

# Lower Thames Crossing

## 6.3 Environmental Statement Appendices Appendix 8.17 - Draft EPS mitigation licence application - great crested newts (Clean version)

(1 of 8)

APFP Regulation 5(2)(a)

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

Volume 6

**DATE: December 2023**  
**DEADLINE: 8**

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**VERSION: 2.0**

### Revision history

| <b>Version</b> | <b>Date</b>     | <b>Submitted at</b> |
|----------------|-----------------|---------------------|
| 1.0            | 31 October 2022 | DCO Application     |
| 2.0            | 5 December 2023 | Deadline 8          |



# Licence Application Form

## Mitigation Licensing – Great Crested Newts

**Please Note – Applications can be completed online.  
For more information please visit our [website](#).**

Wildlife Licensing  
Natural England  
Horizon House  
Deanery Road  
Bristol, BS1 5AH.  
T. 020802 61089  
[EPS.Mitigation@naturalengland.org.uk](mailto:EPS.Mitigation@naturalengland.org.uk)

- Please complete this application form using **dark ink** and BLOCK CAPITALS.
- Return the completed form to the address shown.
- All questions should be answered as appropriate. Questions marked with “\*” are mandatory and failing to complete these may result in delays to your application.
- If there is insufficient space for completing answers on this form, please attach a separate sheet.
- Natural England will aim to determine the outcome of a completed licence application within its published service standards.
- If you experience any problems completing this application or using the online Case Work Management (CWM) system – please see our [website](#) for guidance or contact Wildlife Licensing.
- Additional guidance is provided in [Using CWM – Applicant Guidance Document](#). This can be downloaded from our website or a copy can be requested from Wildlife Licensing.

|                            |
|----------------------------|
| <b>For Office Use Only</b> |
| CWM Ref No:                |
| Charter Deadline:          |

### 1. Applicant Details

Please enter the details of the person or company who will become the licensee.

*(For guidance please see attached annex)*

- If the applicant **is** already registered as a customer please complete Registered Applicant Details (a)
- If the applicant **is not** already registered as a customer please complete the New Applicant Registration (b)

#### (a) Registered Applicant Details

\*Customer Number

\*Surname

\*Forename

\*Postcode

#### (b) New Applicant Registration

*Please note: If you are the agent / named ecologist registering on behalf of the applicant you will need to provide their full authorisation with this application.*

\*Email Address

\*Title

(please tick as appropriate)

Mr

Mrs

Ms

Other

(Please Specify)

\*Forename

Middle Name

\*Surname

Professional Membership

(e.g. CIEEM, IEMA, etc)

House Name / No.

\*Address Line 1

\*Address Line 2

Address Line 3

Town  \*County

\*Postcode  Country

Either 'Telephone No.' or 'Mobile No.' must be completed.

Telephone No.  Mobile No.

Fax no.

\*Customer Type (e.g. Farmer, Householder, Ecologist, etc.)

\*Are you VAT registered? Yes  No  If 'Yes' VAT Number:

\*Are you registered with the Rural Payments Agency? Yes  No  If 'Yes' RPA SBI Number:

(c) If you are registering on behalf of an organisation please complete this section.

\*Position  \*Organisation Name

What is the size of your organisation?

Micro (1 to 10 employees)  
 Small (11 to 49 employees)  
 Medium (50 to 249 employees)  
 Large (250 employees or more)

What is the legal status of your organisation?  
 (e.g. private limited company, registered charity, voluntary organisation, Government agency, Local Authority)

Companies House Registration or Registered Charity Number:

(d) Alternative Applicant Contact Details

In the event that the applicant is unavailable to discuss the application, it would be helpful if alternative contact details could be provided. By completing this section you are confirming that this contact is authorised to act on behalf of the applicant.

Name:

Tel Number:

Email Address:

## 2. Named Ecologist Details

Please enter the details of the named ecologist. Please note a named ecologist is required for all development and mitigation applications *(For guidance please see attached annex)*

- If the ecologist **is** already registered as a customer please complete Registered Named Ecologist Details (a)
- If the ecologist **is not** already registered as a customer please complete the New Named Ecologist Registration (b)
- If there will not be an ecologist used in conjunction with this application please go to the next section.

### (a) Registered Named Ecologist Details

|                      |                      |                      |                      |
|----------------------|----------------------|----------------------|----------------------|
| *Customer Number     | *Surname             | *Forename            | *Postcode            |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |

### (b) New Named Ecologist Details

*Please note: If you are the applicant registering on behalf of the agent / named ecologist you will need to provide their full authorisation with this application.*

\*Email Address

\*Title (please tick as appropriate) Mr  Mrs  Ms  Other  (Please Specify)

|                      |                      |                      |
|----------------------|----------------------|----------------------|
| *Forename            | Middle Name          | *Surname             |
| <input type="text"/> | <input type="text"/> | <input type="text"/> |

Professional Membership (e.g. CIEEM, IEMA, etc)

House Name / No.

\*Address Line 1

\*Address Line 2

Address Line 3

Town  \*County

\*Postcode  Country

*Either 'Telephone No.' or 'Mobile No.' must be completed.*

Telephone No.  Mobile No.

Fax no.

\*Customer Type (e.g. Farmer, Householder, Ecologist, etc.)

\*Are you VAT registered? Yes  No  If 'Yes' VAT Number:

\*Are you registered with the Rural Payments Agency? Yes  No  If 'Yes' RPA SBI Number:

(c) If you are registering on behalf of an organisation please complete the following.

\*Position

\*Organisation Name

What is the size of your organisation?

- Micro (1 to 10 employees)  
 Small (11 to 49 employees)  
 Medium (50 to 249 employees)  
 Large (250 employees or more)

What is the legal status of your organisation?

*(e.g. private limited company, registered charity, voluntary organisation, Government agency, Local Authority)*

Companies House Registration or Registered Charity Number

(d) Alternative Named Ecologist Contact Details

In the event that the named ecologist is unavailable to discuss the application, it would be helpful if alternative contact details could be provided. By completing this section you are confirming that this contact is authorised to act on behalf of the named ecologist and has a detailed knowledge of the application.

Name:

Tel Number:

Email Address:

### 3. Communication Preferences

Please indicate who should be contacted if we need to discuss this application:

*(please note more than one option can be selected for each question):*

Applicant  Named Ecologist

Please indicate to whom the outcome documentation for this application should be sent:

Applicant  Named Ecologist

Applicant preferences: Email  Post  Telephone

If 'Yes' for telephone, please provide a contact no.

Named Ecologist preferences: Email  Post  Telephone

If 'Yes' for telephone, please provide a contact no.

#### 4. Previous Applications

(a) \* To your knowledge, have there been any previous applications or licence decisions concerning this site? Yes  No

*If 'No' please move to question 4(g). If 'Yes' to (a), please complete the following.*

(b) \* Date of most recent application:

(c) \* Which species was the subject of the previous application?

(d) \* What was the application or licence reference number?

(e) \* What was the outcome of the previous application? (Please select one of the following)

Granted  Not Granted  Advice Only  Deferred  Not Yet Known

(f) To your knowledge, does this application relate to any previously licensed 'mitigation' work on the site being applied for? Yes  No

*If 'Yes' to (f): Please provide application/licence reference numbers, species details and outcome details.*

(g) To your knowledge, is the site being applied for subject to any recent, concurrent, pending or future applications for licences for the same or other European protected species or other protected species? Yes  No

*If 'Yes' to (g): Please provide application/licence reference numbers and species information.*

For applications which are part of the Pre-Submission Screening Service:

More information on Natural England's Pre-Submission Screening Service can be found [here](#).

Is this a first draft application? Yes  No  Is this a subsequent draft? Yes  No

Are you aware if your case has been seen or reviewed by Natural England? Yes  No  Not Sure

If yes, who provided the advice and when:

Any further information you would like to provide:

Is this a formal application? Yes  No

Please provide any earlier reference numbers:

For applications which are part of Nationally Significant Infrastructure Projects:

Is this a first draft application? Yes  No

Is this a subsequent draft? Yes  No

Is this a formal application? Yes  No

Please provide any earlier reference numbers

## 5. Purpose

(a) \* Please provide a brief description of your proposal (E.g. Construction of a new road, maintenance of a bridge, construction of five flats with access road and car parking area).

(b) \* Please tell us why you need a licence. (E.g. Great Crested Newt breeding ponds will be damaged, destruction of two known breeding ponds).

(c) \* Please confirm the purpose of the application (Please select one of the following):

- Imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment under section 55(2)(e)
- Preserving public health or public safety, under section 55(2)(e)
- Preventing the spread of disease, under section 55(2)(f)
- Preventing serious damage to livestock, foodstuffs for livestock, crops, vegetables, fruit, growing timber, fisheries or inland waters, or any other form of property under section 55(2)(g)
- A purpose not specified in Regulation 55(2) that is consistent with Article 16(1)(e) of the Habitats Directive, under section 55(4)

(d) \* Please confirm the category most appropriate to your proposed work (Please select one of the following):

- |  |  |
|--|--|
| <input type="checkbox"/> Agriculture / Fishing / Forestry                  | <input type="checkbox"/> Mineral extraction  |
| <input type="checkbox"/> Archaeological investigation / Site investigation | <input type="checkbox"/> Nationally Significant Infrastructure Projects  |
| <input type="checkbox"/> Barn Conversion                                   | <input type="checkbox"/> Places of worship   |
| <input type="checkbox"/> Commercial  | <input type="checkbox"/> Public community projects (e.g. schools, universities, hospitals, care facilities and other public buildings) |
| <input type="checkbox"/> Communications                                    | <input type="checkbox"/> Small scale repair and maintenance works  |
| <input type="checkbox"/> Energy generation                                 | <input type="checkbox"/> Transport   |
| <input type="checkbox"/> Energy supply                                     | <input type="checkbox"/> Waste management  |
| <input type="checkbox"/> Flood and coastal defences                        | <input type="checkbox"/> Water management  |
| <input type="checkbox"/> Health & Safety                                   | <input type="checkbox"/> Other   |
| <input type="checkbox"/> Heritage  |  |
| <input type="checkbox"/> Housing   |  |
| <input type="checkbox"/> Industrial / Manufacturing                        |  |



If other, please provide details here:

(e) \* Is the proposed work part of a phased or a multi-plot development? Yes  No

If 'Yes' to (e): You must submit a species specific master plan and Habitat Management and Maintenance Plan with this application, as a separate document. Guidance on what should be included in a master plan can be found at – [http://webarchive.nationalarchives.gov.uk/20140605090108/http://www.naturalengland.org.uk/Images/WML-G11\\_tcm6-9930.pdf](http://webarchive.nationalarchives.gov.uk/20140605090108/http://www.naturalengland.org.uk/Images/WML-G11_tcm6-9930.pdf)

## 6. Site Details

\* Is the address for the site to be licensed different to the applicant's address? Yes  No

If 'Yes': For the Site / Location to be licensed, please complete **all** of the following details:

If 'No': Please complete Site / Location Name and OS Grid Reference boxes only.

*(For linear projects, please add the start and end points separately)*

|  | <i>Site Details</i> |
|--|---------------------|
| *Site / Location Name:                             |                     |
| House No:  |                     |
| Address Line 1:                                    |                     |
| Address Line 2:                                    |                     |
| Address Line 3:                                    |                     |
| Town:  |                     |
| *County:   |                     |
| Postcode:  |                     |
| *OS Grid Reference:<br><i>(In format XX123456)</i> |                     |

## 7. Conservation Considerations

(a) \*Will any part of the proposed activity fall in and/or adjacent to a Designated Site?

Yes  No  N/A

If 'Yes' to (a) please complete the table below. If 'No', please go to the next section.

| Please indicate whether the activity will fall on and/or adjacent to a designated site: | Designated Site Name: | Type of Designated Site<br><i>E.g. National Nature Reserve (NNR), Site of Special Scientific Interest (SSSI), Special Protection Area (SPA), Special Area of Conservation (SAC), Ramsar Site, Ancient Monument, Marine Nature Reserve (MNR), Area of Outstanding Natural Beauty (AONB)</i> |
|---|-----------------------|--|
| On <input type="checkbox"/><br>Adjacent to <input type="checkbox"/>                     |                       |  |
| On <input type="checkbox"/><br>Adjacent to <input type="checkbox"/>                     |                       |  |
| On <input type="checkbox"/><br>Adjacent to <input type="checkbox"/>                     |                       |  |
| On <input type="checkbox"/><br>Adjacent to <input type="checkbox"/>                     |                       |  |
| On <input type="checkbox"/><br>Adjacent to <input type="checkbox"/>                     |                       |  |
| On <input type="checkbox"/><br>Adjacent to <input type="checkbox"/>                     |                       |  |

(b) Have you consulted with Natural England for advice on the implications of the application on the designated site?

Yes  No  Not Known

(c) Please give either the outcome of your consultations or the reason why you have not consulted us. Please provide any relevant correspondence and the name of the local Natural England adviser or reserve manager consulted.

## 8. Authorisation

(a) \* Is the applicant the owner / occupier of the land?

Yes  No  N/A

If 'Yes' to (a) please go to the next section. If 'No' to (a) please answer (b).

(b) Have you received the owner occupier's permission to apply?

Yes  No

Please note that it is your responsibility as the applicant to obtain the owner or occupier's permissions to act under licence on their property.

You may be asked to provide documentation which confirms that you have owner or occupier's permissions and we will contact you if this is necessary.

## 9. Application Details

(a) Please add details for all licensable actions you wish to perform:

|  | Licensable Action  |
|--|--|
| Application Subject  | <i>Great Crested Newts</i>   |
| Species  | <i>Great Crested Newt</i>  |
| * Activity   | <input type="checkbox"/> Capture<br><input type="checkbox"/> Disturb<br><input type="checkbox"/> Transport<br><input type="checkbox"/> Damage breeding site<br><input type="checkbox"/> Destroy breeding site<br><input type="checkbox"/> Damage resting place<br><input type="checkbox"/> Destroy resting place   |
| * Method or Field Technique  | <input type="checkbox"/> By hand<br><input type="checkbox"/> Hand search<br><input type="checkbox"/> Destructive search<br><input type="checkbox"/> Bottle trapping<br><input type="checkbox"/> Netting<br><input type="checkbox"/> Pitfall trapping and refuges<br><input type="checkbox"/> Draining down and destruction of ponds<br><input type="checkbox"/> Night / torch searching<br><input type="checkbox"/> Refugia only<br><input type="checkbox"/> Exclusion by permanent amphibian fencing<br><input type="checkbox"/> Exclusion by permanent one-way amphibian fencing<br><input type="checkbox"/> Exclusion by temporary amphibian fencing<br><input type="checkbox"/> Exclusion by temporary one-way amphibian fencing<br><input type="checkbox"/> Drift fencing |
| * Number of breeding sites to be impacted:   |  |
| Please enter the proposed start date of action below. <i>Please note this refers to the date of the first licensable action, not necessarily when the development commences.</i> |  |
| * Proposed Date From   |  |

(b) \* Have you sent your records to the Local Records Centre Yes  No

*Please note: You must send survey data and habitat assessment data to your Local Records Centre (LRC). It is a condition of survey licences that records are sent to LRCs annually or to other organisations as specified on a particular survey licence (e.g. People's Trust for Endangered Species).*

## 10. Experience

*Please note: For guidance in completing this section please refer to the Experience in Great Crested Newt Mitigation document at [http://webarchive.nationalarchives.gov.uk/20140605090108/http://www.naturalengland.org.uk/Images/wmlg05\\_tcm6-4115.pdf](http://webarchive.nationalarchives.gov.uk/20140605090108/http://www.naturalengland.org.uk/Images/wmlg05_tcm6-4115.pdf)*

(a) \* Has the named ecologist associated with this application held or been named on a licence in the past three years for the same species and in relation to a project of similar scale, methodology and mitigation? Yes  No

*If 'Yes' to (a)...*

(b) \* Please provide the name of the issuing authority, the licence reference number and date of issue for licenses held:

If 'No' to (a) please complete the following section. If "Yes" to (a) go to the next section.

(c) \* Does the named ecologist currently hold a valid personal survey licence or are they registered to use a class survey licence for the same species?

Yes  If 'Yes' complete **all** of the following.  
No  If 'No' go to (f)

(d) \* What is/are the survey licence reference number(s)?

(e) \* Number of years the survey licence(s) have been held

(f) \* Please give brief details of the named ecologist's current science, education or conservation licence or any other licences issued to the ecologist in the last three years relevant to the species relating to this application:

(g) \* Please give brief details of the named ecologist's experience on mitigation projects relevant to the species relating to this application, including in what capacity they acted. State the site names and reference numbers of licences and the type of mitigation involved:

(h) \* Please provide details of the named ecologist's Qualifications, including any Continual Professional Development (CPD) training relevant to the species relating to this application:

Please note: If you have not held a mitigation licence in the last three years you will need to provide written references from two people who are familiar with the named ecologist's work. Please attach these references with your application. References provided in support of your licence application should:

- Vouch for the named ecologist's suitability and competence to prepare and deliver mitigation projects;
- state how long referees have known the named ecologist and in what capacity;
- provide details of the named ecologist's mitigation experience with the relevant species or a related species; and
- provide details of the referees' own mitigation experience and mitigation licence held (if appropriate): at least one referee must have held a mitigation licence within the last 3 years.

(i) \* Are you providing references?

Yes  No

If 'Yes' to (i): Please provide details of the referees. We may need to contact these referees to verify their statements.

1st Referee:

2<sup>nd</sup> Referee:

## 11. Consent Status

(a) \* Is any consent required for your proposed project and the subject of this licence application?

- 1. Planning-related consent required (e.g. Planning permission, listed building consent, etc)
- 2. Demolition consent (under Building Act 1984) including prior notice to demolish.
- 3. Other type of consent required (e.g. Minerals consents, Highway Act consents, Secretary of State Decision Letter, Compulsory Purchase Order, Environment Agency Consent, etc.)
- 4. Permitted Development (under Town and Country Planning Act 1990) - no specific consent required.
- 5. No consent required (e.g. Public Health and safety issues)

If '3' is selected

(b) \* Please provide details of these consents

If '5' is selected

(c) \* Please explain why no consent is required

If '1', '2' or '3' is selected

(d) Have you obtained the necessary consent(s) to allow the proposed activity to be commenced?

Yes  No

- If 'No' to (d), please complete 'Consent Not Obtained'
- If 'Yes' to (d), please complete 'Consent Obtained'

### Consent not obtained

*Please explain why you are applying in advance of the granting of consent that would allow the development to commence and what the circumstances are (e.g. Site investigation work which is required to inform the planning consent decision and where, after avoidance measures, the risk of affecting a European Protected Species is high). Please note that your application is unlikely to be processed until this issue has been resolved.*

(e) \*Please provide details of the outstanding consents to be obtained and the likely timescales for their determination/issue.

Pre-Submission Screening Service

We will provide advice on draft applications, prior to consents being in place and prior to a formal licence application being submitted through this chargeable service. We **strongly** advise customers to use this service rather than trying to pursue a licence under Exceptional Circumstances, particularly where there are concerns about financial implications resulting from delays in obtaining a licence once planning consents are in place. Please see our [website](#) for further advice about this.

*Consent obtained*

(f) Please confirm details of all the consents that have been granted relevant to the proposed activity and this licence application.

- |   |                          |  |                          |
|---|--------------------------|--|--------------------------|
| Full Planning Permission  | <input type="checkbox"/> | Outline Planning Permission                                | <input type="checkbox"/> |
| Demolition Consent (under Building Act 1984) including prior notice to demolish.      | <input type="checkbox"/> | Conservation Area Consent                                  | <input type="checkbox"/> |
| Listed Building Consent   | <input type="checkbox"/> | Tree Preservation Order                                    | <input type="checkbox"/> |
| Highways Act Consent  | <input type="checkbox"/> | Utilities Consent  | <input type="checkbox"/> |
| Mineral Consent   | <input type="checkbox"/> | Mineral Consent with Review of Mineral Planning Permission | <input type="checkbox"/> |
| Mineral Consent (Review of Mineral Planning Permission submitted to Mineral Planning) | <input type="checkbox"/> | Other consent type   | <input type="checkbox"/> |

Other Consent Type

(g) Please provide consent reference number(s)

*Please submit copies of the consents (or extracts) that are relevant to the proposed activity and this licence application, if applicable.*

(h) For all consents that have been granted, have all conditions or Reserved Matters relating to wildlife species and habitat issues (which are intended to be and are capable of being discharged before development begins) been discharged?

Yes  No

*If 'No' to (h), please answer **all** of the following. If 'Yes', please skip to (j).*

**Please note:** If it is not possible or not intended for the conditions to be discharged before development commences then please complete the questions below.

(i) Please give details of those conditions that are still to be discharged and explain why they have not been discharged.

(j) Is the site subject to any commitment that affects the protected species named in this application?

Yes  No

*For example a Section 106 Agreement (Town and Country Planning act 1990) or other commitments made at a Public Inquiry or in an Environmental Statement.*

If 'Yes' to (j): Has the commitment been met? Please also explain what has been done.

If 'Yes' to (j): What work is outstanding and when will it be completed?

(k) Is the site subject to any such commitment that affects other European Protected Species or other protected species? *E.g. a Section 106 Agreement (Town and Country Planning Act 1990) or other commitments made at a Public Inquiry or in an Environmental Statement.*

Yes  No

If 'Yes' to (k): Has this been met?

If 'Yes' to (k): When will this be complete?

**Reasoned Statement & Supporting Documents**

A Reasoned Statement and supporting documents may be required in support of this application.

Copies of the latest version of the Reasoned Statement template which sets out when a Reasoned Statement is required and further guidance to help are available on our [website](#).

Please confirm that you have read and understood the Reasoned Statement template and advice note/guidance

(l) \* Does your application require a Reasoned Statement? Yes  No

If 'No' to (l): \* Please confirm the exception that applies (specify species and scenario e.g. home improvements or small scale housing developments)

## 12. Consenting Authority

Please provide the Local Planning Authority/Authorities that have granted consent for the proposed project and the subject of this licence application. Please then provide contact details for the responsible officer.

If consent is granted by another body (e.g. Secretary of State, Natural England, Environment Agency, Utilities Consent, Highways Consent, etc) then please provide details for it as appropriate.

If no consent is required (e.g. Public health and safety issues) then please leave the remaining fields blank.

\*Consenting Authority Name

\*Title

\*Forename

\*Surname

\* Position

Email Address

Telephone Number

Address

## 13. Method Statement

A Method Statement must be provided to support this application, along with other supporting documents, which may include some or all of the following:

- Maps
- Figures
- Habitat management and maintenance plans
- Master plans
- Appended survey results
- A work schedule

Please note: The Method Statement is normally prepared by a consultant ecologist or another suitably qualified person because compiling the content requires specific species and site-related knowledge.

Further Advice: Copies of the latest versions of templates for all species and further guidance to help you complete them are available on our [website](#).

## 14. Supplementary Information

Please provide any additional information you may have to support your application.



## 15. Data Protection

The data controller is the Natural England, Foss House, Kings Pool, 1-2 Peasholme Green, York, Y01 7PX. You can contact the Natural England Data Protection Manager at: Natural England, County Hall, Spetchley Road, Worcester, WR5 2NP; [foi@naturalengland.org.uk](mailto:foi@naturalengland.org.uk)

Any questions about how we are using your personal data and your associated rights should be sent to the above contact. The Data Protection Officer responsible for monitoring that Natural England is meeting the requirements of the legislation is: Defra group Data Protection Officer, Department for Environment, Food and Rural Affairs, SW Quarter, 2nd floor, Seacole Block, 2 Marsham Street, London SW1P 4DF. [DefraGroupDataProtectionOfficer@defra.gsi.gov.uk](mailto:DefraGroupDataProtectionOfficer@defra.gsi.gov.uk)

The information on the licence application form and any supporting material will be used by Natural England to undertake our licensing functions. This will include, but is not limited to assessing your application, issuing a licence if applicable, monitoring compliance with licence conditions and collating licence returns and reports. The personal information we will process will include, but is not limited to your name and contact details, customer type and reasons for wanting a licence. Processing is necessary for the performance of a task carried out in the public interest or in the exercise of official authority vested in the data controller. That task is to conduct the licensing functions as delegated by Defra to Natural England under Part 8 Agreement under section 78 of the Natural Environment and Rural Communities Act 2006.

The processing by us of personal data relating to wildlife-related or animal welfare offences or related security measures is carried out only under official authority. This information is used in assessing an application as it is a material fact. Natural England will for particular licence applications and at specific stages of the licencing process discuss your application with third parties. The details of this sharing are set out here <https://www.gov.uk/government/publications/wildlife-licensing-privacy-notice>

Your personal data will be kept by us for 7 years after the expiry of your licence or longer if stated in the licence conditions. Failure to provide this information will mean that we will be unable to assess your application for a wildlife licence.

The information you provide is not connected with individual decision making (making a decision solely by automated means without any human involvement) or profiling (automated processing of personal data to evaluate certain things about an individual).

The data you provide will not be transferred outside the European Economic Area.

A list of your rights under the General Data Protection Regulation, the Data Protection Act 2018, is accessible at:

<https://ico.org.uk/for-organisations/guide-to-the-general-data-protection-regulation-gdpr/individual-rights/>

You have the right to lodge a complaint with the ICO (supervisory authority) at any time. Should you wish to exercise that right full details are available at:

<https://ico.org.uk/for-organisations/guide-to-the-general-data-protection-regulation-gdpr/individual-rights/>

Details of our Personal Information Charter can be found at:

<https://www.gov.uk/government/organisations/natural-england/about/personal-information-charter>.

### Important Advice:

- **If your application is made under the Wildlife and Countryside Act 1981 (as amended) or the Conservation of Habitats and Species Regulations 2017 (as amended), any person who in order to obtain a licence knowingly or recklessly makes a statement or representation, or furnishes a document or information which is false in a material particular, shall be guilty of an offence and may be liable to criminal prosecution. Any person found guilty of such an offence is liable, on summary conviction, to imprisonment for a term not exceeding six months or to a fine not exceeding level 5 on the standard scale, or to both. Regarding other wildlife legislation, we will look to provisions in the Fraud Act 2006 (as amended) in respect of applicants making any false representations.**
- **Natural England or the Secretary of State can modify or revoke at any time any licence that is issued, but this will not be done unless there is good reason for doing so. Any licence that is issued is likely to be revoked immediately if it is discovered that false information has been provided that resulted in the issue of a licence**

## 16. Declaration

### 16a. Convictions

\* Have you or any person listed in the application been convicted of any wildlife-related or animal welfare offence? Yes  No

If 'Yes': Please provide details of the convictions: (including dates)

*The offences we are referring to relate to persons convicted on or after 1 January 2010 of an offence under the Wildlife and Countryside Act 1981, the Conservation (Natural Habitats &c.) Regulations 1994, the Conservation of Habitats and Species Regulations 2017 (as amended), the Protection of Badgers Act 1992, the Deer Act 1991, the Hunting Act 2004, the Wild Mammals (Protection) Act 1996, the Animal Welfare Act 2006 and the Protection of Animals Act 1911 (all as amended). You do not have to declare conviction if the person concerned is: (1) a rehabilitated person for the purposes of the Rehabilitation of Offenders Act 1974 and their conviction is treated as spent; or (2) in respect of such an offence, a court has made an order discharging them absolutely.*

### 16b. Applicant Declaration.

I have read and understood the privacy notice above.

- Where required, I undertake to obtain permission from landowners / occupiers of land to exercise any licence resulting from this application, and to allow any employee or representative of Natural England to monitor or inspect the work described in this application.
- I have read and understood the guidance provided in the application form and on the Wildlife Licensing Internet guidance pages.
- I declare the particulars given are correct to the best of my knowledge and belief, and I apply for a licence in accordance with the information I have provided.
- I confirm that there is no satisfactory alternative to meet the need/resolve the problem detailed in this application.

I agree to the declaration above.

Signature of Applicant:

For electronic applications, please insert an electronic signature above or tick this box to confirm with the declaration.

Name: (In BLOCK letters)

Date:

16c. Ecologist Declaration

- I have read and understood the privacy notice above.
- I confirm that I have visited the site(s).
- I have designed and inputted into the licence proposal.
- I confirm that there is no satisfactory alternative to meet the need/resolve the problem detailed in this application.
- I am satisfied that the proposal will result in no adverse impact on the species concerned.
- I declare the particulars given are correct to the best of my knowledge and belief, and the applicant may apply for a licence in accordance with information I have provided.
- I have documentary evidence that I am authorised to act on behalf of the applicant that I will supply to Natural England on request.

I agree to the declaration above.

Signature of Ecologist:

For electronic applications, please insert an electronic signature above or tick this box to confirm with the declaration.

Name: *(In BLOCK letters)*

Date:

**17. Annex - Application Notes**

*Applicant*

The applicant is the person submitting the application (usually the landowner or occupier) who, if the licence was granted, would become the licensee. The applicant may appoint agents to produce the application pack and act on their behalf. A person with specific skills and knowledge of the species concerned, such as a consultant ecologist, must be appointed to assist in the preparation and the delivery of the proposals that ensure the species protection requirements can be met.

*Licensee*

The "Licensee" named on the licence is responsible for ensuring that all activities carried out on site in relation to the licence comply with the terms and conditions of the licence. However, all persons authorised to act under the licence must comply with the licence and its conditions (see Regulation 60(1) of the 2017 Regulations). This means that all authorised persons have a responsibility for ensuring that the licence terms and conditions, including any annex special conditions, are understood and complied with. Failure to do so could lead to prosecution.

### *Consultant/Named Ecologist*

The “Named Ecologist” is a professional ecological consultant who has satisfied Natural England that they have the relevant skills, knowledge and experience of the species concerned and is responsible for undertaking and/or overseeing the work undertaken in respect of the licensed species. The ‘Named Ecologist’ has a responsibility for ensuring that the licence is complied with. They are responsible for advising the licensee on the suitability and competence of any Accredited Agents or Assistants employed on site to undertake the required duties and may include the direct supervision of Assistants where appropriate. More information about the experience required to become a named ecologist can be found at: [http://webarchive.nationalarchives.gov.uk/20140605090108/http://www.naturalengland.org.uk/Images/bat-mitigation-guidance\\_tcm6-10534.pdf](http://webarchive.nationalarchives.gov.uk/20140605090108/http://www.naturalengland.org.uk/Images/bat-mitigation-guidance_tcm6-10534.pdf)

### *Accredited Agent*

An “Accredited Agent” is a suitably trained and experienced person who is able to carry out work under a licence without the personal supervision of the Named Ecologist. Any Accredited Agent must be appointed by the Licensee and be in possession of a letter signed by the Licensee confirming their appointment. Agents shall carry a copy of the said letter when acting under the licence and shall produce it to any police or Natural England officer on request.

### *Assistants*

An “Assistant” is a person assisting a Named Ecologist or Accredited Agent. Assistants are only authorised to act under this licence whilst they are under the direct supervision of either the Named Ecologist or an Accredited Agent.



## **European Protected Species Mitigation Licensing - Reasoned Statement for the purpose of Imperative Reasons of Overriding Public Interest**

The information provided in this form will be used by Natural England to determine whether the proposed activity affecting the European Protected Species meets the requirements of Regulation 53(2)(e) and 53(9)(a) within The Conservation of Habitats and Species Regulations 2010 (as amended). These are known as the ‘**purpose**’ and ‘**no satisfactory alternatives**’ tests.

This form, for the purpose of Imperative Reasons of Overriding Public Interest, only needs to be completed if your application proposal is **not** covered by one the scenarios and categories listed [on GOV.UK](http://GOV.UK).

*Important Note:* Detailed information on the proposal is required to demonstrate that it will meet the tests set out under the Regulations. If you encounter difficulty answering the questions or providing the evidence required, it may suggest that your proposal is insufficiently advanced to satisfy the licensing tests. In that case, you should consider delaying your application until this information is available.

**Please read the following and complete:**

- **Section A: Purpose test**  
*“Imperative reasons of overriding public interest” (IROPI) including those of a social or economic nature and beneficial consequences of primary importance for the environment”*
- **Section B: No Satisfactory Alternative test**

The tests are applied proportionately, so the strength of the evidence required to meet each will need to be sufficient to justify the impact upon the protected species (see guidance for further information). Where the supporting evidence upon which your reasoning is based consists of lengthy documents, please do not submit these in their entirety as this will delay your application if we need to go through them to find the relevant extracts. You need to provide clear, concise information for us to be able to meet the licensing tests. Please note that your application is likely to be rejected in cases where the supporting evidence has not been clearly referenced.

## Section A: Purpose Test

**A1 Please select against all of the following below which apply to your proposal. You are asked to indicate against those that apply whether the projected benefits are primary or secondary or not applicable to your proposal.**

Please note: A primary benefit is considered to be the key social, economic or environmental benefit brought about from the proposal. A secondary benefit is considered to be an additional benefit, but not the main reason for the proposal. There may be more than one secondary benefit but supporting evidence should be provided in Section A2 where applicable, for each benefit selected.

| Does your proposal:  |   |   |   |
|--|---|---|---|
| Provide housing in an area where shortfalls have been clearly identified?                                | <input type="checkbox"/> Primary benefit            | <input type="checkbox"/> Secondary benefit            | <input checked="" type="checkbox"/> N/A |
| Create, repair or enhance essential infrastructure at a local, regional or national level?               | <input checked="" type="checkbox"/> Primary benefit | <input type="checkbox"/> Secondary benefit            | <input type="checkbox"/> N/A            |
| Provide care facilities or another essential public service in an area where it is known to be required? | <input type="checkbox"/> Primary benefit            | <input type="checkbox"/> Secondary benefit            | <input checked="" type="checkbox"/> N/A |
| Address another clearly identified social, religious or cultural need?                                   | <input type="checkbox"/> Primary benefit            | <input checked="" type="checkbox"/> Secondary benefit | <input type="checkbox"/> N/A            |
| Create long term employment opportunities in an area of high unemployment?                               | <input type="checkbox"/> Primary benefit            | <input checked="" type="checkbox"/> Secondary benefit | <input type="checkbox"/> N/A            |
| Deliver other economic benefits or otherwise contribute in some way to the wider economy?                | <input checked="" type="checkbox"/> Primary benefit | <input type="checkbox"/> Secondary benefit            | <input type="checkbox"/> N/A            |
| Contribute to addressing problems associated with climate change or promote sustainable energy use       | <input type="checkbox"/> Primary benefit            | <input type="checkbox"/> Secondary benefit            | <input checked="" type="checkbox"/> N/A |
| Conserve a place of environmental interest?  | <input type="checkbox"/> Primary benefit            | <input type="checkbox"/> Secondary benefit            | <input checked="" type="checkbox"/> N/A |
| Provide alternative sources of energy?   | <input type="checkbox"/> Primary benefit            | <input type="checkbox"/> Secondary benefit            | <input checked="" type="checkbox"/> N/A |
| Deliver other benefits from those specified above?   | <input type="checkbox"/> Primary benefit            | <input type="checkbox"/> Secondary benefit            | <input checked="" type="checkbox"/> N/A |
| If 'Other benefits' is selected, please provide details here:  |   |   |   |

**A2 In relation to the primary and secondary benefits identified in A1, to help demonstrate the need for the proposal, please provide the evidence and details for all the benefits ticked above.**

*Important note:* Reference the supporting evidence upon which your reasoning is based and include the relevant extracts (please do not send in documents with no indication where the evidence being referred to is). This evidence must link back to the tick boxes selected above. Failure to do so will lead to us having to come back to you for further information.

Supporting evidence can usefully include some or more of the following: Local planning policies and plans, planning permission, policy documents, specialist reports, feasibility studies, extracts from relevant legislation, photographs, media articles or related correspondence. Where applicable, please ensure that planning officer or committee reports and design and access statements are included as supporting evidence.

**A2 (a) (i) Please provide full details of the proposal in the box below.**

The Lower Thames Crossing (the 'Project') would provide a connection between the A2 and M2 in Kent, east of Gravesend, crossing under the the River Thames through two bored tunnels, before joining the M25 south of junction 29. The Lower Thames Crossing is a Nationally Significant Infrastructure Project (NSIP) within Section 14(1)(h) and 22(1)(a) of the Planning Act 2008.

The A122 Road would be approximately 23km long, 4.25 km of which would be in tunnel. On the south side of the River Thames, the Project route would link the tunnel to the A2 and M2. On the north side, it would link to the A13 and junction 29 of the M25. The tunnel portals would be located to the east of the village of Chalk on the south of the River Thames and to the west of East Tilbury on the north side.

The Project would be three lanes in both directions except for; link roads, stretches of carriageways through junctions, and the southbound carriageway from the M25 to the junction with the A13/A1089, which would have two lanes.

The Project would include adjustment to a number of side roads to accommodate the A122 road and to connect with the Project road at the A13 and A2 junctions. There would also be adjustments to a number of public rights of way, used by walkers, cyclists and horse riders. Construction of the Project would also require the diversion of a number of utilities, including gas pipelines, overhead and underground electricity cables, as well as water supplies and telecommunications assets.

A full description of the Project is set out in Environmental Statement (Chapter 2 - Project Description) (Application Document 6.1), specifically section 2.4 (Description of the Project) and section 2.8 (Operations, maintenance and management), submitted as part of the application for a development consent order.

**A2 (a) (ii) Explain why your proposal is considered to be imperative (essential).**

For example, if your development proposal is for a housing development reference the local housing need as set out in the area plan and explain how your proposal contributes to meeting this need or how the requirement for the proposed new public service, care facility or infrastructure project was identified.

The main drivers behind the need case are to reduce existing congestion at the Dartford Crossing and improve the resilience of the Thames Crossing and the major road network. The need case is set out in full within the Need for the Project, notably section 3 (Policy context) (Application Document 7.1) submitted as part of the application for development consent.

Government policy for Transport NSIPs is set out in the National Policy Statement for National Networks (NPSNN).

Paragraph 2.2 of the NPSNN recognises that there is a critical need to improve the national networks to address road congestion in order, '... to provide safe, expeditious and resilient networks that better support social and economic activity; and to provide a transport network that is capable of stimulating and supporting economic growth'.

This is supported by paragraph 2.22 of the NPSNN which states that without improving the road network, including its performance, it will be difficult to support further economic development, and this will impede economic growth and reduce people's quality of life. The Government has therefore concluded that, at a strategic level, there is a compelling need for the development of the national road network.

Paragraph 2.27 of the NPSNN goes on to state that, in some cases to meet the needs of traffic, it will not be sufficient to simply expand capacity on the existing network. In those circumstances new road alignment and corresponding links, including those alignments which cross a river or estuary, may be needed to support increased capacity and connectivity.

**Please provide details of supporting evidence.**

Provide clear referencing such as page numbers and paragraphs of specific documents so these can easily be cross-referenced. To help with our assessment, please only provide the relevant extracts that help to demonstrate the reasoning given above rather than including lengthy documents in their entirety. Please do not provide website links to separate documentation, unless you identify where exactly in the linked document or web page the evidence referred to is located (our preference is for you to extract the evidence and copy it below, referencing where it has come from).

A full description of the Project is set out in the Environmental Statement (Chapter 2 - Project Description. Application Document 6.1), specifically section 2.4 (Description of the Project) and section 2.8 (Operations, maintenance and management), submitted as part of the application for a development consent order. The need case is set out in full in the Need for the Project (Application Document 7.1).

**Please confirm that relevant extract/s from supporting evidence to verify the above have been included**

Yes  No



**A2 (b) Explain why the benefits of your proposal override any harm to the protected species.**

The benefit/s arising from the proposal must outweigh the harm (or risk of harm) to the protected species. Generally this means long-term public benefits rather than short term benefits (ie creation of permanent employment opportunities rather than temporary employment or creation of infrastructure that helps to provide long-term solutions to clearly identified national problems associated with energy demands).

The benefits of the Project address the long-standing transport problems at Dartford Crossing which constrain the economy and impose negative issues on nearby communities. National policy recognises the contribution the Project would make to the national and regional economy, notably around the Government's levelling up proposals.

High level traffic demand for crossing the River Thames east of London significantly outstrips the available road space supply, with growth in this demand progressively making this situation worse. This results in traffic congestion and poor journey time reliability, ranking this part of the Strategic Road Network as being in the top 1% of worst performing sections for reliability. Such congestion, delay and poor journey time reliability are identified as being a major impediment to economic growth in the South East of England and the rest of the country.

The Project will increase the supply of available road space by over 80%, and provide an alternative route to the Dartford Crossing. This would reduce congestion and journey time, and improve reliability, increasing the growth potential for local economies both sides of the River Thames, and benefiting the flow of goods and services using the South East ports. Local communities would see reduced congestion in the local area, as well as reductions in noise and air pollution.

Further details on the need case for the Project are given in Need for the Project (Application Document 7.1).

The potential adverse effects on terrestrial biodiversity associated with the construction and operation of the Project are set out in Chapter 8: Terrestrial Biodiversity of the Environmental Statement (Application Document 6.1), notably section 8.4 (Baseline), section 8.5 (Project Design and Mitigation), and section 8.6 (Assessment of Likely Significant Effects), submitted as part of the application for a development consent order. There are no potential significant residual effects predicted to occur to any protected species, although significant adverse effects are predicted for some assemblages of terrestrial invertebrates, as well as a number of statutory and non-statutory designated sites.

The Planning Statement (Application Document 7.2), provides a Project-wide assessment of effects on protected species in a national policy context, and demonstrate that the benefits of the proposed development outweigh any harm or risk to protected species. Biodiversity impacts are detailed within section 6 (National Policy - Project-wide Assessment), notably paragraphs 6.5.45 to 6.5.93. Paragraphs 6.5.68 to 6.5.76 deal specifically with protected species.

**Please provide details of supporting evidence as explained in A2 above.**

Please refer to the following documents:

Environmental Statement. Chapter 2 - Project Description. (Application Document 6.1). Notably section 2.4 (Description of the Project) and section 2.8 (Operations, maintenance and management).

Environmental Statement. Chapter 8 - Terrestrial Biodiversity. (Application Document 6.1). Notably section 8.4 (Baseline), section 8.5 (Project Design and Mitigation), and section 8.6 (Assessment of Likely Significant Effects).

Need for the Project. (Application Document 7.1). Notably section 3 (Policy Context).

Planning Statement (Application Document 7.2). Notably section 6 (National Policy - Project-wide Assessment)

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**Please confirm that relevant extract/s from supporting evidence to verify the above have been included**

Yes  No

**A3 There must be a Public Interest. You need to demonstrate that your proposal will deliver a public benefit rather than a solely private interest.**

Note: Planning consent (or its equivalent) is considered evidence of public interest so please ensure to reference here but only include details in the application form.

**A3 (a) Indicate the scale of these benefits:**

Local  Regional  National

**A3 (b) Where possible, explain the scale of the benefits that will be achieved from your proposal, in quantifiable terms, as indicated above.**

For example, this could be the number of new houses provided in proportion to the identified need at a local and regional scale; the number of long term employment opportunities that will be created at a local level; the level of reduced Co2 emissions at an 'X' level.

The Project will deliver benefits locally, regionally and nationally, across transport, community and environment, and economic sectors. Transport benefits would see increased road capacity and resilience through the creation of an alternative river crossing to the Dartford Crossing. There would also be reduced congestion, reduced journey times, improved journey reliability and safety benefits. From a community and environment perspective, local communities would experience improved connectivity to the wider road network and greater ease to cross the River Thames. Environmentally, the Project would see a net increase in receptors predicted to experience better air quality, and would create a positive legacy of green infrastructure through the creation of recreational sites such as Chalk Park and Tilbury Fields. The Project would also see direct and indirect provision of local jobs and opportunity for upskilling the local workforce. Economic benefits would aid growth potential north and south of the River Thames through the creation of a single market, no longer fragmented by the river, which would enhance the labour market, competition and efficiencies, driving up productivity.

The detail of these benefits is set out in the Need for the Project (Application Document 7.1), section 5 (Project Benefits) submitted as part of the application for a development consent order.

**A3 (c) Please provide details of supporting evidence to verify the above as explained in A2 above**

Need for the Project (Application Document 7.1). Notably section 5 (Project Benefits).

**Please confirm that relevant extract/s from supporting evidence to verify the above have been included**

Yes  No

## SECTION B: No Satisfactory Alternative Test

Please explain why there is no satisfactory alternative to your proposal.

A “satisfactory alternative” is a different way of achieving the objective of the activity (ie meeting your need) which has a *less negative impact on the protected species*. If there is a less damaging satisfactory alternative available that is feasible, then legally, a licence cannot be granted.

You are expected to have considered all reasonable alternative solutions when developing your proposal(s) and to have suitable grounds (and evidence) for discounting each against the proposed solution to meet the need. There are technical and non-technical elements to consider for this test and this part of your application will consider the non-technical elements – focussing on delivering the need. Alternatives can include different locations, routes, designs and timings. The Method Statement focusses on the technical elements of this test – ie reducing the impact on the species (see ‘Important Advice’ below).

**Important Advice:** Please note that alternative mitigation (including timing of licensable works) and compensation solutions are considered as part of the Favourable Conservation Status test and should be included in the relevant species Method Statement submitted with your application and not here.

### **B1 (a) Firstly, please explain why the current situation (ie the status quo) isn’t acceptable or feasible.**

The Need for the Project Document (Application Document 7.1), section 4 (Need Case: Issues and Opportunities) identifies the need for the Project and explains why the status quo is not acceptable or feasible. Currently demand outstrips road space supply, with no major increase in capacity achieved since the opening of the Dartford Crossing in 1991, despite increasing demand. This problem is exacerbated by the configuration of the road network at the Dartford Crossing and its approaches, particularly when compared to modern standards (e.g. high constraints within specific tunnel lanes leading the traffic weaving; the need to prevent traffic queuing within tunnels leading to increased congestion at tunnel entrances; drivers using local roads to avoid congestion on M25 and then rejoining the M25 closer to the crossing location). Congestion on M25 and local roads leads to increased and unreliable journey times.

There is a lack of alternative crossing routes east of London, those being limited to the Woolwich Ferry, 10 miles upstream of the Dartford Crossing, and the Blackwall Tunnel, 15 miles upstream. Limitations for some vehicles using these crossing points mean some vehicles are forced to follow the M25 west around London, significantly increasing their journey time.

### **B1 (b) Details of supporting evidence.**

Provide clear referencing such as page numbers and paragraphs of specific documents so these can easily be cross-referenced. To help with our assessment, please only provide the relevant extracts that help to demonstrate the reasoning given above rather than including lengthy documents in their entirety. Please do not provide website links to separate documentation, unless you identify where exactly in the linked document or web page the evidence referred to is located (our preference is for you to extract the evidence and copy it below, referencing where it has come from).

See Need for the Project (Application Document 7.1). In particular, please refer to section 4 (Need Case: Issues and Opportunities) which details why the current situation at Dartford Crossing isn't acceptable or feasible.



**B1 (c) Confirm relevant extract(s) from supporting evidence is included to verify the above.**

Yes  No

**Please use the tables below to describe each alternative considered.**

Please use a separate line for each and tick the relevant reason(s) why it was dismissed. It is important to explain why each alternative was judged to be unsatisfactory or unfeasible to meet the need for the proposal put forward in your application and to provide concise supporting evidence as appropriate (*Please insert additional rows as required*).

| <b>B2 (a) Set out <u>what</u> alternative locations and/or routes were considered and indicate how and why they were not acceptable.</b> | Not applicable to situation   | Won't deliver need                  | Not feasible             | Greater impact on species |
|--|---|-------------------------------------|--------------------------|---------------------------|
| Location or route 1:   | <input type="checkbox"/>  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  |
| If you have ticked 'Not applicable to situation', please explain why here, otherwise please complete this table as appropriate:          |   |                                     |                          |                           |
| Describe the location or route considered  | Additional capacity at the existing Dartford Crossing   |                                     |                          |                           |
| Clearly set out how and why the alternative location/route was discounted.   | Option need not meet traffic-related objectives as it did not provide an alternative route, performed poor in relation to safety, noise and air quality impacts, and had drawbacks from a deliverability perspective. |                                     |                          |                           |
| Location or route 2  | <input type="checkbox"/>  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  |
| Describe the location or route considered  | Swanscombe peninsula link to the A1089  |                                     |                          |                           |
| Clearly set out how and why the alternative location/route was discounted.   | Option would have a significant adverse impact on committed development within the area   |                                     |                          |                           |
| Location or route 3:   | <input type="checkbox"/>  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  |
| Describe the location or route considered  | M2 link to the A130 via Cliffe/Pitsea   |                                     |                          |                           |
| Clearly set out how and why the alternative location/route was discounted.   | Failure to meet the objective of relieving congestion on the Dartford Crossing  |                                     |                          |                           |
| Location or route 4:   | <input type="checkbox"/>  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  |
| Describe the location or route considered  | M2 link to the A130 via Canvey Island   |                                     |                          |                           |
| Clearly set out how and why the alternative location/route was discounted.   | Failure to meet the objective of relieving congestion on the Dartford Crossing  |                                     |                          |                           |

*\*Please note: you can add more rows to the table: Right click in the bottom row > Choose Insert > Insert rows below.*

**B2 (b) Details of supporting evidence.**

Provide clear referencing such as page numbers and paragraphs of specific documents so these can easily be cross-referenced. To help with our assessment, please only provide the relevant extracts that help to demonstrate the reasoning given above rather than including lengthy documents in their entirety. Please do not provide website links to separate documentation, unless you identify where exactly in the linked document or web page the evidence referred to is located (our preference is for you to extract the evidence and copy it below, referencing where it has come from).

One additional route options were identified which could not be incorporated into table B2:  
 Route 5: Isle of Grain link to east of Southend  
 Route discounted as wouldn't deliver the need case due to failure to meet the objective of relieving congestion on the Dartford Crossing.

The Planning Statement (Application Document 7.2), section 5 (Project Evolution and Alternatives) submitted in support of the application for a development consent order provides a consideration of all routes reviewed as part of the optioneering process and sets out why each option was assessed. In particular, please refer to section 5.4 (Route Selection) to understand the overview of the alternative options that were reviewed since 2009 (consisting of six potential crossing locations between the Dartford Crossing and the Isle of Grain) through to 2017 when the Secretary of State made the Preferred Route Announcement selecting the current location, as well as the subsequent reappraisal of the Preferred Route Announcement which sought to ensure that the previous work that had been undertaken to identify the preferred route, and to discount other routes, was still valid.

**B2 (c) Confirm relevant extract(s) from supporting evidence is included to verify the above.** Yes  No

| <b>B3 (a) Set out <u>which</u> alternative development scales or designs were considered.</b>  | Not applicable to situation   | Won't deliver need       | Not feasible             | Greater impact on species |
|--|---|--------------------------|--------------------------|---------------------------|
| <i>Important note: If new infrastructure is to be created explain why the need cannot be met by expanding existing infrastructure.</i> |   |                          |                          |                           |
| Development scale or Design 1:   | <input checked="" type="checkbox"/>   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  |
| If you have ticked 'Not applicable to situation', please explain why here otherwise please complete this table as appropriate:         |   |                          |                          |                           |
| Describe the development scale or design considered.   | See Route 2 Plate 5.10 - Shortlisted routes. Planning Statement (Application Document 7.2).   |                          |                          |                           |
| Clearly explain how and why the different development scale or design considered was discounted.                                       | Route 2 would be closer to existing urban areas and would require challenging construction works, leading to the mixing of local and long distance traffic. |                          |                          |                           |
| Development scale or Design 2:   | <input checked="" type="checkbox"/>   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  |
| Describe the development scale or design considered.   | See Route 4 Plate 5.10 - Shortlisted routes. Planning Statement (Application Document 7.2).   |                          |                          |                           |

|  |  |                          |                          |                          |
|--|--|--------------------------|--------------------------|--------------------------|
| Clearly explain how and why the different development scale or design considered was discounted. | Route 4 had greater impacts on designated sites and was a longer, higher cost option than the Project design |                          |                          |                          |
| Development scale or Design 3:   | <input type="checkbox"/>   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Describe the development scale or design considered.   | See Comment below  |                          |                          |                          |
| Clearly explain how and why the different development scale or design considered was discounted. | See Comment below  |                          |                          |                          |
| Development scale or Design 4:   | <input type="checkbox"/>   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Describe the development scale or design considered.   | See Comment below  |                          |                          |                          |

|  |                   |  |  |  |
|--|-------------------|--|--|--|
| Clearly explain how and why the different development scale or design considered was discounted. | See Comment below |  |  |  |
|--|-------------------|--|--|--|

*\*Please note: you can add more rows to the table: Right click in the bottom row > Choose Insert > Insert rows below.*

**B3 (b) Details of supporting evidence.**

Provide clear referencing such as page numbers and paragraphs of specific documents so these can easily be cross-referenced. To help with our assessment, please only provide the relevant extracts that help to demonstrate the reasoning given above rather than including lengthy documents in their entirety. Please do not provide website links to separate documentation, unless you identify where exactly in the linked document or web page the evidence referred to is located (our preference is for you to extract the evidence and copy it below, referencing where it has come from).

The Planning Statement (Application Document 7.2), section 5 (Project Evolution and Alternatives) submitted in support of the application for a development consent order provides a consideration of all routes reviewed as part of the optioneering process and sets out why each option was assessed. In particular, please refer to section 5.4 (Route Selection - development of the preferred route. Paragraph 5.4.97 - 5.4.130) to understand the refinement of the route options which led to the Secretary of State's Preferred Route Announcement selecting the current location, as well as the subsequent reappraisal of the Preferred Route Announcement which sought to ensure that the previous work that had been undertaken to identify the preferred route, and to discount other routes, was still valid.

**B3 (c) Confirm relevant extract(s) from supporting evidence is included to verify the above.** Yes  No

|   |                             |                    |              |                           |
|---|-----------------------------|--------------------|--------------|---------------------------|
| <b>B4 (a) Other alternative activities, processes or construction methods considered to reduce the impact upon the species</b>  | Not applicable to situation | Won't deliver need | Not feasible | Greater impact on species |
| <i>Important note – detailed timings of licensable works, alternative mitigation and compensation which will reduce the degree of harm are to be considered within the Method Statement and not here.</i> |                             |                    |              |                           |

|  |                          |                          |                          |                          |
|--|--------------------------|--------------------------|--------------------------|--------------------------|
| Alternative activity, process or method 1:   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| If you have ticked 'Not applicable to situation', please explain why here otherwise please complete this table as appropriate: |                          |                          |                          |                          |
| Describe the alternative activity, process or method considered.   | See comment below        |                          |                          |                          |
| Clearly explain why this alternative was discounted.   | See comment below        |                          |                          |                          |
| Alternative activity, process or method 2:   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Describe the alternative activity, process or method considered.   | See comment below        |                          |                          |                          |
| Clearly explain why this alternative was discounted.   | See comment below        |                          |                          |                          |
| Alternative activity, process or method 3:   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Describe the alternative activity, process or method considered.   | See comment below        |                          |                          |                          |
| Clearly explain why this alternative discounted.   | See comment below        |                          |                          |                          |
| Alternative activity, process or methods 4:  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Describe the alternative activity, process or method considered.   | See comment below        |                          |                          |                          |
| Clearly explain why this alternative was discounted.   | See comment below        |                          |                          |                          |

*\*Please note: you can add more rows to the table: Right click in the bottom row > Choose Insert > Insert rows below.*

**B4 (b) Details of supporting evidence.**

Provide clear referencing such as page numbers and paragraphs of specific documents so these can easily be cross-referenced. To help with our assessment, please only provide the relevant extracts that help to demonstrate the reasoning given above rather than including lengthy documents in their entirety. Please do not provide website links to separate documentation, unless you identify where exactly in the linked document or web page the evidence referred to is located (our preference is for you to extract the evidence and copy it below, referencing where it has come from).

During the design process undertaken following the Secretary of State's Preferred Route Announcement, a huge number of design decisions were considered across every aspect of the Project's design. These are too numerous to detail in this document but instead are summarised in the Planning Statement (Application Document 7.2), section 5.5 (Design Refinement and Evolution) submitted in support of the application for a development consent order. These include the development of designs for utilities diversions required to facilitate the Project, the location of construction compounds, and junction and road alignments.

**B4 (c) Confirm relevant extract(s) from supporting evidence is included to verify the above.**

Yes  No





**Template for Method Statement to support application for licence under Regulation 55(2)e of The Conservation of Habitats and Species Regulations 2017 (as amended) in respect of great crested newts *Triturus cristatus*. Form WML-A14-2 (Version March 2019)**

**Instructions for completion of Method Statement template**

**Introduction**

This template is designed to make the process easier for applicants, by providing standard responses where possible and by indicating optional and mandatory fields, plus making clear the level and type of information required. It will also facilitate assessment of applications, as information will be presented in a standard way.

**The Macros in this workbook enable the rows to expand with the text where this is indicated, but will require the users to hit enter to leave each cell, to avoid harmless error messages appearing on screen and to ensure that the text can be seen. Please retain page scaling at 130% to avoid the text becoming obscured.**

This spreadsheet has two main sections: Instructions and advice, and the Method Statement template itself. The instructions should help you complete the Method Statement, as well as providing advice on some common areas of confusion in mitigation. These are designed to assist you in deciding whether to apply for a licence, and if you do, what kind of survey and mitigation should be proposed. Note: that this is offered as general advice and in the event of any enforcement investigation the original legislation must be referred to.

**Entering information into the template**

|  |  |
|--|--|
|  | (Pale red) Indicates mandatory fields  |
|  | (Pale green; dashed outline except in some tables) Indicates fields that are either optional or will be necessary in some cases depending on the circumstances. In many cases it is helpful to fill in green fields to provide more detail. Where the spreadsheet can detect a necessary field from data you have already given, a green field will turn red. It is your responsibility to ensure any necessary information is included. |
|  | (Pale blue) Indicates a field that is automatically completed by the spreadsheet, based on data you have entered.  |
| <b>IMPORTANT: Only enter data in pale red or pale green fields. Do not enter or alter any data in other coloured fields, including whitespace, as this may affect spreadsheet function. Please do not re-format text, except to underline or make 'bold' any changes if you are submitting an amendment.</b> |  |

It is your responsibility to ensure the completed template provides all information necessary for licence determination. Although we have tried to make the template as helpful as possible, some features may not be suitable for accepting the information for your scheme, and occasionally the automatic spreadsheet coding may produce unusual results. **If this happens you must take care to explain the scheme on additional sheets, and not rely on the standard responses or automatic spreadsheet coding.** It will not be acceptable to submit a Method Statement that provides misleading or incomplete information, and attribute such shortcomings to the template format.

**Fill in the spreadsheet in order, as some data you enter is used in subsequent calculations or Please be concise with your descriptions and keep information only to what is required. Several questions have standard responses suitable for a maximum of 10 ponds; should your scheme involve >10 ponds provision for additional data is included in the [Additional Records tab](#).**

**Viewing:** You may find it helpful to **zoom in and out by scrolling your mouse wheel while holding down CTRL (or View > Zoom)**. Sometimes parts of a text box can appear "cut off", depending on your computer set-up. **Zooming in or out may help, and all the text should be readable if you click inside the box.**

**Printing:** To print the whole spreadsheet: *File > Print... > Print what > Entire workbook*. To print selected worksheets only, select the appropriate tabs (use shift to select a continuous range, and CTRL for non-adjacent worksheets), then *File > Print > Print what > Active sheet(s)*. *Please print on both sides.*

**Method Statement structure**

The Method Statement is divided into two sections:

**(I) Background and supporting information** (worksheets with lavender-coloured tabs)

**(II) Delivery information** (worksheets with blue-coloured tabs)

Within each section, there are subdivisions, e.g. for survey, impact assessment, etc. For modifications to projects already licensed (non-annexed or where significant changes are proposed), or re-submissions following a Further Information Request response, when submitting a hard or an electronic copy it will currently be necessary to re-submit the document in its entirety detailing where changes have been made. If submitting re-submissions or new applications electronically, send the whole template file (plus maps and appendices) because attempting to extract worksheets will cause coding problems; in any case it is no additional effort to send the whole file. See website below for current instructions on the format of licence application submission.

<https://www.gov.uk/government/publications/great-crested-newts-apply-for-a-mitigation-licence>

**Important notes on technical mitigation issues**

Use the *Great crested newt mitigation guidelines* (English Nature, 2001) and information on .GOV.UK here:

<https://www.gov.uk/guidance/great-crested-newts-surveys-and-mitigation-for-development-projects>

This template is designed to record licence application data for a range of common development scenarios. However, this does not restrict the use of novel mitigation practice, where this is appropriate. If you wish to employ a method, approach or level of effort that deviates from the standard recommendations in the guidelines, you must point this out, and provide either: (a) direct evidence from other projects or research that it is likely to be effective; or, if no direct evidence is available (b) a sound rationale for why you think it is appropriate and likely to be effective.

**Note that applications that involve reductions compared to standard recommendations (e.g. reduced capture effort or habitat provisions) may only be acceptable if you provide clear logistical and ecological reasons.**

**Notes on licence assessment**

"Development" in this Method Statement means an activity that you believe to meet the requirements of Regulation 55(2)(e). It does not refer solely to construction-related activity.

This Method Statement is the evidence on which you must demonstrate compliance with Regulation 55(9)(b) (the "favourable conservation status test"). The "no satisfactory alternative" and "purpose" tests are assessed using other criteria.

"Pond" in this Method Statement means any waterbody that is likely to be used by GCN for foraging, resting or breeding.

**Application tools**

- [Do I need a licence? - rapid risk assessment](#)
- [Conversions](#)
- [Non-licensed avoidance measures](#)
- [Survey data - what kind, how much, how old?](#)
- [Measuring turbidity and vegetation cover](#)
- [Use of Habitat Suitability Index Scores](#)
- [Post development monitoring, advice and guidance](#)
- [References](#)

**(1) "Do I need a licence?" - rapid risk assessment****Background**

In recent years there has been a trend towards increasingly precautionary applications, resulting from a risk-averse approach to mitigation. Whilst considering potential risks to great crested newts is laudable, many recent mitigation schemes were designed for developments that actually had very little or no effect on the newt population. In part this is because it can be difficult to assess whether newts will be affected by certain activities, especially when they take place at some distance from breeding ponds. Newts tend to be present at increasingly low density the further one looks from ponds, and the task of detecting and capturing them becomes more problematic. Further from ponds, there is a corresponding reduction in the scale of impact on populations. Given that great crested newts can disperse over 1km from breeding ponds, the potential for offences may seem vast, yet the probability of an offence outside the core breeding and resting area is often rather small, and even if an offence takes place, the effect on the population may be negligible.

Natural England is concerned about the trend for increasingly risk-averse mitigation for several reasons. Primarily, there is no legal need, and little benefit to great crested newt conservation, in undertaking mitigation where there are no offences through development. Even where there technically is an offence, such as the destruction of a small, distant area of resting place habitat, it is arguable that impacts beyond the core area often have little or no tangible impact on the viability of populations. Mitigation in such circumstances is of questionable value in conservation terms. There are, however, substantial costs: developers delay projects and spend large sums on mitigation. Sometimes the mitigation project itself has environmental costs, especially when it entails substantial lengths of newt fencing. In some cases long newt fences are employed with no justification. Natural England wishes to see newt fencing used more appropriately, i.e. only where there is a reasonable risk of capturing, containing and/or excluding newts.

Natural England recognises that the two key factors leading consultants to adopt this risk-averse approach are: (a) uncertainty over the presence of newts and whether there will be an offence in areas distant from ponds; (b) undertaking mitigation under licence "just in case", so that there is no perceived risk of litigation for their client. Natural England wishes to see mitigation planning shift away from such a highly risk-averse starting point. The domestic legislation protecting great crested newts arises largely from the Habitats Directive, which has a central aim to restore scheduled species to a favourable conservation status. A more proportionate approach to mitigation, addressing tangible impacts on populations whilst giving lower priority to negligible effects, is consistent with the aims of the Directive. The loss of the "incidental result" defence from the legislation may create a tension with this approach, but it is hoped that the guidance here will assist.

This simple risk assessment can inform the decision as to whether to apply for a licence. It remains the responsibility of the developer - normally acting through their consultant - to decide whether to apply. Early consideration of options can often result in no licence being required - see **Non-licensed avoidance measures** tool, later in the Instructions section. A sound survey and careful comparison with development plans will often be the best guide to whether a licence should be obtained.

**Guidance on use**

The rapid risk assessment is done by **completing the table later in the instruction section**. Consider the impacts of the development **without any licensed mitigation**. For each "component", select a likely effect from the drop-down menu. It may help to produce a map of the land marked with 100m and 250m radii around each great crested newt breeding pond, overlaid with the development boundary. The land categories refer to all land, not just that used by newts. N.B. this risk assessment is not part of your application, and there is no obligation to use it; it is a tool to help you decide whether to apply for a licence.

Each effect is assigned a notional probability of leading to an offence. Note that these are purely notional for the purpose of this generic assessment, and should not be taken as definitive in a given real case. The score takes into account that some activities (e.g. killing newts) are not entirely predictable. The maximum notional probability is then used to derive a conclusion, which is displayed as red (probability ≥ 0.65), amber (0.3-0.65) or green (<0.3) in the "risk assessment result" box. Further information on interpreting the result is given below the table. Following this, you may wish to amend details of the development, and include additional precautions (see tool later in instructions), in order to avoid impacts on newts. You can then re-select the likely effects, to re-calculate the assessment based on the modified development, in order to see whether the risk has been reduced further. This process is in line with the general approach of avoiding offences wherever possible.

*Remember you should enter the likely effects as if the development were to proceed **without any licensed mitigation** - i.e. no trapping or fencing, etc. This may mean, for instance, that killing newts is likely as the development would destroy areas they use (though we have taken into account in the probability score that it is often uncertain as to whether newts would be killed by development in a given location away from ponds). You should **consider likely effects after taking any appropriate unlicensed precautions to reduce risks** - e.g. groundworks during daylight only. Further guidance on this is given in the **Non-licensed avoidance measures** tool, later in the Instructions section.*

**Caveats and limitations**

**This risk assessment tool has been developed as a general guide only**, and it is inevitably rather simplistic. It has been generated by examining where impacts occurred in past mitigation projects, alongside recent research on newt ecology. It is not a substitute for a site-specific risk assessment informed by survey. In particular, the following factors are not included for sake of simplicity, though they will often have an important role in determining whether an offence would occur: population size, terrestrial habitat quality, presence of dispersal barriers, timing and duration of works, detailed layout of development in relation to newt resting and dispersal. The following factors could increase the risk of committing an offence: large population size, high pond density, good terrestrial habitat, low pre-existing habitat fragmentation, large development footprint, long construction period. The following factors could decrease the risk: small population size, low pond density, poor terrestrial habitat, substantial pre-existing dispersal barriers, small development footprint, short construction period. You should bear these mitigating and aggravating factors in mind when considering risk.

It is critical that, even if you decide not to apply for a licence, you ensure that any development takes account of potential newt dispersal. Where great crested newts are present, landuse in that area must ensure there is adequate connectivity. Retaining and improving connectivity will often involve no licensable activities.

| Component                                | Likely effect (select one for each component; select the most harmful option if more than one is likely; lists are in order of harm, top to bottom) | Notional offence probability |
|--|---|------------------------------|
| Great crested newt breeding pond(s)      | No effect   | 0                            |
| Land within 100m of any breeding pond(s) | No effect   | 0                            |
| Land 100-250m from any breeding pond(s)  | No effect   | 0                            |
| Land >250m from any breeding pond(s)     | No effect   | 0                            |
| Individual great crested newts           | No effect   | 0                            |
|  | Maximum:  | 0                            |
| Rapid risk assessment result:            | <b>GREEN: OFFENCE HIGHLY UNLIKELY</b>   |                              |

**Guidance on risk assessment result categories**

**"Green: offence highly unlikely"** indicates that the development activities are of such a type, scale and location that it is highly unlikely any offence would be committed should the development proceed. Therefore, no licence would be required. However, bearing in mind that this is a generic assessment, you should carefully examine your specific plans to ensure this is a sound conclusion, and take precautions (see **Non-licensed avoidance measures tool**) to avoid offences if appropriate. It is likely that any residual offences would have negligible impact on conservation status, and enforcement of such breaches is unlikely to be in the public interest.

**"Amber: offence likely"** indicates that the development activities are of such a type, scale and location that an offence is likely. In this case, the best option is to redesign the development (location, layout, methods, duration or timing; see **Non-licensed avoidance measures tool**) so that the effects are minimised. You can do this and then re-run the risk assessment to test whether the result changes, or preferably run your own detailed site-specific assessment. Bear in mind that this generic risk assessment will over- or under-estimate some risks because it cannot take into account site-specific details, as mentioned in caveats above. In particular, the exact location of the development in relation to resting places, dispersal areas and barriers should be critically examined. Once you have amended the scheme you will need to decide if a licence is required; this should be done if on balance you believe an offence is reasonably likely.

**"Red: offence highly likely"** indicates that the development activities are of such a type, scale and location that an offence is highly likely. In this case, you should attempt to re-design the development location, layout, timing, methods or duration in order to avoid impacts (see **Non-licensed avoidance measures tool**), and re-run the risk assessment. You may also wish to run a site-specific risk assessment to check that this is a valid conclusion. If you cannot avoid the offences, then a licence should be applied for.

**(2) Conversions**

[Return to Impact assessments](#)

All area figures in this Method Statement template should be entered in hectares, to allow consistent calculations. Some ecologists prefer to work in m<sup>2</sup>, especially for smaller figures such as pond surface areas. Use this tool to easily convert between the two units.

Enter area in m<sup>2</sup>:  =  ha

Enter area in ha:  =  m<sup>2</sup>

**(3) Non-licensed avoidance measures**

**Background**

Licensable activities should ideally be designed out of developments during the early planning stages. This should result in avoiding harm to great crested newt populations, and can save developers the time and expense of licensed mitigation measures. Many potentially licensable activities can in fact be avoided by careful planning of the development combined with simple precautionary measures. In many cases, adopting such an approach may mean that no licence is required (as no offence would be committed). Even when a licence is applied for because you decide an offence is likely, such measures can still be employed to reduce the level of harm to newt populations. This application tool helps you to plan non-licensed avoidance measures for common development scenarios. You may also use them in licensed projects to reduce impacts.

**Guidance on use, caveats and limitations**

Check the list below for suggestions for avoiding impacts that might be appropriate for your project. You can use this in combination with the "Do I need a licence? Rapid risk assessment" tool to help you plan mitigation and decide on whether to apply for a licence. For schemes that cover a large area, you might use these tools to decide that only part(s) of the development should be subject to a licence. This section is based on an examination of approaches considered in recent projects, and is obviously generic. The suggestions may not be appropriate for your particular development, or may require fine-tuning to be helpful. Neither are they exhaustive: **we encourage you to develop your own ideas and let us know** so that we can include them in future guidance.

If you determine that no offences would be committed and therefore decide not to apply for a licence, it may be useful to keep a copy of the decision-making steps, and any precautions that will be taken. In some cases these might form the basis of a non-licensed method statement, to help a developer and their contractors understand how to carry out works with a minimal risk of breaching the law. If soundly produced, this might act as an audit trail and a "defence" in the event of any future queries about the development's effects on newts. Similarly, if you use these tools to determine that only part(s) of the development area should be subject to a licence, then it is helpful to include this rationale in the licence application, so that we can see why and how you have included and excluded particular areas in the licensed work.

| Project element                              | Suggestions for avoidance measures   |
|--|--|
| Location & layout                            | (a) Locate site as far as possible from potential breeding ponds and high quality terrestrial habitat. (b) Locate in areas subject to high pre-existing fragmentation. (c) Locate on hard, compacted ground with few fissures. (d) Design layout so that any hard landscaping is as far as possible from ponds, with retained habitat and soft landscaping toward ponds.   |
| Timing & duration                            | (a) Restricting works to the winter period (when newts are rarely active above ground) is sensible if the project would not harm hibernation habitat. Projects with temporary habitat disruption and reinstatement, such as some pipelines, could potentially be carried out without any licensable activity in this way. (b) Keep duration of groundworks as short as possible. (c) Undertake during the day works that might only affect newts above ground.     |
| Construction methods and special precautions | (a) Backfill trenches and other excavations before nightfall, or leave a ramp to allow newts to easily exit. (b) Raise stored materials (that might act as temporary resting places) off the ground, e.g. on pallets. (c) For pipelines, use directional drilling to cross areas of core habitat and dispersal routes. (d) Avoid installing structures that act as barriers close to ponds, or include gaps at ground level where walls or fences are unavoidable. |

#### (4): Survey data - what kind, how much, how old?

##### Background

Survey data are essential for any mitigation licence application. Consultants frequently seek advice on requirements for the level of effort, type of survey and age of survey data. The answer to this is that sufficient data need to be provided to demonstrate the level of impact on the population, plan effective mitigation, and allow an assessment of development and mitigation effects. Data requirements will be proportionate to the level of impact of the development. Clearly these will vary from case to case. *The Great crested newt mitigation guidelines and .GOV.UK*

<https://www.gov.uk/guidance/great-crested-newts-surveys-and-mitigation-for-development-projects>

provide general comments and technical advice on methods. This application tool provides further guidance to assist with planning pond survey effort and Method Statement preparation. It deals only with standard newt pond surveys and Habitat Suitability Index (HSI) assessments. Other kinds of surveys, e.g. terrestrial newt surveys, may be appropriate either as a substitute or in addition, depending on the situation.

##### Guidance on use, caveats and limitations

Using the **table further down the instructions section in Survey Guidance Table**, check the likely type of impact that your development would have, and then read across to see which types of surveys are indicated. The table is divided into permanent and temporary habitat loss; the latter occurs when there is rapid reinstatement to appreciably similar conditions following development (e.g. typical pipeline projects). Where both presence/absence and population size class assessment surveys are indicated, these can run together. Note that the indications in this table are meant as minimum standards, and are inevitably generic. **The circumstances of a particular scheme may indicate that more surveys are required.** For example, additional effort or other types of surveys (e.g. terrestrial dispersal survey, capture-mark-recapture [CMR]) should be done where there is a sound case. Note that **different survey types and effort may be appropriate for different ponds on (or close to) the same development site**, especially for large schemes where impacts vary across the footprint.

The figures on extent of habitat loss here do not take into account overall habitat availability. **You will need to consider the spatial layout of habitat, and in particular barriers to dispersal.** So, for example, if 0.1ha of land were to be lost at a distance of 70m from a pond, and that 0.1ha seems likely (from maps, aerial photos or a walk-over survey) to provide the majority of good quality terrestrial habitat for the nearest population, then a population size class assessment should be done (contrary to the standard recommendation in the table). Conversely, for example, if this habitat were separated by major roads and built land, you may decide that no survey is necessary as it is unlikely to be used by newts. Furthermore, this table focuses on typical habitat loss/damage, and does not take into account all possible impact types, such as disturbance only. Again the general advice is to devise surveys appropriate to the level of potential impact.

##### Geographical limits of survey

In keeping with a proportionate and risk-based approach, surveys need reasonable boundaries. The *Great crested newt mitigation guidelines* explain that surveys of ponds up to around 500m from the development might need to be surveyed. The decision on whether to survey depends primarily on how likely it is that the development would affect newts using those ponds. For developments resulting in permanent or temporary habitat loss at distances over 250m from the nearest pond, carefully consider whether a survey is appropriate. Surveys of land at this distance from ponds are normally appropriate when all of the following conditions are met: (a) maps, aerial photos, walk-over surveys or other data indicate that the pond(s) has potential to support a large great crested newt population, (b) the footprint contains particularly favourable habitat, especially if it constitutes the majority available locally, (c) the development would have a substantial negative effect on that habitat, and (d) there is an absence of dispersal barriers.

That is not to say that all development proposals over 250m from a pond will not require surveys. There are cases where large numbers of newts have been found at 250-500m from ponds, and so impacts are potentially significant, but such cases are rare and can often be predicted by the presence of especially favourable habitat. Developments beyond 500m from the nearest pond would very rarely merit newt surveys.

#### Age of survey data

Newt survey data must be sufficient to accurately reflect the status of the site at the time the licence application is submitted. The older the survey data, the more likely it is to misrepresent status, and in general you are advised to carry out surveys as close as possible to submission. The larger the predicted impacts, the more important it is to have recent data. Particular care must be taken if there have been changes to the habitats on or adjacent to the site since the last survey. A walk-over survey, at the least, should be undertaken within 3 months prior to submission to check for habitat changes since the survey was carried out. If circumstances have changed, then only those areas affected by the changes need to be re-surveyed.

Re-assessment of the impacts will need to be undertaken after any re-surveys, and this may require changes to mitigation plans. The far right column in the table gives maximum acceptable age of survey, from date undertaken to date of licence submission. Note that this **assumes no significant habitat changes on or adjacent to the site since last survey**. This must be confirmed, e.g. by walk-over survey, within 3 months prior to licence application submission. Whenever you rely on old surveys, mention their key findings in the main body of your Method Statement, and attach the full survey as an annex.

#### Survey guidance table

| Impact type and location   | Potential terrestrial habitat - loss or damage (ha) | Presence/ likely absence survey | Population size class assessment | HSI | Maximum age of survey data (# breeding seasons) |
|--|---|---------------------------------|----------------------------------|-----|---|
| <b>Permanent habitat loss or damage</b>                                      |   |                                 |                                  |     |   |
| Pond(s) lost or damaged, with or without other habitat loss or damage        | ≥0  | YES                             | YES                              | YES | 2   |
| No ponds lost or damaged, development within 50m of nearest pond             | ≤0.01   | YES                             | NO                               | YES | 3   |
|  | >0.01   | YES                             | YES                              | YES | 2   |
| No ponds lost or damaged, development 50-100m from nearest pond              | ≤0.2  | YES                             | NO                               | NO  | 3   |
|  | >0.2  | YES                             | YES                              | YES | 2   |
| No ponds lost or damaged, development 100-250m from nearest pond             | ≤0.5  | YES                             | NO                               | NO  | 4   |
|  | >0.5  | YES                             | YES                              | YES | 3   |
| No ponds lost or damaged, development >250m from nearest pond (NB see notes) | ≤5  | YES                             | NO                               | NO  | 4   |
|  | >5  | YES                             | NO                               | YES | 3   |
| <b>Temporary habitat loss or damage</b>                                      |   |                                 |                                  |     |   |
| Pond(s) lost or damaged, with or without other habitat loss or damage        | ≥0  | YES                             | YES                              | YES | 2   |
| No ponds lost or damaged, development within 50m of nearest pond             | ≤0.05   | YES                             | NO                               | YES | 3   |
|  | >0.05   | YES                             | YES                              | YES | 3   |
| No ponds lost or damaged, development 50-100m from nearest pond              | ≤0.5  | YES                             | NO                               | NO  | 4   |
|  | >0.5  | YES                             | YES                              | YES | 3   |
| No ponds lost or damaged, development >100m from nearest pond                | ≤5  | YES                             | NO                               | NO  | 4   |
|  | >5  | YES                             | NO                               | YES | 4   |

**Example:** Survey undertaken in 2011 between April to June. Application submitted in autumn 2013 using the 2011 survey. The survey supporting the application would not suffice and the 2011 survey is actually 3 survey seasons old by autumn 2013 (i.e. 1st survey season = 2011, 2nd survey season = 2012 and 3rd survey season = 2013). If the application had been submitted in March/April or even May 2013 it may have been acceptable if fully justified why no further survey effort was required.

**Measuring turbidity and vegetation cover.** These factors can greatly influence survey counts, so it is important to measure them consistently. In the Method Statement, we ask you to use the following convention:

*Vegetation cover score (0-5)*; 0 = no vegetation obscuring survey; 5 = water completely obscured by vegetation.

*Turbidity score (0-5)*: 0 = completely clear; 5 = very turbid.

### **(5): Use of the great crested newt Habitat Suitability Index (HSI)**

#### **Background**

The great crested newt Habitat Suitability Index (HSI) is quantitative measure of habitat quality (source: 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). The HSI is number between 0 and 1, derived from an assessment of ten habitat variables known to influence the presence of newts. An HSI of 1 is optimal habitat (high probability of occurrence), while an HSI of 0 is very poor habitat (minimal probability of occurrence). The HSI is calculated on a single pond basis, but takes into account surrounding terrestrial habitat and local pond density.

#### **Application to great crested newt mitigation**

The great crested newt HSI is potentially a useful tool in survey and mitigation. One benefit is that it can be undertaken in a single field visit (with supporting desk work), and at any time of the year (though some variables are more easily measured in spring and summer). Its main uses are:

1) in **surveys**, to assess habitat quality in a repeatable, objective manner. In particular, the HSI allows individual factors that influence newt presence to be easily identified. These factors could help explain a very high or very low count. A high HSI can justify employing additional survey effort or methods if no newts are found initially.

2) in **impact assessments**, to allow a measure of how damaging a development could be. HSI might also be used as a screening tool to select no impact or minimal impact options in conjunction with (3) below.

3) in **risk assessments**, helping to decide whether an offence might be committed, and therefore whether a licence should be applied for. If a pond has a very low HSI score (say <0.5) then there would typically be a minimal chance of great crested newt presence. Hence, with due care and in limited circumstances (see also caveats below), the HSI might be used in the absence of newt survey to help conclude that an offence is highly unlikely and therefore work could proceed in that area without a licence. This application of the HSI should only be used where the predicted impacts - were newts to be present - would be low (e.g. development at least 100m from pond, permanent habitat loss <0.5ha or temporary habitat loss <5ha). The developer and consultant should realise that there would still be a risk of committing an offence, but it would typically be so low as to be negligible. Obviously, note that if HSI >0.5, this is not confirmation of newt presence; a newt survey would be required to confirm this.

4) in **habitat enhancement**, HSI could be used to identify the low-scoring factors in an existing pond that need addressing to improve its quality for newts.

5) in **post-development monitoring**, to allow an assessment of habitat condition.

#### **HSI in licence Method Statements**

Natural England recommends that consultants engaged in great crested newt mitigation familiarise themselves with the HSI by reading the original paper by Oldham et al (2000). For field use in mitigation practice, we recommend that consultants follow the slightly simplified version adapted for the National Amphibian and Reptile Recording Scheme (NARRS). A helpful guidance note has been produced by The Herpetological Conservation Trust, available to download at:

[www.narrs.org.uk/documents/HSI%20guidance.pdf](http://www.narrs.org.uk/documents/HSI%20guidance.pdf)

The survey sections of this template include fields for entering HSI data. The preceding guidance on survey data explains when it might be used most effectively.

#### **Caveats and limitations**

**The HSI is not a substitute for undertaking newt surveys;** it indicates but cannot confirm presence or absence. **A licence application that infers great crested newt presence solely from HSI data (i.e. no newt survey data presented) will be rejected.** Very low HSI scores may be used along with scheme details to infer a minimal chance of committing an offence in low impact situations, as explained above. This is on a risk assessment basis and consultants should be aware of the potential hazards of this approach. Whilst current data indicate a generally good relationship, HSI scores should not be used to predict population size. Care should be taken when interpreting low HSI scores; for example, a low scoring pond close to an occupied newt pond may still support newts. Whilst appropriate for most pond types, the HSI may lead to unusual scores for some atypical types (possibly including large expanses of marshes, and complex series of depressions in quarry floors). You are asked in the form to comment on any limitations of the HSI approach in your case, and if these are serious then it may be appropriate not to calculate HSI scores.



**Post development monitoring advice and guidance**

Licences can only be issued where Natural England is confident there will be no detriment to maintaining the conservation status of the newt population at a favourable level, and in some cases a package of monitoring and remedial action will be required to provide that confidence.

All mitigation schemes carry a risk of failure. If mitigation measures fail, then the resulting impact on the conservation status of the newts may mean that the “Favourable Conservation Status test” (FCS test) will not have been met. This risk is greatest for activities that are judged to have a medium or high impact. Post-development monitoring has a role in providing confidence in any judgement that there will be no detriment to favourable conservation status by detecting problems that may lead to such a detrimental effect and enabling appropriate remedial action to be taken to avoid it.

Post-development monitoring will be expected for most medium and high impact cases. Monitoring and remedial action will form an important component of the mitigation package in these cases and will be a key prerequisite to an application for a mitigation licence passing the FCS test.

The success of mitigation commonly depends on measures undertaken following the main phase of construction and newt capture (e.g. Edgar, Griffiths & Foster, 2005; Lewis, Griffiths & Barrios, 2007). Deficiencies in newly created ponds are a common problem and both aquatic and terrestrial habitat features may require several years of management to achieve a high value for newts. Monitoring is necessary to inform that management. Monitoring great crested newt numbers and breeding can also be used to identify the need for action.

When assessing applications, Natural England considers whether post-development monitoring proposals, in conjunction with the other mitigation measures, will be sufficient to ensure that the FCS test will be met. The need for monitoring, and the type of monitoring required, is related to the impact of the development and the status of the great crested newt population. In this way, monitoring requirements are proportionate to the risk of potential impacts on conservation status. For developments having low impacts, monitoring will not normally be required. Developers reducing the impact of their projects will therefore benefit from having lower costs following construction. *For further details, see table below.*

| Site status assessment/<br>population size class | Impact type and size |                     |                     |
|--|----------------------|---------------------|---------------------|
|  | Low                  | Medium              | High                |
| Small population/ low                            | None                 | Presence/absence; 2 | Presence/absence; 4 |
| Medium population/                               | None                 | Pop size class      | Pop size class      |
| High population/ high                            | pop size class       | Pop size class      | Pop size class      |

[Return to E5.2](#)

In addition to being necessary in some cases to support a conclusion of no detriment to maintenance of favourable conservation status, data produced in accordance with monitoring conditions helps Natural England and others to assess the effectiveness of mitigation measures. This in turn can feed back into good practice, so that future mitigation can be made more effective (these improvements can also help with cost effectiveness). The UK government has a duty to report to the European Commission on derogations, and for this we rely on data collected under mitigation licences.

**References**

Edgar, P, Griffiths, RA & Foster, JP. 2005. Evaluation of translocation as a tool for mitigating development threats to great crested newts (*Triturus cristatus*) in England, 1990-2001, *Biological Conservation*, 122: 45-52.

Lewis, B, Griffiths, RA & Barrios, Y. 2007. Field assessment of great crested newt *Triturus cristatus* mitigation projects in England. Natural England Research Report NERR001. Natural England, Peterborough.

[Next section](#)

### Additional Advice for completing the Method Statement Template

#### Masterplan Guidance

For phased developments you are required to submit a detailed, stand alone, Masterplan to help assess the overall impacts of the entire works on the GCN population and the future mitigation across the whole scheme. A Masterplan to support a licence application must be specific to licensing (it is not appropriate to submit planning documents). As a minimum Natural England expects the Licensing Masterplan to include:

1. A map of the overall site (i.e. the entire area the proposed development will cover) to show the terrestrial and aquatic habitat types and areas CURRENTLY present.
2. Maps showing:
  - Where each construction phase or plot is to be located and where each mitigation licence will be required within these.
  - The impacts of each phase which requires a licence (loss and damage)
  - All proposed receptor areas, habitat compensation areas (which may be discrete from the receptor areas) sites, mitigation areas and development footprints
  - Post-development connectivity across the site (i.e. how will mitigation and compensation habitats link to each other and the wider landscape)
3. The proposed phasing programme (to include information on the number of phases (i.e. which need a licence) and indicative time frames for their construction start and end dates.
4. Brief, explanatory text to describe:
  - The overall size of the site (ha) and what it currently consists of (habitat types and areas).
  - Total terrestrial habitat losses (type and areas) and those for each individual phase.
  - Total aquatic habitat losses which will be incurred and those for each individual phase.
  - The impacts caused by the phasing of the development in the absence of mitigation
  - The total terrestrial habitat compensation proposed and that for each individual phase.
  - The total aquatic habitat compensation proposed and that for each individual phase.
  - Where captured newts will be translocated during each individual phase.
  - How post-development connectivity will be maintained across the entire site.
  - How the potential for double-handling will be avoided (i.e. the recapture of newts trapped during early phases of the scheme in subsequent phases).
  - Post development monitoring (in line with recommendations in the *Great crested newt mitigation guidelines*)
5. A map to show the location and extent of all of the GCN specific habitat measures proposed.
6. A detailed Habitat Maintenance and Management Plan (specific to GCN) to describe how mitigation/compensation areas will be managed and maintained in the long term to benefit GCNs (to include the time frame that it will cover).
7. Assurance of the long term security of the GCN population and confirmation that any proposals are not left as open-ended options before the application is submitted.
8. Guarantees that proposed receptor sites will be safe-guarded and free from future development pressures.

Return to [Section B1](#)

For further info please see the archived site below:

[http://webarchive.nationalarchives.gov.uk/20140605090108/http://www.naturalengland.org.uk/Images/WML-G11\\_tcm6-9930.pdf](http://webarchive.nationalarchives.gov.uk/20140605090108/http://www.naturalengland.org.uk/Images/WML-G11_tcm6-9930.pdf)

in relation to the number of licences required for the development and not construction phases.

If **link does not open**, please paste this into an internet search browser:

[webarchive.nationalarchives.gov.uk/20140605090108/http://www.naturalengland.org.uk/Images/WML-G11\\_tcm6-9930.pdf](http://webarchive.nationalarchives.gov.uk/20140605090108/http://www.naturalengland.org.uk/Images/WML-G11_tcm6-9930.pdf)

### Important notes on capture methods and effort

#### Pitfall trapping minimum effort

Trapping may cease once there have been 5 zero capture days in suitable conditions. These 5 zero capture days may be the last 5 of the minimum capture period, but not earlier. Note: The shortest minimum capture period listed (25 days) is only appropriate in exceptional circumstances, e.g. small population size class and minor development impacts predicted. Deviations from the recommendations within the Great crested newt mitigation guidelines should be fully explained and justified. A minimum of 25 nights trapping will be acceptable for linear developments (such as pipelines, boreholes, archaeological investigations) which incur temporary impacts only (e.g. where habitats will be fully re-instated to their previous status and no ponds will be lost or damaged).

#### Seasonal considerations in pitfall trapping and fence installation

Natural England advises that pitfall traps are closed once newts begin to hibernate (generally after the first frosts) and re-opened in suitable weather conditions in the spring when newts become active again above ground. Although some newts may become active during the winter period, their behaviour is unpredictable and many individuals will remain in hibernation sites, where they are unavailable for capture. Furthermore, strong directional movements, which are best for trapping, are much less common during this period. Pitfall trapping over the winter period also has welfare implications for both target and non-target species caught in traps. Any animal caught in a pitfall trap is protected under the Animal Welfare Act 2006 and the operator has a duty of care to ensure that captured animals do not endure suffering whilst in captivity. Natural England will not therefore licence the terrestrial capture of great crested newts over the winter period, even during bouts of milder weather.

For applications proposing newt capture in autumn, Natural England expects consideration to be given to the possibility that weather conditions may become unsuitable for newt capture, whereby pitfall traps must be closed and trapping re-started the following spring in suitable weather conditions. In cases such as this it is advisable for 'Work schedule E6a' to reflect possible delays and ensure it is clear that no construction works are scheduled to take place until the agreed capture effort is completed and that traps will be closed and re-opened the following spring.

Amphibian fencing should only be installed in winter if there is no risk of harming dormant or hibernating newts. For example, installing fence lines across ground with no opportunities for refuge (e.g. compacted ground, amenity grassland) pose the least risk to newts. The key point to examine is whether the fence is to be installed in an area likely to be used by wintering newts.

#### Night searching

(1) *Application*. This capture method is appropriate only in certain circumstances, as follows: (a) capture area within 100m of pond, unless clear resting place feature more distant and no dispersal barriers (b) newts clearly visible when above ground, i.e. even ground surface, even topography and no or very little vegetation (e.g. even quarry floors, amenity grassland, hardstanding), (c) carried out during period of reasonable dispersal, i.e. March to late June, late August to end October. It may also be used in addition to pitfall trapping, and this may increase capture rates and allow an earlier finish to capture operations.

In the following cases night searching as the *sole capture method* may be used instead of pitfall trapping: where all the conditions listed previously for applicability are met, and one of the following is the case: (a) ground conditions mean installation of pitfall traps is impractical, (b) vandalism is likely to be so severe that even with standard safeguards pitfall trapping is impractical or dangerous for the newts, (c) other site-specific rationale to believe that night searching would be more effective than trapping. In such cases night searching capture effort proposals are expected to mirror that for pitfall trapping (e.g. 30 nights night searching for a small population in suitable weather conditions and ceasing only when the above criteria have been met - see pitfall trapping minimum effort). Deviations from the mitigation guidelines recommendations should be fully explained and justified).

(2) *Method*. Drift fences erected in lengths forming rough arcs around pond, with some cross-ways lengths. Lay refuges next to fence and any likely resting place features. Searching to be done by highly experienced newt ecologist with high power torch (at least 1M cp). Search on warm nights during rain or shortly after rain. Start around 22.00 even if dark earlier. Search for approx. 3 hours (more on very large sites), repeat scanning areas to check for newts emerging from ground. Check along fence lines (first and last checks) but also search other areas. Walk slowly scanning torch in front; check refuges. Cease search if much leaf fall as this makes newts difficult to detect. Take great care to avoid stepping on newts.

#### Destructive searching and hand searching

These methods are only appropriate for distinct habitat features that can be carefully dismantled by hand or machine, with minimal risk of harm, and after other capture methods are expended. Examples: rubble pile, topsoil mound, patio, fractured hard-standing. Not to be used on extents of habitat such as grassland or scrub. Not to be undertaken in winter when newts are inactive or in extremely hot periods in summer; capture should only be carried out in suitable weather conditions as per the *Great crested newt mitigation guidelines*.

[Return to table E4](#)

[Next Section](#)

GCN Method Statement WML-A14-2 (Version November 2017)

**The Conservation of Habitats and Species Regulations 2017 (as amended)  
Method Statement to support application for licence under Regulation 55(2)(e) in respect of Great crested newts *Triturus cristatus***

**Section A.**

Site/project name:

Applicant (developer) name:

Named Ecologist:

Is this application for a new Method Statement (not previously licensed), a modification to a licensed Method Statement (non-annexed only), or a re-submission following a "Further Information Request" notice?

If a re-submission, please give previous application reference

(eg EPSL, EPSM 20XX-3142A, 20XX XXX EPS MIT):

**NB: For re-submissions and modifications (non-annexed) the Method Statement should be re-submitted in its entirety, including all maps, appendices, reports, etc. You must clearly show any changes from the previously submitted version by underlining relevant text (CTRL-U) or by changing the font colour.**

In undertaking this mitigation project, I agree to comply with good practice as set out in the *Great crested newt mitigation guidelines (GCNMG)* (English Nature, 2001). [Note: if you do not check the box to comply with good practice your application will almost certainly be rejected. See comments on *Technical mitigation issues* in Instructions]

Yes

**NB: Please be concise with your information and descriptions provided within your Method Statement**

**Section B Introduction**

You have provided a brief description of proposal in the application form, please provide the following additional background and site information.

**Relationship with impacts due to other nearby development**

**B1.1** Is this application part of a phased/multi-plot development? See: [Advice on Masterplan guidance](#)

For example, is it part of a phased mineral extraction, housing development or one plot in a multiple ownership residential scheme?.....  Yes  No If No, go to Question B1.2

If yes, how many great crested newt (GCN) licences will be required?

What licence application phase is this? e.g. licence application 1 of 3.

**Note: sections in this Method Statement on impact assessment and mitigation measures must explicitly relate to impacts only from the development currently proposed.**

**Your separate master plan document is expected to take due regard of the overall project. This is important to ensure that in-combination effects are considered, and mitigation measures across the whole project are both sufficient and coherent.**

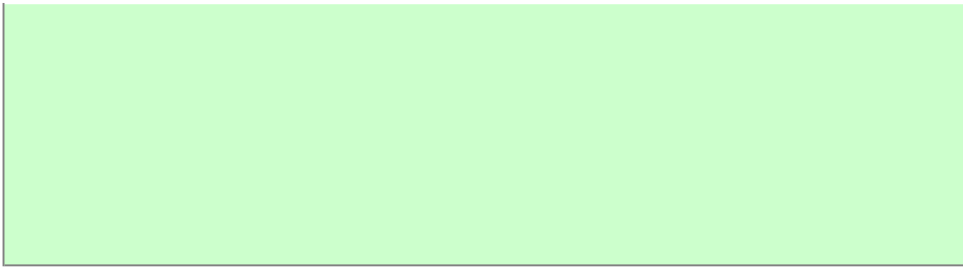
**Confirm you provided:**

• A Separate Masterplan document.....  Yes  No

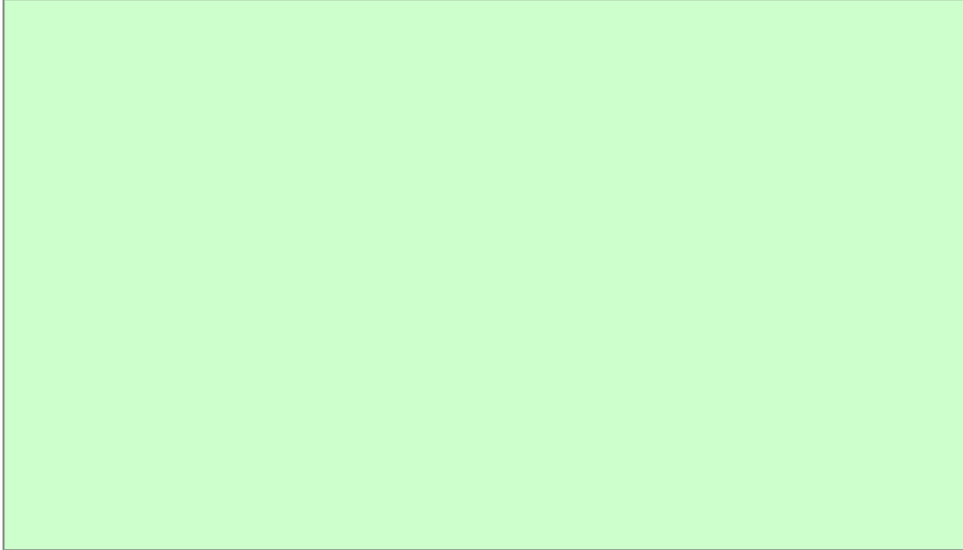
• Separate Masterplan figures.....  Yes  No

• A Habitat Management and Maintenance Plan?...  Yes  No

If you have selected 'No' to any of the above questions, please explain why as these are considered necessary and important documents for determination of your application. Not to provide them is likely to result in delays to being able to determine your application whilst we come back to you for this information.



Please provide below a brief summary of how the current application relates to the larger project.



**For this method statement also include a map FIG. B1.1 - [see Sum & Figs. tab.](#)**

**B1.2** Apart from any mentioned in B1.1, are there other GCN mitigation projects which might affect the target population? You must make reasonable efforts to establish this, including discussions with your client and the LPA.  Yes  No

Notes: Include any projects within 100m of site boundary, and any further away that are likely to seriously impact on the population at the site. Include current projects, any from the last 5 years, and any planned to happen within the next 5 years.

If yes, provide summary information here, including site names, dates, and - if known - licence reference No.s:

Efforts have been made to establish any other GCN mitigation projects which might affect the target population, including: Searching the MAGIC website for any granted GCN licences; reviewing the cumulative impacts section of the ES for the Lower Thames Crossing Project; and reviewing planning applications on the local authority websites.

The following local authority websites were searched for relevant planning applications:

South:

•Kent <https://www.kent.gov.uk/waste-planning-and-land/planning-applications/look-at-planning-applications>

North:

•Thurrock <https://www.thurrock.gov.uk/search-planning-records/planning-records-online>

•Havering [https://www.havering.gov.uk/info/20034/planning/116/planning\\_searches](https://www.havering.gov.uk/info/20034/planning/116/planning_searches)

No applications relating to great crested newts were found.

There were two Licence applications granted in relation to GCN within 100m of the scheme.

1) Case Ref: EPSM2010-2039 Start 06/04/2011, End 31/03/2013. Destruction of a resting place (just south of junction 29 of the M25).

2) Case Ref: 2014-1051-EPS-MIT, Essex, Licence start date 20.06.2014, end date 30/06/2017, allowing damage to a breeding site and destruction of a resting place (East Tilbury).

**NB: Locations of other GCN sites must be shown on FIG. B1.2 - [see Sum & Figs. tab](#)**

[Next Section](#)

TBC: Lower Thames Crossing

**C Survey and site assessment**

C1 Pre-existing survey information on GCN at survey site (eg previous to the survey data used to inform this application)

C1.1 Indicate conclusion on newts at development site from pre-existing survey data, if any. You should make reasonable efforts to find this data, including consulting the NBN Gateway and Local Records Centres.

Pre-existing survey confirms great crested newt presence

C1.2 Age of pre-existing survey data (years between now and latest survey)

Between 4 and 6 years

C1.3 Source(s) of pre-existing survey data; also include a copy or summary in an appendix

Records were obtained from the Kent & Medway Biological Records Centre (KMBRC), Essex Wildlife Trust Biological Records Centre (EWTBRC) Essex Field Club (EFC) and Greenspace Information for Greater London (GiGL) in 2022.

Further information can be found in Additional Sheet C1.3 Pre-existing Data

C2 Status of GCNs in the local area

C2.1 Local status (within approx 10km). Note: often there will be only patchy data on newt distribution, but you may feel able to assign one of the categories below when combined with pond density figures for the local area. Note: this is only a rough measure.

Occasional - known or likely to occur at c. 1-5 ponds per square km

Further information on local status

The GCN Study Area covers approx. 106 square km. The presence of GCN has been confirmed, or is assumed, at 111 ponds within this study area. This is approximately 1 pond per square km. As such, the local status of GCN is classified as 'occasional'.

C3 Recent survey (to inform this mitigation project)

C3.1 Objective of survey

To confirm presence of great crested newts in a specified area

C3.2 Survey area and justification

- Clearly state which areas were surveyed...

If *Other*, please provide comments below:

Survey Area

250m     500m     Other

A 500m survey area for the main carriageway and a 250m survey area for minor utility works.

- Select which ponds were surveyed.....

If *Other*, please provide comments below:

Ponds Surveyed

All Ponds     Some Ponds     Other

All ponds for which access was granted were surveyed

- Provide justification for the area surveyed (whether 250m or 500m of the site)

A 500m survey area was used, in accordance with the GCNMG (English Nature, 2001), where construction works could have a large impact on the population, specifically but not limited to, in relation to the proposed new carriageway. A 250m survey area was used where minor construction works were proposed mainly for utility works, for example pylon restringing and pipeline diversions. This approach has been agreed with Natural England.

A combination of eDNA surveys and conventional survey method were used to obtain appropriate survey information to inform this licence. Where GCN presence was confirmed within 50m of the site boundary population surveys were undertaken, where possible.

Surveys in 2020 were limited to eDNA, netting and egg searches due to the Covid-19 pandemic.

Each pond ID is suffixed with a N or a S to indicated whether the pond is located in the north (Essex) or south (Kent).

**NB: to accompany the survey section you must identify the survey area and all ponds within that area, indicating those surveyed from those not surveyed, on FIG. C3.2(a) and the 250m and 500m radii limits around the development boundary. An aerial photograph of the site and surrounding area is also useful. Please label as FIG. C3.2(b) if included. [See Sum & Figs. tab.](#)**

**C3.3 Habitat description: waterbodies**

C3.3i Briefly describe all waterbodies within your survey area. Please provide only a short text description, e.g. "Pond 1 is a small garden pond in the northwest of the site. Pond 2 is a marl pit pond in the centre of the site". Include pond references (names). Do not include Habitat Suitability Index (HSI) data here; this is to be added later in the Method Statement.

| Pond ref | Description                       |
|----------|-----------------------------------|
|          | See Additional Sheet C - Tab C3.3 |

|  |  |
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Add further records to the [Additional Records tab](#).

**C3.3.ii Waterbodies:** distance from development site boundary and other ponds.  
 Provide distance (to the nearest 10m) from the development site boundary for each pond within the survey area. If pond is on site, enter "0". If a pond on site or close to the development was not surveyed for GCNs, still give the distance, and provide reason for not surveying.

| Pond ref | Distance (m) | Surveyed or not? | If selected 'No- other reason' explain below |
|----------|--------------|------------------|--|
|          |              |                  | See Additional Sheet C3.3ii waterbodies      |
|          |              |                  |  |
|          |              |                  |  |
|          |              |                  |  |
|          |              |                  |  |
|          |              |                  |  |
|          |              |                  |  |
|          |              |                  |  |
|          |              |                  |  |
|          |              |                  |  |

Add more records here [Additional records page](#)

**C3.4 Habitat description: terrestrial habitats.**

What is the total area (ha) of the development site? 739.5

- Please provide a broad breakdown (ha and habitat type) of terrestrial habitat present on the development site. **Note** that this total should be the same as the area included above.
- Also, briefly describe the terrestrial habitats present on adjacent areas likely to support GCNs. If there is no defined boundary to development site, please explain the habitats affected by the works and within the surrounding area.
- The habitats described in this section should be clearly shown and identified on Figure C3.2(a)

The total area of the development site is 2292 ha. However, only 739.5ha falls within 500m of a GCN pond, and thus these are the sections that are considered as part of this method statement.

- The 739.5 ha of the site boundary within 500m of the GCN ponds comprises
- Woodland (57.4 ha)
  - Scrub (15.8)
  - Grassland (inc. Unimproved and semi-improved acid, semi-improved neutral, unimproved and semi-improved calcareous, poor semi-improved, improved & marshy) (151.9 ha)
  - Tall ruderals and herbs (9.3 ha)
  - Wetland (swamp & marginal) (0.6 ha)
  - Waterbodies (7.5 ha)
  - Intertidal habitats (0.2 ha)
  - Arable (449.3)
  - Amenity grassland (4.9 ha)
  - Emphermal / short perenial (7.7 ha)
  - Other habitats (roads, built up areas, etc.) (39.9 ha)
  - Hedgerows (19897.8 m)
  - Watercourses (1104.2 m)

The terrestrial habitats in the wider area are largely similar, comprising expansive agricultural fields with boundary hedgerows and woodland copses. There are many ponds, and these typically have some associated margin that may support GCN. Larger areas of woodland are present within Kent.

**NB: Photographs showing the habitats on site should be provided - FIG. C3.4**  
[see Sum & Figs. tab](#)

**C3.5 Waterbodies: quantitative assessment.**  
 A Habitat Suitability Index (HSI) score should be calculated for each pond that would be subject to activities



likely to result in adverse impacts on the local GCN population. See guidance in the Instructions section (Survey data and HSI tabs). It is not required for ponds subject to low impacts, though can be entered if you wish; this may be useful, for example, to provide objective evidence that the population affected is likely to be small.

In the boxes below, enter the Pond reference (or name) then the SI scores. The spreadsheet will automatically calculate the HSI. It is expected that, for each HSI, all ten SI scores should be entered in most cases. If you did not calculate a particular SI score, leave blank (**do not** enter "0"). If more than two variables are missing, the HSI should be treated as provisional and you should comment on this below. If more than 10 waterbodies need HSI scores, include additional information in an appendix, in the same format as below.

|                                |  |  |  |  |  |
|--------------------------------|--|--|--|--|--|
| Date HSI assessment undertaken |  |  |  |  |  |
| Pond ref                       |  |  |  |  |  |
| SI1 - Location                 |  |  |  |  |  |
| SI2 - Pond area                |  |  |  |  |  |
| SI3 - Pond drying              |  |  |  |  |  |
| SI4 - Water quality            |  |  |  |  |  |
| SI4 - Shade                    |  |  |  |  |  |
| SI6 - Fowl                     |  |  |  |  |  |
| SI7 - Fish                     |  |  |  |  |  |
| SI8 - Ponds                    |  |  |  |  |  |
| SI9 - Terr'l habitat           |  |  |  |  |  |
| SI10 - Macrophytes             |  |  |  |  |  |
| HSI                            |  |  |  |  |  |

|                                |  |  |  |  |  |
|--------------------------------|--|--|--|--|--|
| Date HSI assessment undertaken |  |  |  |  |  |
| Pond ref                       |  |  |  |  |  |
| SI1 - Location                 |  |  |  |  |  |
| SI2 - Pond area                |  |  |  |  |  |
| SI3 - Pond drying              |  |  |  |  |  |
| SI4 - Water quality            |  |  |  |  |  |
| SI4 - Shade                    |  |  |  |  |  |
| SI6 - Fowl                     |  |  |  |  |  |
| SI7 - Fish                     |  |  |  |  |  |
| SI8 - Ponds                    |  |  |  |  |  |
| SI9 - Terr'l habitat           |  |  |  |  |  |
| SI10 - Macrophytes             |  |  |  |  |  |
| HSI                            |  |  |  |  |  |

Add more records here [Additional records](#) page

Please comment and describe any constraints on HSI data if appropriate. If ponds did not undergo a HSI assessment please also explain why:

For all the ponds which were surveyed in 2018-2020 ('Yes' in C3.3ii), HSI surveys were not undertaken at the following ponds:-  
 P045N - dry at the time of HSI assessment

**C4 Amphibian survey**

**C4.1 Terrestrial amphibian survey**

Was a terrestrial survey undertaken? .....  Yes  No

If no, proceed to next section.

Objective of terrestrial survey:

Which area was surveyed for terrestrial amphibians?

Explain terrestrial survey area(s). Also mark on map, and give map reference here:

**Applicants must ensure they retain or have access to the records set out in the technical advice note, and used to support the licence application, for at least 12 months after the first licence return (dates for which will be set out in any licence granted).**

Fill in the boxes to show methods, timing, effort and results:

Survey start date:  Survey end date:

| Method:       | Refuge search | Pitfall | Night search | Other** |
|---------------|---------------|---------|--------------|---------|
| Effort        |               |         |              |         |
| No. of newts* |               |         |              |         |
| Total newts:  | 0             |         |              |         |

Metamorphs and immatures as percentage of total catch:

\*for this section, "no. of newts" refers more accurately to "no. of newt observations", as individuals are not distinguished in typical surveys. If you have individual newt data, state below.

Comments on results, e.g. \*\* if an 'other' method was used please explain what this was, favoured areas, migration route, juvenile dispersal route. Also mark observations and locations newts found on a map, and give map reference here:

**C4.2 Aquatic surveys for presence / absence using eDNA.**

A. Have you used eDNA to determine GCN presence?  Yes  No

B. If yes, please confirm the following:

i. The Defra [technical advice note](#) has been strictly followed -  Yes  No

*If no, the results will not be accepted.*

**Applicants must ensure they retain or have access to the records set out in the technical advice note, and used to support the licence application, for at least 12 months after the first licence return (dates for which will be set out in any licence granted).**

ii. Natural England's published timeframes for taking eDNA samples has been adhered to -  Yes  No

*If no, please explain why.*

iii. Confirm only licensed GCN surveyors, or suitably trained and competent Accredited Agents (see below table) have taken the eDNA samples to support this licence application. Provide their names and licence references below.  Yes  No

| Pond ref | GCN Surveyor / Accredited Agent | Licence Reference |
|----------|---------------------------------|-------------------|
|          |                                 |                   |

|                                  |  |
|----------------------------------|--|
| See Additional Sheet C - Tab 4.2 |  |
|                                  |  |
|                                  |  |
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|                                  |  |
|                                  |  |
|                                  |  |

*Add more records here* [Additional records page](#)

C. Complete the following table

| Pond reference | Date eDNA sample taken | Result (presence or absence) |
|----------------|------------------------|------------------------------|
|                |                        |                              |
|                |                        |                              |
|                |                        |                              |
|                |                        |                              |
|                |                        |                              |
|                |                        |                              |
|                |                        |                              |
|                |                        |                              |
|                |                        |                              |

*Add more records here* [Additional records page](#)

**It is only acceptable to use Accredited Agents under a GCN survey licence to collect eDNA samples if it can be demonstrated that they are adequately trained and competent in GCN ecology, conventional survey techniques, trained in the collection of eDNA samples and are experienced GCN surveyors even if they do not hold their own GCN survey licences. The named ecologist and applicant are responsible for ensuring that this condition is met.**

**Results of eDNA survey data must be clearly depicted on Figure C3.2a.**

[Next Section](#)

**C5 Interpretation and evaluation**

**Summary of presence, peak count, population size class and habitat quality**

Enter whether GCNs (any life stage) were detected for each pond, and HSI score for each pond subject to adverse impacts (see guidance in instructions). The other fields (in blue) should be generated automatically based on data you have entered in previous sheets.

| Pond ref | Gt. crested newts detected? | Peak adult count | Pop size class | HSI | Low detectability warning* | Peak count visit number | Eggs |
|----------|-----------------------------|------------------|----------------|-----|----------------------------|-------------------------|------|
| 0        |                             | 0                |                |     |                            |                         |      |
| 0        |                             | 0                |                |     |                            |                         |      |
| 0        |                             | 0                |                |     |                            |                         |      |
| 0        |                             | 0                |                |     |                            |                         |      |
| 0        |                             | 0                |                |     |                            |                         |      |
| 0        |                             | 0                |                |     |                            |                         |      |
| 0        |                             | 0                |                |     |                            |                         |      |
| 0        |                             | 0                |                |     |                            |                         |      |
| 0        |                             | 0                |                |     |                            |                         |      |
| 0        |                             | 0                |                |     |                            |                         |      |
| 0        |                             | 0                |                |     |                            |                         |      |
| 0        |                             | 0                |                |     |                            |                         |      |
| 0        |                             | 0                |                |     |                            |                         |      |
| 0        |                             | 0                |                |     |                            |                         |      |

**\*Note: The detectability column will state "Caution" if your data suggest any survey was done in poor conditions (temp<5C, veg cover>3, turbidity>3 or torch power <500,000 cp); otherwise it is blank. Aquatic newt surveys should not be carried out when air temp is <5C or with weak torches as results can be misleading. Whilst careful timing can sometimes avoid vegetation and turbidity problems, they are inevitable at some sites. It may be appropriate to undertake more detailed surveys and interpretation techniques (e.g. CMR). If this column returns "Caution", or there is any other reason to suspect detectability problems, you should be especially careful about interpreting counts, and comment on this in the constraints box below.**

Peak total site count\*\* for all ponds surveyed: 0

\*\* This figure is derived as follows. For each survey visit, the spreadsheet picks the highest count of adult newts obtained by torch, net or bottle-trap for each pond. These individual pond counts are then summed to give a site count for each visit. The peak total site count is then the highest of these figures, i.e. highest summed count across all ponds attained on any one visit. This figure may derive from counts using a mixture of methods (torch, bottle-trap or net) - see adjacent table which shows how the figure is derived. The calculations assume survey visits per pond are undertaken within similar timeframes, if this is not the case, this Peak total site count should be calculated by hand and reasons for it explained in the general comments text box below.

Population size class for all ponds surveyed:

\*\*\* this automatically generated size class assumes that it is appropriate to aggregate counts from all ponds, i.e. there is likely to be newt movement between ponds, for example where each pond is within approx 250m of another, with no significant barriers to dispersal. If you believe the automatically generated size class is incorrect for your site, provide your ecological justification in box below and give alternative accounts of peak total site counts and population size class for the site. Where there are meta-populations explain which ponds form each meta-population. For surveys of >10 ponds, data should be added to appendix provided, and note that peak counts etc will need to be derived separately.

For the full survey summary and detailed survey results, see Additional Sheet C Survey Info - Tab C

The structure of the GCN population along the scheme comprises of 20 discrete metapopulations and as opposed to one single population. A large population was recorded at metapopulations S02 and N13. The remaining comprised small and medium populations of GCN. In addition to this, where information was lacking or not sufficient, 18 assumed metapopulations have been included. A detailed description of each metapopulation is provided in Additional Sheet C Detailed Metapopulations Description

Site status assessment (see Section 5.8.5 of *Great crested newt mitigation guidelines* for guidance):

|              |  |
|--------------|--|
| Quantitative | High importance - large population   |
| Qualitative  | Moderate - breeding on site; habitats common in area                       |
| Functional   | Moderate importance - probably some dispersal to/from nearby population(s) |
| Contextual   | Moderate importance - population size class typical of area                |

**General comments on overall site status, and constraints to interpretation and evaluation -**  
How did the constraints affect your interpretation of your survey?

- Account for the presence of any barriers to dispersal and explain how this affects your assessment of the distribution of newts across the site and the presence of meta-populations

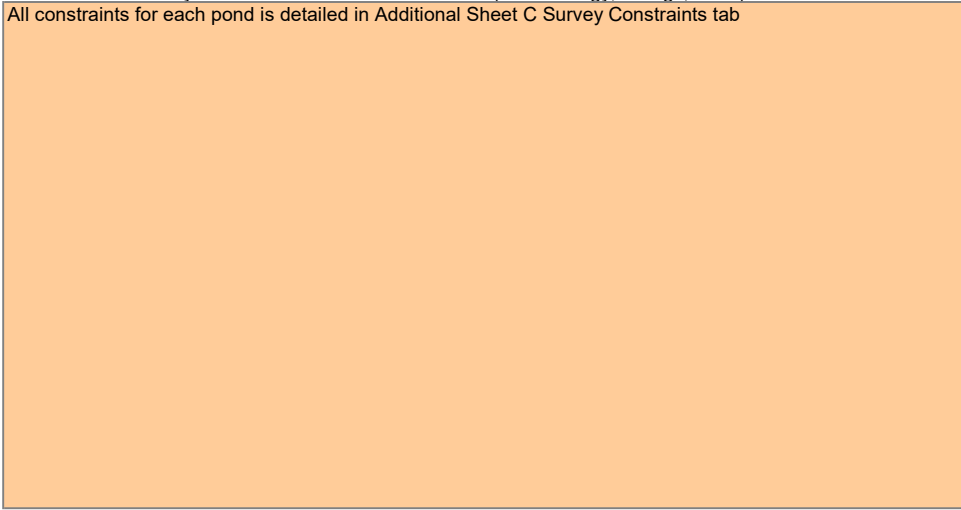
The existing road network, namely the M25, A13 and A2, currently all pose a barrier to existing GCN populations.

A detailed description of each metapopulation is provided in Additional Sheet C Detailed Metapopulations Description.



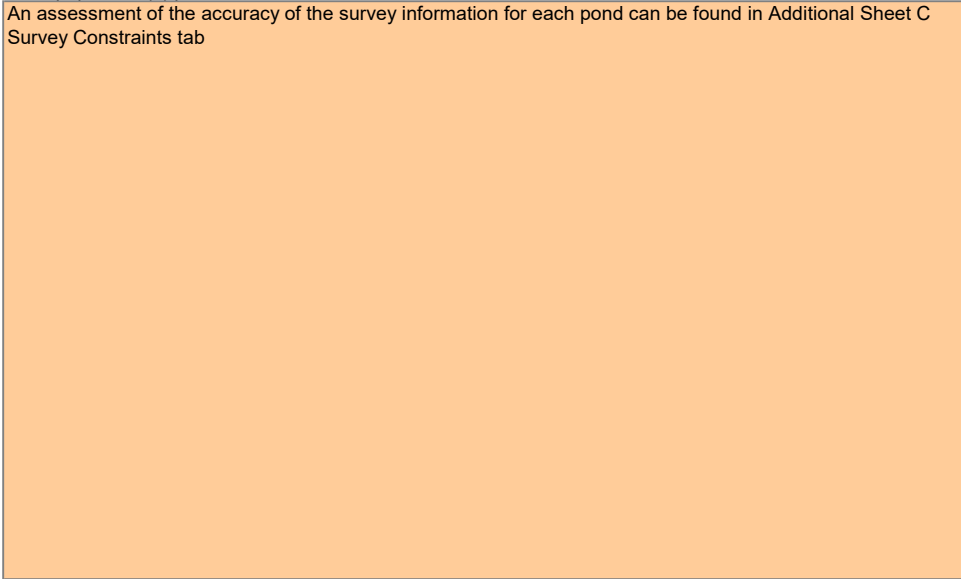
- Acknowledge any survey constraints e.g. low detectability warnings (as highlighted in section C5 above), deviation from survey recommendations in the GCNMG (methodology, timings, effort) etc.

All constraints for each pond is detailed in Additional Sheet C Survey Constraints tab



- Justify why constrained survey data is considered to accurately represent the size and distribution of the GCN population(s) present

An assessment of the accuracy of the survey information for each pond can be found in Additional Sheet C Survey Constraints tab



[Next section](#)

TBC: Lower Thames Crossing

**D1 Habitat impact tables**

N.B: this section must identify impacts *in the absence of mitigation or compensation measures*. Refer to the *Great crested newt mitigation guidelines* for guidance in impact types (section 6).

Should you wish to convert ha to m<sup>2</sup> or m<sup>2</sup> to ha please [use this converter](#)

Total Area of Development (ha): 739.5

**D1.1 Breakdown of terrestrial impacts**

| Permanent                   |                | Temporary                   |                   |
|-----------------------------|----------------|-----------------------------|-------------------|
| Habitat type                | Area lost (ha) | Habitat type                | Area damaged (ha) |
| Woodland                    | 29.35          | Woodland                    | 8.59              |
| Scrub                       | 6.43           | Scrub                       | 3.91              |
| Grassland                   | 88.99          | Grassland                   | 44.45             |
| Amentiy grassland           | 1.33           | Tall herb and fern          | 2.68              |
| Tall herb and fern          | 5.27           | Wetland                     | 0.13              |
| Ephemeral / short perennial | 6.22           | Ephemeral / short perennial | 1.41              |
| Wetland                     | 0.34           | Arable                      | 148.8             |
| Arable                      | 293.52         | Amenity grassland           | 2.28              |
| Gardens / allotments        | 0.33           | Gardens / allotments        | 0.53              |
| Other                       | 0.1            | Other                       | 0.47              |
| <b>Total Loss</b>           | <b>431.88</b>  | <b>Total Damage</b>         | <b>213.25</b>     |

**D1.2 Core, intermediate and distant terrestrial impacts**

|                                     | Permanent<br>Area lost (ha) | Temporary<br>Area damaged (ha) |
|-------------------------------------|-----------------------------|--------------------------------|
| Core<br>(<50m from pond)            | 6.96                        | 5.64                           |
| Intermediate<br>(50-250m from pond) | 138.78                      | 78.83                          |
| Distant<br>(>250m from pond)        | 286.14                      | 128.78                         |
| <b>Total (ha)</b>                   | <b>431.88</b>               | <b>213.25</b>                  |

**D1.3 Aquatic impacts**

|              | Permanent   |                             | Temporary      |                                |
|--------------|-------------|-----------------------------|----------------|--------------------------------|
|              | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
| GCN Ponds    | 5           | 4332.23                     | 0              | 0                              |
| Other Ponds  | 4           | 1425.36                     | 0              | 0                              |
| <b>Total</b> | <b>9</b>    | <b>5757.59</b>              | <b>0</b>       | <b>0</b>                       |

**Notes on terms in these tables:**

- 'GCN ponds' must include all ponds or other waterbodies in which GCN were recorded plus any others that are likely to be used by GCNs for foraging e.g. suitable ponds / waterbodies where no GCN were recorded but with good connectivity to other ponds / waterbodies within the survey area found to support GCNs.

- Area of ponds to be calculated by measuring or estimating extent at winter maximum.

- "Terrestrial habitat" here includes any land likely to be important to the local GCN population for foraging, resting, hibernating or dispersal. This means, for example, that even unvegetated or sparsely vegetated areas close to high quality newt ponds (within around 50m) should be included in impact assessments; this could apply to quarry floors, arable, cracked or damaged hard-standing and amenity grassland.

- Areas may be excluded from calculations if you assess that they are substantially isolated by barriers to dispersal and therefore highly unlikely to be used by newts; this may even include apparently high quality areas.

- Areas may also be excluded if you believe for any other reason that they are highly unlikely to be used by newts.

**Please always explain why you have excluded certain areas below.**

*If there are discrepancies in the areas in the tables below, please explain in the Impact text boxes below.*

**D2 Pre- and mid-development impacts:** descriptive text. Example: "Vegetation clearance and

archaeological investigations in Area A would kill and injure newts, and damage core refuge sites, close to Pond 1. Moderate negative impact on population."

The construction phase activities will require standard operations including vegetation clearance and topsoil stripping. Five GCN ponds will be lost or directly impacted by the Scheme in the short-term (construction phase). Construction works in the vicinity of confirmed or assumed great crested newt ponds would, or could potentially, kill and injure newts and damage and destroy refuge and hibernation sites. There would be loss of terrestrial habitat, including foraging and commuting habitat. The four non-GCN ponds to be impacted all fall outside of any known meta-population. These ponds are P024N, P025N, P046N and P106N.

See Additional Sheet D Detailed Impact Assessment for details of the works proposed in the vicinity of each pond and the impact of the works.

**D3 Long-term impacts:** descriptive text (to always include fragmentation if applicable to scheme) .

Example:

"Construction of Plot 1 in Area B would kill and injure newts, destroy Pond 1 (a breeding site) and core terrestrial habitat, consisting of rough grassland and deciduous woodland, around Pond 1. Creation of play area in Area C would reduce grassland value for newts. Construction of Plot 1 would create significant dispersal barrier between Ponds 1 and 2. Serious negative impact on population."

Given the nature of the scheme, there is potential to cause fragmentation between ponds within a metapopulation and/or between breeding ponds and valuable habitat for foraging or hibernating.

See Additional Sheet D Detailed Impact Assessment for details of any long-term impacts.

**D4 Post-development interference impacts:** descriptive text. Example: "Major increase in risk of fish and invasive aquatic plant introduction due to creation of large residential development adjacent to pond. Potentially serious negative impact on population."

Where populations are close to the new proposed carriageway, there is the likelihood of injury and killing of GCN due to road collisions.

See Additional Sheet D Detailed Impact Assessment for details of post-development impacts.



**D5 Other impacts:** descriptive text. Example: "Reduced water table due to altered local hydrology when development is complete. Increased early pond desiccation, resulting in lower breeding success. Likely serious negative impact on population." impacts when creating any mitigation or compensation measures.

See Additional Sheet D Detailed Impact Assessment for details of any other impacts.

#### **D5.2 Impact assessment map notes**

Impact maps must be of a suitable scale to clearly show the following:

- The development site boundary
- 50m, 250m and 500m radii around each GCN pond boundary
- Temporary and permanent impacts and habitats affected (to include a key to show the habitat types).
- Fragmentation impacts and/or barriers to dispersal.

More than one map may be required for larger schemes.

**NB:** Impacts must be shown on FIG. D - ensure all habitats types that will be affected by the proposals and impacts on them (indicating whether temporary or permanent) are clearly indicated and 50m, 250m and 500m radii are shown around GCN ponds.

[See Sum & Figs. tab.](#)

[Next section](#)



**E1 The mitigation solution** being proposed in the Method Statement should be the one that delivers the 'need' with the least impact on the newt population.

Please explain why this design was chosen over other potential solutions - set out what other mitigation proposals were considered and why they were not feasible, for example:

- if the proposal is to construct a new road and it will destroy breeding ponds, explain why it is not possible to retain the ponds in the proposed design etc; or,
- if a residential development results in a net loss of habitat, explain why it was not possible to reduce the housing footprint; or,
- if pond drain down is planned for the summer months when newts are breeding please explain why it is not possible to schedule this in, followed by pond destruction, in late September onwards; or
- if your proposal includes a non-standard approach to meeting the 'need'.

No licensable activities are proposed within close proximity to ponds within the following metapopulations and as such, these metapopulations will not be mentioned further.

- S03
- S05
- S11
- S12
- S13
- N03
- N06
- N08
- N17
- N19
- N20
- N22
- N23
- N24
- N25
- N26

Please refer to Additional Sheet E Mitigation and Compensation which details the mitigation solution for each of the other metapopulations.

**E2 Receptor site selection.** *NB: this relates to the place(s) where any captured newts will be released. It does not just refer to distant receptor sites or need to be the entire compensation area; where GCN will be placed must be clearly indicated on the relevant map. Enter details below unless no newts will be captured or displaced.*

**NB: Location of the receptor site in relation to the development site must be provided on FIG. E2 see Sum & Figs. tab**

**E2.1 Existing GCN status at receptor site(s)**

Great crested newts absent/highly likely to be absent

**E2.2 Survey information for receptor site if different from the survey for the application proposal.**

Same as application proposal

**E2.3 Receptor site locations. *Must include:*** Please record further sites in [Additional Records tab](#)

| Site name   | OS grid ref<br>eg AB12345678 | Administration area - if different<br>from development site | Distance from<br>development site (m). |
|---|------------------------------|---|--|
| Please see additional sheet E mitigation and compensation |                              |   |  |
|   |                              |   |  |

**E2.4 Receptor site(s): ownership and land status. *Please note that any receptor site must be free from future development proposals/threats.*** [Additional records tab.](#)

| Site name                     | Site Ownership | Conservation Designation? |
|-------------------------------|----------------|---------------------------|
| Please see additional sheet E |                |                           |
|                               |                |                           |

**E2.5 Receptor site: habitat description, size (ha) & adjacent land use.** [Additional Records tab](#)

| Site name                     | Habitat description | Size (ha) | Adjacent Land Use |
|-------------------------------|---------------------|-----------|-------------------|
| Please see additional sheet E |                     |           |                   |
|                               |                     |           |                   |

**E3 Habitat creation, restoration and/or enhancement**

The left side of table below summarises the impacts you specified in section D. Enter the habitat creation, restoration and/or enhancement that will be undertaken to compensate for these impacts in the right hand column.

Should you wish to convert ha to m<sup>2</sup> or m<sup>2</sup> to ha please [use this converter](#)

| Aquatic habitat | Impacts |        |                              | Compensation                     |        |                              |
|-----------------|---------|--------|------------------------------|----------------------------------|--------|------------------------------|
|                 | Effect  | Number | Total Area (m <sup>2</sup> ) | Measure                          | Number | Total Area (m <sup>2</sup> ) |
| GCN ponds       | Lost    | 9      | 5757.59                      | Created                          | 10     | 6,020                        |
|                 | Damaged | 0      | 0                            | Restored / reinstated / enhanced | 0      | 0                            |

| Terrestrial habitat | Impacts        |              | Compensation     |                                  |
|---------------------|----------------|--------------|------------------|----------------------------------|
|                     | Area lost (ha) |              | Area gained (ha) |                                  |
|                     | Permanent      | Temporary    | Created          | Restored / reinstated / enhanced |
| Core                | 7.0            | 5.6          | 2.8              | 5.6                              |
| Intermediate        | 138.8          | 78.8         | 49.3             | 78.8                             |
| Distant             | 286.1          | 128.8        | 72.7             | 128.8                            |
| <b>Totals</b>       | <b>431.9</b>   | <b>213.3</b> | <b>124.8</b>     | <b>213.2</b>                     |

**NB: All habitat creation, restoration and enhancement measures must be shown on FIG. E3.1 - see [Sum & Figs. tab](#)**

If a net loss of habitat (ha) is proposed please provide in the text box below an ecological justification to explain why the habitat measures proposed are considered sufficient to compensate for the impacts of the development. Some reduction in terrestrial habitat area may be acceptable provided there is an appreciable increase in habitat quality.

Although there is an overall net loss the majority of habitat loss is within intensively managed arable fields (293ha). In addition to the newly created habitats specific for GCN mitigation, there is an extra 202ha of the new habitats comprise of semi-natural habitat landscape planting which is considered of high value to GCN.

**E3.1** Describe the creation, restoration or enhancement of aquatic habitats (include design and water body dimensions as per *mitigation guidelines* and waterbody location. Dimensions these will be included in any annexed licence issued).

**NB: Only put timing of aquatic creation, restoration or enhancement in the timetable E6a.**

| Pond reference | Surface Area (m <sup>2</sup> ) | Max. Depth (m) | Design / enhancement measures and location                |
|----------------|--------------------------------|----------------|---|
|                |                                |                | Please see Additional Sheet E Mitigation and Compensation |
|                |                                |                |   |
|                |                                |                |   |
|                |                                |                |   |
|                |                                |                |   |

**E Mitigation & compensation (continued)**

**E3.2 Terrestrial habitat measures**

State number/area/length of any terrestrial habitat measures. Leave blank if not applicable. \*Dimensions of hibernacula are expected to be *at least* that recommended in the mitigation guidelines.

|                                     | Number/area (ha)/length** |                                  |
|-------------------------------------|---------------------------|----------------------------------|
|                                     | Created                   | Reinstated / Restored / Enhanced |
| Hedgerow planting                   | 780                       | 0                                |
| Grassland re-seeding                | 0                         | 3.01                             |
| Grassland management (just for GCN) | 109.86                    | 0                                |
| Scrub planting                      | 0                         | 0                                |
| Woodland planting                   | 11.63                     | 0                                |
| Hibernacula creation*               | 33                        | 0                                |
| Refuge creation                     | 38                        | 0                                |

\*\* Information must be consistent with Table E3.

Please describe management methods and explain any novel designs, non-standard proposals or techniques in the free text box below. Also describe any other terrestrial habitat measures, including locations & design. (Confirm landowner agreement for these measures, if they are to be created on land outside of the applicant's ownership, in Declaration worksheet J).

**NB: Do not put in specific dates here; add these into E6a (separate document).**

Grassland management for GCN will involve managing the habitat in accordance with open mosaic habitat principles, with areas of bare ground, flower rich habitats, scrub and scattered trees, sward diversity and open water. All figures in table E3.2 are for areas within GCN specific mitigation areas.

The Project includes an outline Land scape and Ecology Management Plan (Applicarion Document 6.7)which is a secured document as part of the control plan in the application for the development consent order. This document sets out the long-term management and monitoring requirements for all areas of ecological mitigation including those sites associated with this draft licence application. It also includes the provision of a steering group which will advise on the progress towards success criteria for each habitat area, and will offer guidance on achieving those objectives. The steering group will include representatives from Natural England, as well as local authorities and other relevant parties.

Please see Additional Sheet E Mitigation and Compensation

**E3.3 Integration with roads and other hard landscapes.**

Explain any measures you will take to integrate mitigation with roads and other hard landscapes. If you propose any connectivity measures, such as underpasses, please specify:

- Design (to include length, width, height and guide fencing)
- Monitoring (to include methodology and duration)
- Maintenance (to detail how long-term functionality of the underpass(es) and entrances will be ensured)

**NB: Locations & details of any proposed connectivity measures must be provided on FIG. E3.3 - see:**

[Sum & Figs. tab](#)

**NB: If you have identified fragmentation as an impact this is something you should address.**

Drainage systems can result in high mortality of amphibians, as such the drainage for the scheme is being designed to use amphibian friendly drainage options; this is an ongoing process and the impact on amphibians is constantly being reviewed.

Please refer to Additional Sheet E Mitigation and Compensation for more details for each metapopulation.

**E Mitigation & compensation (continued)**

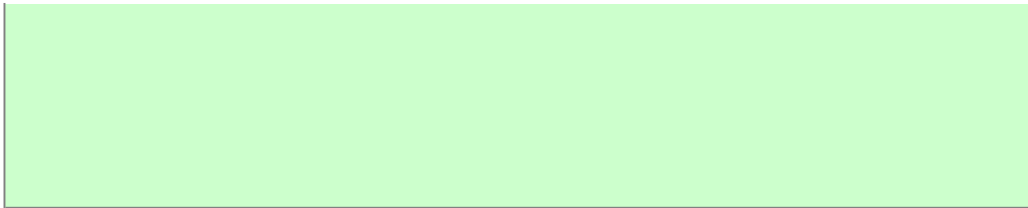
**E4 Capture, exclusion & translocation: Please do not refer to any dates in this section - these should be provided in E6.**

State capture +/- or exclusion methods, with effort levels.

[Pls Read Advice Notes](#)

|  | Use method?<br><i>Yes/no</i> | Minimum capture effort<br><i>(days)</i> |
|--|------------------------------|---|
| At pond: bottle-trap, net, hand search &/or drain down | Yes                          | Other                                   |
| At pond: ring-fence, pitfall trap (+ fence & refuges)  | Yes                          | Other                                   |
| Away from pond: hand search                            | Yes                          | Other                                   |
| Away from pond: destructive search                     | Yes                          | Other                                   |
| Away from pond: fence, pitfall trap (& refuges)        | Yes                          | Other                                   |
| Away from pond: night search                           | Yes                          | Other                                   |
| Away from pond: exclusion fence only                   | Yes                          |   |
| Other or additional method(s) - state below:           |                              |   |

A detailed description of the capture and/or exclusions methods and capture effort for each metapopulation is included in Additional Sheet E Mitigation and Compensation



**NB:** • A minimum of 25 nights trapping will only be acceptable in exceptional circumstances which are fully justified and explained. See [guidance on capture effort](#)

**NB: Locations of all capture/exclusion activities must be shown on FIG. E4(a)**  
**- Any non-standard capture/exclusion measures should be detailed on FIG. E4(b) - [see H - Figures tab](#)**  
**- if timings of works are different for different meta-populations please separate out in your work schedule.**

Briefly explain your capture/exclusion proposals, for example:

- Justify the use of non-standard methodologies and/or deviation from recommendations in the Great crested newt mitigation guidelines
- Explain differing capture effort in trapping compartments

NB: If a very complex capture operation is proposed the methodology should be explained in detail below.

Please refer to Additional Sheet E - Mitigation and compensation

**E Mitigation & compensation (continued)**

**E5 Post-development site safeguard.** Refer to Section 8.5 of the Great crested newt mitigation guidelines.

**E5.1 Habitat management & maintenance**

Is any specific post-development habitat management and site maintenance planned?

Yes  No If no, proceed to population monitoring section E5.2.

State which of the following habitat management operations will occur:

|  |  |
|--|--|
| Aquatic vegetation management in water bodies                |  |
| Clearance of shading tree or scrub cover around pond margins |  |
| Mowing, cutting or grazing of grassland                      |  |
| Desilting and clearance of leaf-fall                         |  |
| Woodland and scrub management                                |  |
| Other (state below)  |  |

Please refer to Additional Sheet E - Mitigation and compensation  
**NB: Details of site management and maintenance should be shown on FIG. E5.1. - see "H Sum & Figs" tab. Indicate which areas (including which ponds) the management and maintenance plan will apply to.**

State which of the following site maintenance operations will occur:

|   |  |
|---|--|
| Checking for fish presence, and removal through appropriate methods |  |
| Checking pond condition and remedial action as required             |  |
| Checking for and removal of dumped rubbish                          |  |
| Reinstatement following fire, acute pollution or other major damage |  |
| Repair or replace fences  |  |

|   |  |
|---|--|
| Maintain tunnel, underpass, guide fencing in good condition |  |
| Repair or replace interpretation boards                     |  |
| Other (state below)   |  |

Please refer to Additional Sheet E - Mitigation and compensation  
 State the period for which habitat management and maintenance plan will continue:

**NOTE:** A separate, detailed plan must also be attached if  
 (a) population size class is large and impacts are moderate-high,  
 (b) regionally important population and impacts are moderate-high,  
 (c) losses of > 2 breeding water bodies on site supporting medium size class population, or  
 (d) phased or multi-plot developments.

If your proposal meets one of the above (a - d), confirm that such a document is attached:

Yes  No

Please note, if you have selected 'No', you are likely to receive a Further Information Request.

**E5.2** Post-development population monitoring (refer to Section 8.5.2 of the *Great crested newt mitigation guidelines* and advice at beginning of this template).

**NB: Details of ponds which will be monitored post development must be shown and referenced on FIG. E5.2. see Sum & Figs. tab**

**NB: It is the licensee's responsibility to ensure that post development monitoring is carried out and that remedial action is taken if compensation measures are failing.**

Is population monitoring required? Y/N  Yes

[Please refer to table in the post development monitoring advice section](#)

If no, proceed to section E5.3

Indicate timing and type of post-development population monitoring:

Timing (years post-dev't):

Type of monitoring:

Specify which ponds will be monitored. Additionally, if your post-development monitoring proposals do not follow the GCNMG please provide your ecological justification below. Comments on monitoring period, methods or effort.

Please refer to Additional Sheet E - Mitigation and compensation for further details on monitoring for each metapopulation.

All mitigation ponds will remain in the ownership of Highways England. Other ponds will be access through arrangement with the landowners.

**NB: A Natural England mitigation licence will not confer rights of access to monitor water bodies or other habitats which lie outside the licensee's ownership. Permission/s should be granted prior to applying for a licence. Please see Declaration section in worksheet I.**

**E5.3 Site safeguard**

Mechanism(s) for site safeguard.

Is there a mechanism in place to secure site safeguard?.....  Yes  N/A

If N/A, please briefly explain why.

All works are to take place entirely on land owned by National Highways secured by compulsory purchase order through the DCO.

If yes, please confirm which apply to your scheme:

- i) Restrictive Covenant.....  Yes
- ii) Clause to relinquish future development rights in S106 agreement.....  Yes
- iii) NERC Act agreement.....  Yes
- iv) Explicit recognition of site in local planning documents.....  Yes
- v) Designation as County Wildlife Site or similar.....  Yes
- vi) other.....

Please confirm that the receptor site and mitigation and / or compensation land is free from future development.

Yes

No

Note : if you state 'No' your application will almost certainly be rejected; provide justification below.

**NOTE: A copy of any significant document, such as a Section 106 agreement, must be included with your application. It must be clear within any s106, or other legal document/agreement, where the specific reference to GCN is.**

**E6 Work Schedule**

Please complete a separate [Work Schedule for Great crested newt Annexed Licence](#), and submit with your application.

[Next section](#)

**F - Final post development Layout**

F1 Final Post development Layout Figure F1 is required

**NB: Please show the final layout on FIG. F1. - see "H and list of figures" below. This must show the final development layout and include ponds, buildings, roads, GCN tunnels, other mitigation or compensation measures, etc.**

**G - Checklist of Documents, figures, maps and diagrams to include**

You must provide maps, photographs and diagrams to adequately explain the mitigation plans. Use the checklist below to understand what is required for your application. All maps and figures must be included as individual files. Additional maps, photos or diagrams should be included where necessary.

Map / Figure guidance: Ensure each map / figures includes the following:

- Site name and figure reference
- Scale bar and Direction of North
- Date DD/MM/YYYY

**H - List of figures**

| Figure reference  | Mandatory or not?   | What it must show<br>(also see details above on site reference, dating and naming).   |
|---|---|---|
| <b>Figure B1.1</b><br><input type="checkbox"/> Included             | Yes, if the application is part of a phased or multi-plot development                           | <b>Masterplan map</b> showing the location of each individual phase or plot associated with the overall scheme. The phase to which the current application refers should be highlighted   |
| <b>Figure B1.2</b><br><input checked="" type="checkbox"/> Included  | Yes, if there are other GCN mitigation projects nearby which might affect the target population | <b>Map to show location of other nearby GCN mitigation sites</b> to show development boundaries and compensation/mitigation areas.  |
| <b>Figure C3.2a</b><br><input checked="" type="checkbox"/> Included | Yes   | <b>Survey map</b> to show development site location, survey area and ponds. The terrestrial and aquatic habitats described in sections C3.3 and C3.4 should also be shown. Indicate which ponds were found to support GCN, including specifying results of any eDNA sampling if relevant.   |
| <b>Figure C3.2b</b><br><input checked="" type="checkbox"/> Included | -   | <b>Aerial photograph of site</b> for information only to help better inform the application.  |
| <b>Photos C3.4</b><br><input checked="" type="checkbox"/> Included  | Yes   | <b>Photographs</b> to show terrestrial and aquatic habitats on the development site and surrounding area (to include the receptor area).  |
| <b>Figure D</b><br><input checked="" type="checkbox"/> Included     | Yes   | <b>Impact map</b> to show the location and extent of the different habitat types to be temporarily and/or permanently lost/damaged (as detailed in section D of the Method Statement). Radii of 50, 250 and 500m around each GCN pond which will be impacted must be shown.   |
| <b>Figure E2</b><br><input checked="" type="checkbox"/> Included    | Yes   | Receptor site map to show the location of the receptor site(s) in relation to the development.  |
| <b>Figure E3.1</b><br><input checked="" type="checkbox"/> Included  | Yes, if habitat creation, enhancement or restoration is proposed                                | Habitat measures map to show the location and extent of all terrestrial and aquatic habitat measures detailed in section E3 of the Method Statement).   |
| <b>Figure E3.3</b><br><input type="checkbox"/> Included             | Yes, if measures to improve connectivity are proposed   | Connectivity map to show the location of any measures employed to improve connectivity e.g. underpasses/tunnels, new friendly traffic and /or drainage features (dropped kerbs/set-back gully pots) etc.  |
| <b>Figure E4a</b><br><input checked="" type="checkbox"/> Included   | Yes   | Capture and exclusion map to show how GCNs will be cleared from the development site and prevented from entering during construction. A clear differentiation should be made between different types of amphibian fencing (e.g. permanent, temporary, perimeter, drift, ring, one-way etc). Direction of travel over one-way fences should also be shown. |



03. LTC GCN Method Statement

|   |  |  |
|---|--|--|
| <p><b>Figure E4b</b><br/> <input type="checkbox"/> Included</p>             | Yes, if non-standard measures are proposed             | Non-standard capture and exclusion measures – diagrams or photographs to show designs/specifications.  |
| <p><b>Figure E5.1</b><br/> <input checked="" type="checkbox"/> Included</p> | Yes, if habitat management and maintenance is proposed | Post-development management and maintenance map to show the location and extent of the terrestrial and aquatic habitats to be managed and maintained in accordance with section E5.1 of the Method Statement. To include tunnels/underpasses/guide fencing if applicable. Ponds to be managed and maintained must be clearly referenced. |
| <p><b>Figure E5.2</b><br/> <input checked="" type="checkbox"/> Included</p> | Yes, if monitoring has been proposed                   | Post-development monitoring map to show, and reference, all of the waterbodies to be monitored (as detailed in section E5.2 of the Method Statement). To include tunnel/underpass/guide fencing if applicable.   |
| <p><b>Figure F1</b><br/> <input checked="" type="checkbox"/> Included</p>   | Yes  | <b>Final development layout map</b> to show both the development layout (e.g. buildings, rail, roads) <u>and</u> all of the mitigation/compensation measures proposed (e.g. including ponds, tunnels, receptor areas)  |

**List of documents**

| Document  | Mandatory or not?   |
|---|---|
| Completed application form <input checked="" type="checkbox"/> Included                       | Yes   |
| Completed method statement template <input checked="" type="checkbox"/> Included              | Yes   |
| Completed work schedule <input checked="" type="checkbox"/> Included                          | Yes   |
| Figures - as stated above <input checked="" type="checkbox"/> Included                        | Yes   |
| Separate Masterplan document <input type="checkbox"/> Included                                | Yes - if part of a phased or multi-plot development   |
| Separate Habitat Management and Maintenance Plan <input checked="" type="checkbox"/> Included | Yes - if:<br>(a) population size class is large and impacts are moderate-high, or<br>(b) regionally important population and impacts are moderate-high, or<br>(c) losses of > 2 breeding water bodies on site supporting medium size class population, or<br>(d) phased or multi-plot developments. |

List any other maps, photographs or diagrams attached:

C3.2c Detailed Metapopulation Figure

[Next Section](#)

**I - Declarations**

Yes Re: E2: I confirm that relevant landowner consent/s has/have been granted to accept great crested newts onto land outside the applicant's ownership.

N/A

Yes Re: E3.1 and E3.2 – I confirm that landownership consent/s has/have been granted to allow the creation of the proposed habitat compensation (aquatic or terrestrial) on land outside the applicant's ownership.

N/A

Yes Re: E5.2 – I confirm that consent/s has/have been granted by the relevant landowner/s for monitoring and maintenance purposes, as set out in E5.2, on land outside the applicant's ownership.

N/A

Yes RE: E5.1 and E5.2 - I, the applicant, confirm that all habitat management, maintenance and monitoring detailed in section 5, and accompanying documents, will be undertaken.

N/A

**Unsecured consents statement:**

If you have been unable to secure consents for any of the four declarations please explain why and detail any plans you have in place to obtain the consent(s) or provide details of any right(s) or agreement(s) that will enable the lawful implementation of the proposed mitigation, compensation and monitoring. Important Note: Failure to provide the appropriate landowner consents means that the Method Statement is unlikely to meet the requirements for the FCS test to be met. It is therefore in your interest to ensure that the appropriate consents have been secured before applying for a licence.

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**Records of additional pond(s) surveyed**

Please use this page to record extra data, if more than 10 ponds were surveyed - Ponds 11 - 20

C3.3i continued Ponds 11 - 20

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| Pond ref | Description |
|----------|-------------|
|          |             |
|          |             |
|          |             |
|          |             |
|          |             |
|          |             |
|          |             |
|          |             |
|          |             |
|          |             |

C3.3ii continued

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| Pond ref | Distance (m) | Surveyed or not? | If not why not? |
|----------|--------------|------------------|-----------------|
|          |              |                  |                 |
|          |              |                  |                 |
|          |              |                  |                 |
|          |              |                  |                 |
|          |              |                  |                 |
|          |              |                  |                 |
|          |              |                  |                 |
|          |              |                  |                 |
|          |              |                  |                 |
|          |              |                  |                 |

C3.5 additional ponds HSI score

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|                      |  |  |  |  |  |
|----------------------|--|--|--|--|--|
| Date HSI assessmt    |  |  |  |  |  |
| Pond ref             |  |  |  |  |  |
| SI1 - Location       |  |  |  |  |  |
| SI2 - Pond area      |  |  |  |  |  |
| SI3 - Pond drying    |  |  |  |  |  |
| SI4 - Water quality  |  |  |  |  |  |
| SI4 - Shade          |  |  |  |  |  |
| SI6 - Fowl           |  |  |  |  |  |
| SI7 - Fish           |  |  |  |  |  |
| SI8 - Ponds          |  |  |  |  |  |
| SI9 - Terr'l habitat |  |  |  |  |  |
| SI10 - Macrophytes   |  |  |  |  |  |
| HSI                  |  |  |  |  |  |

|                      |  |  |  |  |  |
|----------------------|--|--|--|--|--|
| Date HSI assessmt    |  |  |  |  |  |
| Pond ref             |  |  |  |  |  |
| SI1 - Location       |  |  |  |  |  |
| SI2 - Pond area      |  |  |  |  |  |
| SI3 - Pond drying    |  |  |  |  |  |
| SI4 - Water quality  |  |  |  |  |  |
| SI4 - Shade          |  |  |  |  |  |
| SI6 - Fowl           |  |  |  |  |  |
| SI7 - Fish           |  |  |  |  |  |
| SI8 - Ponds          |  |  |  |  |  |
| SI9 - Terr'l habitat |  |  |  |  |  |
| SI10 - Macrophytes   |  |  |  |  |  |
| HSI                  |  |  |  |  |  |

C4.2iii Continued

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| Pond ref | GCN Surveyor / Accredited Agent | Licence Reference |
|----------|---------------------------------|-------------------|
|          |                                 |                   |
|          |                                 |                   |
|          |                                 |                   |
|          |                                 |                   |

|  |  |  |
|--|--|--|
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

4.2c Continued

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| Pond reference | Date eDNA sample taken | Result (presence or absence) |
|----------------|------------------------|------------------------------|
|                |                        |                              |
|                |                        |                              |
|                |                        |                              |
|                |                        |                              |
|                |                        |                              |
|                |                        |                              |
|                |                        |                              |
|                |                        |                              |
|                |                        |                              |
|                |                        |                              |

E2.3 Receptor site locations. Continued

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| Site name | OS grid ref<br>eg AB12345678 | Administration area - if different<br>from development site | Distance from<br>development site |
|-----------|------------------------------|---|-----------------------------------|
|           |                              |   |                                   |
|           |                              |   |                                   |
|           |                              |   |                                   |
|           |                              |   |                                   |

E2.4 Receptor site(s): continued

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| Site name | Site Ownership | Conservation<br>Designation? |
|-----------|----------------|------------------------------|
|           |                |                              |
|           |                |                              |
|           |                |                              |
|           |                |                              |

E2.5 Receptor site(s): continued

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| Site name | Habitat description | Size (ha) | Adjacent Land Use |
|-----------|---------------------|-----------|-------------------|
|           |                     |           |                   |
|           |                     |           |                   |
|           |                     |           |                   |
|           |                     |           |                   |

03. LTC GCN Method Statement

TBC: Lower Thames Crossing

**C4.3 Aquatic amphibian survey (conventional methods) - GCN results - Pond 1**

|                                       |  |   |
|---------------------------------------|--|---|
| Was an aquatic amphibian survey done? |  | If no, proceed to next section.   |
| Total no. of ponds surveyed:          |  | If >10 ponds or >8 visits for a pond, provide further data... See additional <a href="#">Survey ponds 11-20 sheet</a> |

Surveyor name(s):

**Important. Read before completing this section:** Enter GCN survey data in relevant boxes in the table below (for Pond 1) and those on subsequent sheets (for up to 9 other ponds). Enter "0" where you did a survey and found no newts; leave box blank if no survey was done. This format is designed for a typical single season survey with typical methods and effort. Explain atypical methods/effort later. For multiple year surveys, give details in annex (convert data to this format if possible). Use these tables to provide details only for the most recent season's survey. Append older survey results in full. Automatic yellow highlight indicates possible detectability problem (see Evaluation & interpretation section, later).

| Pond reference (e.g. "Pond 1") - below  |          |           |           | Method:         | Torch        |        |      | Bottle-trap                |        |      | Net  |        |      | Egg search  | Larvae                        |
|---|----------|-----------|-----------|-----------------|--------------|--------|------|----------------------------|--------|------|------|--------|------|-------------|-------------------------------|
|   |          |           |           |                 | Torch power: |        |      | No. of traps used in pond: |        |      |      |        |      | eggs found? | larvae found?<br>(any method) |
| No. of survey visits to this pond:  |          |           |           |                 |              |        |      |                            |        |      |      |        |      |             |                               |
|   |          |           |           | Sex/life stage: | Male         | Female | Imm. | Male                       | Female | Imm. | Male | Female | Imm. |             |                               |
| (1) Date:   | Air temp | Veg cover | Turbidity |                 |              |        |      |                            |        |      |      |        |      |             |                               |
|   |          |           |           | Adult totals:   | 0            |        |      | 0                          |        |      | 0    |        |      |             |                               |
| (2) Date:   | Air temp | Veg cover | Turbidity |                 |              |        |      |                            |        |      |      |        |      |             |                               |
|   |          |           |           | Adult totals:   | 0            |        |      | 0                          |        |      | 0    |        |      |             |                               |
| (3) Date:   | Air temp | Veg cover | Turbidity |                 |              |        |      |                            |        |      |      |        |      |             |                               |
|   |          |           |           | Adult totals:   | 0            |        |      | 0                          |        |      | 0    |        |      |             |                               |
| (4) Date:   | Air temp | Veg cover | Turbidity |                 |              |        |      |                            |        |      |      |        |      |             |                               |
|   |          |           |           | Adult totals:   | 0            |        |      | 0                          |        |      | 0    |        |      |             |                               |
| (5) Date:   | Air temp | Veg cover | Turbidity |                 |              |        |      |                            |        |      |      |        |      |             |                               |
|   |          |           |           | Adult totals:   | 0            |        |      | 0                          |        |      | 0    |        |      |             |                               |
| (6) Date:   | Air temp | Veg cover | Turbidity |                 |              |        |      |                            |        |      |      |        |      |             |                               |
|   |          |           |           | Adult totals:   | 0            |        |      | 0                          |        |      | 0    |        |      |             |                               |
| (7) Date:   | Air temp | Veg cover | Turbidity |                 |              |        |      |                            |        |      |      |        |      |             |                               |
|   |          |           |           | Adult totals:   | 0            |        |      | 0                          |        |      | 0    |        |      |             |                               |
| (8) Date:   | Air temp | Veg cover | Turbidity |                 |              |        |      |                            |        |      |      |        |      |             |                               |
|   |          |           |           | Adult totals:   | 0            |        |      | 0                          |        |      | 0    |        |      |             |                               |
| <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |          |           |           |                 |              |        |      | 0                          |        |      |      |        |      |             |                               |

Comments and constraints:

03. LTC GCN Method Statement

TBC: Lower Thames Crossing

C4.3 Aquatic amphibian survey (conventional methods)- GCN results (cont - Pond 2)

NB: This page prints in landscape format

| Pond reference (e.g. Pond 2)  |          |           |           | Method:         | Torch        |  |      | Bottle-trap                |      |      | Net    |      |      | Egg search<br>eggs found? | Larvae<br>larvae found?<br>(any method) |
|---|----------|-----------|-----------|-----------------|--------------|--|------|----------------------------|------|------|--------|------|------|---------------------------|---|
| No. of survey visits to this pond:  |          |           |           |                 | Torch power: |  |      | No. of traps used in pond: |      |      |        |      |      |                           |   |
|   |          |           |           | Sex/life stage: |              |  | Male | Female                     | Imm. | Male | Female | Imm. | Male | Female                    | Imm.                                    |
| (1) Date:   | Air temp | Veg cover | Turbidity |                 |              |  |      |                            |      |      |        |      |      |                           |   |
|   |          |           |           | Adult totals:   |              |  | 0    |                            |      | 0    |        |      | 0    |                           |   |
| (2) Date:   | Air temp | Veg cover | Turbidity |                 |              |  |      |                            |      |      |        |      |      |                           |   |
|   |          |           |           | Adult totals:   |              |  | 0    |                            |      | 0    |        |      | 0    |                           |   |
| (3) Date:   | Air temp | Veg cover | Turbidity |                 |              |  |      |                            |      |      |        |      |      |                           |   |
|   |          |           |           | Adult totals:   |              |  | 0    |                            |      | 0    |        |      | 0    |                           |   |
| (4) Date:   | Air temp | Veg cover | Turbidity |                 |              |  |      |                            |      |      |        |      |      |                           |   |
|   |          |           |           | Adult totals:   |              |  | 0    |                            |      | 0    |        |      | 0    |                           |   |
| (5) Date:   | Air temp | Veg cover | Turbidity |                 |              |  |      |                            |      |      |        |      |      |                           |   |
|   |          |           |           | Adult totals:   |              |  | 0    |                            |      | 0    |        |      | 0    |                           |   |
| (6) Date:   | Air temp | Veg cover | Turbidity |                 |              |  |      |                            |      |      |        |      |      |                           |   |
|   |          |           |           | Adult totals:   |              |  | 0    |                            |      | 0    |        |      | 0    |                           |   |
| (7) Date:   | Air temp | Veg cover | Turbidity |                 |              |  |      |                            |      |      |        |      |      |                           |   |
|   |          |           |           | Adult totals:   |              |  | 0    |                            |      | 0    |        |      | 0    |                           |   |
| (8) Date:   | Air temp | Veg cover | Turbidity |                 |              |  |      |                            |      |      |        |      |      |                           |   |
|   |          |           |           | Adult totals:   |              |  | 0    |                            |      | 0    |        |      | 0    |                           |   |
| <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |          |           |           |                 |              |  |      |                            |      | 0    |        |      |      |                           |   |

Comments and constraints:

03. LTC GCN Method Statement

TBC: Lower Thames Crossing

C4.3 Aquatic amphibian survey (conventional methods) - GCN results (cont - Pond 3)

NB: This page prints in landscape format

| Pond reference (e.g. Pond 3)  |          |           |           | Method: | Torch        |      |      | Bottle-trap                |      |      | Net             |      |               | Egg search<br>eggs found? | Larvae<br>larvae found?<br>(any method) |
|---|----------|-----------|-----------|---------|--------------|------|------|----------------------------|------|------|-----------------|------|---------------|---------------------------|---|
| No. of survey visits to this pond:  |          |           |           |         | Torch power: |      |      | No. of traps used in pond: |      |      | Sex/life stage: |      |               |                           |   |
| (1) Date:   | Air temp | Veg cover | Turbidity | Male    | Female       | Imm. | Male | Female                     | Imm. | Male | Female          | Imm. | Adult totals: |                           |   |
|   |          |           |           |         |              |      |      |                            |      |      |                 |      | 0             |                           |   |
| (2) Date:   | Air temp | Veg cover | Turbidity |         |              |      |      |                            |      |      |                 |      | 0             |                           |   |
|   |          |           |           |         |              |      |      |                            |      |      |                 |      | 0             |                           |   |
| (3) Date:   | Air temp | Veg cover | Turbidity |         |              |      |      |                            |      |      |                 |      | 0             |                           |   |
|   |          |           |           |         |              |      |      |                            |      |      |                 |      | 0             |                           |   |
| (4) Date:   | Air temp | Veg cover | Turbidity |         |              |      |      |                            |      |      |                 |      | 0             |                           |   |
|   |          |           |           |         |              |      |      |                            |      |      |                 |      | 0             |                           |   |
| (5) Date:   | Air temp | Veg cover | Turbidity |         |              |      |      |                            |      |      |                 |      | 0             |                           |   |
|   |          |           |           |         |              |      |      |                            |      |      |                 |      | 0             |                           |   |
| (6) Date:   | Air temp | Veg cover | Turbidity |         |              |      |      |                            |      |      |                 |      | 0             |                           |   |
|   |          |           |           |         |              |      |      |                            |      |      |                 |      | 0             |                           |   |
| (7) Date:   | Air temp | Veg cover | Turbidity |         |              |      |      |                            |      |      |                 |      | 0             |                           |   |
|   |          |           |           |         |              |      |      |                            |      |      |                 |      | 0             |                           |   |
| (8) Date:   | Air temp | Veg cover | Turbidity |         |              |      |      |                            |      |      |                 |      | 0             |                           |   |
|   |          |           |           |         |              |      |      |                            |      |      |                 |      | 0             |                           |   |
| <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |          |           |           |         |              |      | 0    |                            |      |      |                 |      |               |                           |   |

Comments and constraints:

03. LTC GCN Method Statement

TBC: Lower Thames Crossing

C4.3 Aquatic amphibian survey (conventional methods) - GCN results (cont - Pond 4)

NB: This page prints in landscape format

| Pond reference (e.g. Pond 4)  |          |           |           | Method: | Torch        |      |      | Bottle-trap                |      |      | Net             |      |  | Egg search<br>eggs found? | Larvae<br>larvae found?<br>(any method) |
|---|----------|-----------|-----------|---------|--------------|------|------|----------------------------|------|------|-----------------|------|--|---------------------------|---|
| No. of survey visits to this pond:  |          |           |           |         | Torch power: |      |      | No. of traps used in pond: |      |      | Sex/life stage: |      |  |                           |   |
|   |          |           |           | Male    | Female       | Imm. | Male | Female                     | Imm. | Male | Female          | Imm. |  |                           |   |
| (1) Date:   | Air temp | Veg cover | Turbidity |         |              |      |      |                            |      |      |                 |      |  |                           |   |
| Adult totals:   |          |           |           | 0       |              |      | 0    |                            |      | 0    |                 |      |  |                           |   |
| (2) Date:   | Air temp | Veg cover | Turbidity |         |              |      |      |                            |      |      |                 |      |  |                           |   |
| Adult totals:   |          |           |           | 0       |              |      | 0    |                            |      | 0    |                 |      |  |                           |   |
| (3) Date:   | Air temp | Veg cover | Turbidity |         |              |      |      |                            |      |      |                 |      |  |                           |   |
| Adult totals:   |          |           |           | 0       |              |      | 0    |                            |      | 0    |                 |      |  |                           |   |
| (4) Date:   | Air temp | Veg cover | Turbidity |         |              |      |      |                            |      |      |                 |      |  |                           |   |
| Adult totals:   |          |           |           | 0       |              |      | 0    |                            |      | 0    |                 |      |  |                           |   |
| (5) Date:   | Air temp | Veg cover | Turbidity |         |              |      |      |                            |      |      |                 |      |  |                           |   |
| Adult totals:   |          |           |           | 0       |              |      | 0    |                            |      | 0    |                 |      |  |                           |   |
| (6) Date:   | Air temp | Veg cover | Turbidity |         |              |      |      |                            |      |      |                 |      |  |                           |   |
| Adult totals:   |          |           |           | 0       |              |      | 0    |                            |      | 0    |                 |      |  |                           |   |
| (7) Date:   | Air temp | Veg cover | Turbidity |         |              |      |      |                            |      |      |                 |      |  |                           |   |
| Adult totals:   |          |           |           | 0       |              |      | 0    |                            |      | 0    |                 |      |  |                           |   |
| (8) Date:   | Air temp | Veg cover | Turbidity |         |              |      |      |                            |      |      |                 |      |  |                           |   |
| Adult totals:   |          |           |           | 0       |              |      | 0    |                            |      | 0    |                 |      |  |                           |   |
| <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |          |           |           |         |              |      | 0    |                            |      |      |                 |      |  |                           |   |

Comments and constraints:



03. LTC GCN Method Statement

TBC: Lower Thames Crossing

C4.3 Aquatic amphibian survey (conventional methods) - GCN results (cont - Pond 5)

NB: This page prints in landscape format

| Pond reference (e.g. Pond 5)  |          |           |           | Method:       | Torch        |      |      | Bottle-trap                |      |      | Net             |      |   | Egg search<br>eggs found? | Larvae<br>larvae found?<br>(any method) |
|---|----------|-----------|-----------|---------------|--------------|------|------|----------------------------|------|------|-----------------|------|---|---------------------------|---|
| No. of survey visits to this pond:  |          |           |           |               | Torch power: |      |      | No. of traps used in pond: |      |      | Sex/life stage: |      |   |                           |   |
|   |          |           |           | Male          | Female       | Imm. | Male | Female                     | Imm. | Male | Female          | Imm. |   |                           |   |
| (1) Date:   | Air temp | Veg cover | Turbidity | Adult totals: |              |      | 0    |                            |      | 0    |                 |      | 0 |                           |   |
| (2) Date:   | Air temp | Veg cover | Turbidity | Adult totals: |              |      | 0    |                            |      | 0    |                 |      | 0 |                           |   |
| (3) Date:   | Air temp | Veg cover | Turbidity | Adult totals: |              |      | 0    |                            |      | 0    |                 |      | 0 |                           |   |
| (4) Date:   | Air temp | Veg cover | Turbidity | Adult totals: |              |      | 0    |                            |      | 0    |                 |      | 0 |                           |   |
| (5) Date:   | Air temp | Veg cover | Turbidity | Adult totals: |              |      | 0    |                            |      | 0    |                 |      | 0 |                           |   |
| (6) Date:   | Air temp | Veg cover | Turbidity | Adult totals: |              |      | 0    |                            |      | 0    |                 |      | 0 |                           |   |
| (7) Date:   | Air temp | Veg cover | Turbidity | Adult totals: |              |      | 0    |                            |      | 0    |                 |      | 0 |                           |   |
| (8) Date:   | Air temp | Veg cover | Turbidity | Adult totals: |              |      | 0    |                            |      | 0    |                 |      | 0 |                           |   |
| <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |          |           |           |               |              |      | 0    |                            |      | 0    |                 |      |   |                           |   |

Comments and constraints:

03. LTC GCN Method Statement

TBC: Lower Thames Crossing

C4.3 Aquatic amphibian survey (conventional methods) - GCN results (cont - Pond 6)

NB: This page prints in landscape format

| Pond reference (e.g. Pond 6)  |          |           |           | Method:         | Torch        |  |      | Bottle-trap                |      |      | Net    |      |      | Egg search<br>eggs found? | Larvae<br>larvae found?<br>(any method) |  |
|---|----------|-----------|-----------|-----------------|--------------|--|------|----------------------------|------|------|--------|------|------|---------------------------|---|--|
| No. of survey visits to this pond:  |          |           |           |                 | Torch power: |  |      | No. of traps used in pond: |      |      |        |      |      |                           |   |  |
|   |          |           |           | Sex/life stage: |              |  | Male | Female                     | Imm. | Male | Female | Imm. | Male | Female                    | Imm.                                    |  |
| (1) Date:   | Air temp | Veg cover | Turbidity |                 |              |  |      |                            |      |      |        |      |      |                           |   |  |
|   |          |           |           | Adult totals:   |              |  | 0    |                            |      | 0    |        |      | 0    |                           |   |  |
| (2) Date:   | Air temp | Veg cover | Turbidity |                 |              |  |      |                            |      |      |        |      |      |                           |   |  |
|   |          |           |           | Adult totals:   |              |  | 0    |                            |      | 0    |        |      | 0    |                           |   |  |
| (3) Date:   | Air temp | Veg cover | Turbidity |                 |              |  |      |                            |      |      |        |      |      |                           |   |  |
|   |          |           |           | Adult totals:   |              |  | 0    |                            |      | 0    |        |      | 0    |                           |   |  |
| (4) Date:   | Air temp | Veg cover | Turbidity |                 |              |  |      |                            |      |      |        |      |      |                           |   |  |
|   |          |           |           | Adult totals:   |              |  | 0    |                            |      | 0    |        |      | 0    |                           |   |  |
| (5) Date:   | Air temp | Veg cover | Turbidity |                 |              |  |      |                            |      |      |        |      |      |                           |   |  |
|   |          |           |           | Adult totals:   |              |  | 0    |                            |      | 0    |        |      | 0    |                           |   |  |
| (6) Date:   | Air temp | Veg cover | Turbidity |                 |              |  |      |                            |      |      |        |      |      |                           |   |  |
|   |          |           |           | Adult totals:   |              |  | 0    |                            |      | 0    |        |      | 0    |                           |   |  |
| (7) Date:   | Air temp | Veg cover | Turbidity |                 |              |  |      |                            |      |      |        |      |      |                           |   |  |
|   |          |           |           | Adult totals:   |              |  | 0    |                            |      | 0    |        |      | 0    |                           |   |  |
| (8) Date:   | Air temp | Veg cover | Turbidity |                 |              |  |      |                            |      |      |        |      |      |                           |   |  |
|   |          |           |           | Adult totals:   |              |  | 0    |                            |      | 0    |        |      | 0    |                           |   |  |
| <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |          |           |           |                 |              |  |      |                            |      | 0    |        |      |      |                           |   |  |

Comments and constraints:

03. LTC GCN Method Statement

TBC: Lower Thames Crossing

C4.3 Aquatic amphibian survey (conventional methods) - GCN results (cont - Pond 7)

NB: This page prints in landscape format

| Pond reference (e.g. Pond 7)  |          |           |           | Method:         | Torch        |  |      | Bottle-trap                |      |      | Net    |      |      | Egg search<br>eggs found? | Larvae<br>larvae found?<br>(any method) |  |
|---|----------|-----------|-----------|-----------------|--------------|--|------|----------------------------|------|------|--------|------|------|---------------------------|---|--|
| No. of survey visits to this pond:  |          |           |           |                 | Torch power: |  |      | No. of traps used in pond: |      |      |        |      |      |                           |   |  |
|   |          |           |           | Sex/life stage: |              |  | Male | Female                     | Imm. | Male | Female | Imm. | Male | Female                    | Imm.                                    |  |
| (1) Date:   | Air temp | Veg cover | Turbidity |                 |              |  |      |                            |      |      |        |      |      |                           |   |  |
|   |          |           |           | Adult totals:   |              |  | 0    |                            |      | 0    |        |      | 0    |                           |   |  |
| (2) Date:   | Air temp | Veg cover | Turbidity |                 |              |  |      |                            |      |      |        |      |      |                           |   |  |
|   |          |           |           | Adult totals:   |              |  | 0    |                            |      | 0    |        |      | 0    |                           |   |  |
| (3) Date:   | Air temp | Veg cover | Turbidity |                 |              |  |      |                            |      |      |        |      |      |                           |   |  |
|   |          |           |           | Adult totals:   |              |  | 0    |                            |      | 0    |        |      | 0    |                           |   |  |
| (4) Date:   | Air temp | Veg cover | Turbidity |                 |              |  |      |                            |      |      |        |      |      |                           |   |  |
|   |          |           |           | Adult totals:   |              |  | 0    |                            |      | 0    |        |      | 0    |                           |   |  |
| (5) Date:   | Air temp | Veg cover | Turbidity |                 |              |  |      |                            |      |      |        |      |      |                           |   |  |
|   |          |           |           | Adult totals:   |              |  | 0    |                            |      | 0    |        |      | 0    |                           |   |  |
| (6) Date:   | Air temp | Veg cover | Turbidity |                 |              |  |      |                            |      |      |        |      |      |                           |   |  |
|   |          |           |           | Adult totals:   |              |  | 0    |                            |      | 0    |        |      | 0    |                           |   |  |
| (7) Date:   | Air temp | Veg cover | Turbidity |                 |              |  |      |                            |      |      |        |      |      |                           |   |  |
|   |          |           |           | Adult totals:   |              |  | 0    |                            |      | 0    |        |      | 0    |                           |   |  |
| (8) Date:   | Air temp | Veg cover | Turbidity |                 |              |  |      |                            |      |      |        |      |      |                           |   |  |
|   |          |           |           | Adult totals:   |              |  | 0    |                            |      | 0    |        |      | 0    |                           |   |  |
| <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |          |           |           |                 |              |  |      |                            |      | 0    |        |      |      |                           |   |  |

Comments and constraints:

03. LTC GCN Method Statement

TBC: Lower Thames Crossing

C4.3 Aquatic amphibian survey (conventional methods) - GCN results (cont - Pond 8)

NB: This page prints in landscape format

| Pond reference (e.g. Pond 8)  |          |           |           | Method:       | Torch        |      |      | Bottle-trap                |      |      | Net             |      |   | Egg search<br>eggs found? | Larvae<br>larvae found?<br>(any method) |
|---|----------|-----------|-----------|---------------|--------------|------|------|----------------------------|------|------|-----------------|------|---|---------------------------|---|
| No. of survey visits to this pond:  |          |           |           |               | Torch power: |      |      | No. of traps used in pond: |      |      | Sex/life stage: |      |   |                           |   |
|   |          |           |           | Male          | Female       | Imm. | Male | Female                     | Imm. | Male | Female          | Imm. |   |                           |   |
| (1) Date:   | Air temp | Veg cover | Turbidity | Adult totals: |              |      | 0    |                            |      | 0    |                 |      | 0 |                           |   |
| (2) Date:   | Air temp | Veg cover | Turbidity | Adult totals: |              |      | 0    |                            |      | 0    |                 |      | 0 |                           |   |
| (3) Date:   | Air temp | Veg cover | Turbidity | Adult totals: |              |      | 0    |                            |      | 0    |                 |      | 0 |                           |   |
| (4) Date:   | Air temp | Veg cover | Turbidity | Adult totals: |              |      | 0    |                            |      | 0    |                 |      | 0 |                           |   |
| (5) Date:   | Air temp | Veg cover | Turbidity | Adult totals: |              |      | 0    |                            |      | 0    |                 |      | 0 |                           |   |
| (6) Date:   | Air temp | Veg cover | Turbidity | Adult totals: |              |      | 0    |                            |      | 0    |                 |      | 0 |                           |   |
| (7) Date:   | Air temp | Veg cover | Turbidity | Adult totals: |              |      | 0    |                            |      | 0    |                 |      | 0 |                           |   |
| (8) Date:   | Air temp | Veg cover | Turbidity | Adult totals: |              |      | 0    |                            |      | 0    |                 |      | 0 |                           |   |
| <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |          |           |           |               |              |      | 0    |                            |      | 0    |                 |      |   |                           |   |

Comments and constraints:

03. LTC GCN Method Statement

TBC: Lower Thames Crossing

C4.3 Aquatic amphibian survey (conventional methods) - GCN results (cont - Pond 9)

NB: This page prints in landscape format

| Pond reference (e.g. Pond 9)  |          |           |           | Method:         | Torch        |  |      | Bottle-trap                |      |      | Net    |      |      | Egg search<br>eggs found? | Larvae<br>larvae found?<br>(any method) |
|---|----------|-----------|-----------|-----------------|--------------|--|------|----------------------------|------|------|--------|------|------|---------------------------|---|
| No. of survey visits to this pond:  |          |           |           |                 | Torch power: |  |      | No. of traps used in pond: |      |      |        |      |      |                           |   |
|   |          |           |           | Sex/life stage: |              |  | Male | Female                     | Imm. | Male | Female | Imm. | Male | Female                    | Imm.                                    |
| (1) Date:   | Air temp | Veg cover | Turbidity |                 |              |  |      |                            |      |      |        |      |      |                           |   |
|   |          |           |           | Adult totals:   |              |  | 0    |                            |      | 0    |        |      | 0    |                           |   |
| (2) Date:   | Air temp | Veg cover | Turbidity |                 |              |  |      |                            |      |      |        |      |      |                           |   |
|   |          |           |           | Adult totals:   |              |  | 0    |                            |      | 0    |        |      | 0    |                           |   |
| (3) Date:   | Air temp | Veg cover | Turbidity |                 |              |  |      |                            |      |      |        |      |      |                           |   |
|   |          |           |           | Adult totals:   |              |  | 0    |                            |      | 0    |        |      | 0    |                           |   |
| (4) Date:   | Air temp | Veg cover | Turbidity |                 |              |  |      |                            |      |      |        |      |      |                           |   |
|   |          |           |           | Adult totals:   |              |  | 0    |                            |      | 0    |        |      | 0    |                           |   |
| (5) Date:   | Air temp | Veg cover | Turbidity |                 |              |  |      |                            |      |      |        |      |      |                           |   |
|   |          |           |           | Adult totals:   |              |  | 0    |                            |      | 0    |        |      | 0    |                           |   |
| (6) Date:   | Air temp | Veg cover | Turbidity |                 |              |  |      |                            |      |      |        |      |      |                           |   |
|   |          |           |           | Adult totals:   |              |  | 0    |                            |      | 0    |        |      | 0    |                           |   |
| (7) Date:   | Air temp | Veg cover | Turbidity |                 |              |  |      |                            |      |      |        |      |      |                           |   |
|   |          |           |           | Adult totals:   |              |  | 0    |                            |      | 0    |        |      | 0    |                           |   |
| (8) Date:   | Air temp | Veg cover | Turbidity |                 |              |  |      |                            |      |      |        |      |      |                           |   |
|   |          |           |           | Adult totals:   |              |  | 0    |                            |      | 0    |        |      | 0    |                           |   |
| <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |          |           |           |                 |              |  |      |                            |      | 0    |        |      |      |                           |   |

Comments and constraints:

03. LTC GCN Method Statement

TBC: Lower Thames Crossing

C4.3 Aquatic amphibian survey (conventional methods) - GCN results (Pond 10)

NB: This page prints in landscape format

| Pond reference (e.g. Pond 10)   |          |           |           | Method:         | Torch        |        |      | Bottle-trap                |        |      | Net             |        |      | Egg search<br>eggs found? | Larvae<br>larvae found?<br>(any method) |
|---|----------|-----------|-----------|-----------------|--------------|--------|------|----------------------------|--------|------|-----------------|--------|------|---------------------------|---|
| No. of survey visits to this pond:  |          |           |           |                 | Torch power: |        |      | No. of traps used in pond: |        |      | Sex/life stage: |        |      |                           |   |
| Date  | Air temp | Veg cover | Turbidity | Sex/life stage: | Male         | Female | Imm. | Male                       | Female | Imm. | Male            | Female | Imm. |                           |   |
| (1) Date:   |          |           |           |                 |              |        |      |                            |        |      |                 |        |      |                           |   |
|   |          |           |           | Adult totals:   | 0            |        |      | 0                          |        |      | 0               |        |      |                           |   |
| (2) Date:   |          |           |           |                 |              |        |      |                            |        |      |                 |        |      |                           |   |
|   |          |           |           | Adult totals:   | 0            |        |      | 0                          |        |      | 0               |        |      |                           |   |
| (3) Date:   |          |           |           |                 |              |        |      |                            |        |      |                 |        |      |                           |   |
|   |          |           |           | Adult totals:   | 0            |        |      | 0                          |        |      | 0               |        |      |                           |   |
| (4) Date:   |          |           |           |                 |              |        |      |                            |        |      |                 |        |      |                           |   |
|   |          |           |           | Adult totals:   | 0            |        |      | 0                          |        |      | 0               |        |      |                           |   |
| (5) Date:   |          |           |           |                 |              |        |      |                            |        |      |                 |        |      |                           |   |
|   |          |           |           | Adult totals:   | 0            |        |      | 0                          |        |      | 0               |        |      |                           |   |
| (6) Date:   |          |           |           |                 |              |        |      |                            |        |      |                 |        |      |                           |   |
|   |          |           |           | Adult totals:   | 0            |        |      | 0                          |        |      | 0               |        |      |                           |   |
| (7) Date:   |          |           |           |                 |              |        |      |                            |        |      |                 |        |      |                           |   |
|   |          |           |           | Adult totals:   | 0            |        |      | 0                          |        |      | 0               |        |      |                           |   |
| (8) Date:   |          |           |           |                 |              |        |      |                            |        |      |                 |        |      |                           |   |
|   |          |           |           | Adult totals:   | 0            |        |      | 0                          |        |      | 0               |        |      |                           |   |
| <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |          |           |           |                 |              |        |      | 0                          |        |      |                 |        |      |                           |   |

Comments and constraints:

*TBC: Lower Thames Crossing*

C4.4 Aquatic amphibian survey (continued)

1. Confirm that you have undertaken a walkover survey within 3 months prior to submission.....

Yes  No

2. If the survey was not undertaken this year, please confirm whether there are any changes to habitats (aquatic or terrestrial). If yes, please detail the nature of the changes below.

[Next Section](#)

03. LTC GCN Method Statement

TBC: Lower Thames Crossing

**C4.3 Aquatic amphibian survey (conventional methods) - GCN results - Pond 11**

Was an aquatic amphibian survey done?  If no, proceed to next section. Return to [Ponds 1 - 10 tab](#)

Total no. of ponds surveyed:

Surveyor name(s):

**Important. Read before completing this section:** Enter GCN survey data in relevant boxes in the table below (for Pond 1) and those on subsequent sheets (for up to 9 other ponds). Enter "0" where you did a survey and found no newts; leave box blank if no survey was done. This format is designed for a typical single season survey with typical methods and effort. Explain atypical methods/effort later. For multiple year surveys, give details in annex (convert data to this format if possible). Use these tables to provide details only for the most recent season's survey. Append older survey results in full. Automatic yellow highlight indicates possible detectability problem (see Evaluation & interpretation section, later).

| Pond reference (e.g. "Pond 11") - below   |          |           |           | Method:                        | Torch        |      |                                | Bottle-trap                |      |                                | Net    |      |  | Egg search  | Larvae                        |
|---|----------|-----------|-----------|--------------------------------|--------------|------|--------------------------------|----------------------------|------|--------------------------------|--------|------|--|-------------|-------------------------------|
|   |          |           |           |                                | Torch power: |      |                                | No. of traps used in pond: |      |                                |        |      |  | eggs found? | larvae found?<br>(any method) |
| No. of survey visits to this pond:  |          |           |           | <input type="text" value="0"/> |              |      |                                |                            |      |                                |        |      |  |             |                               |
| Sex/life stage:   |          |           |           | Male                           | Female       | Imm. | Male                           | Female                     | Imm. | Male                           | Female | Imm. |  |             |                               |
| (1) Date:   | Air temp | Veg cover | Turbidity |                                |              |      |                                |                            |      |                                |        |      |  |             |                               |
| Adult totals:   |          |           |           | <input type="text" value="0"/> |              |      | <input type="text" value="0"/> |                            |      | <input type="text" value="0"/> |        |      |  |             |                               |
| (2) Date:   | Air temp | Veg cover | Turbidity |                                |              |      |                                |                            |      |                                |        |      |  |             |                               |
| Adult totals:   |          |           |           | <input type="text" value="0"/> |              |      | <input type="text" value="0"/> |                            |      | <input type="text" value="0"/> |        |      |  |             |                               |
| (3) Date:   | Air temp | Veg cover | Turbidity |                                |              |      |                                |                            |      |                                |        |      |  |             |                               |
| Adult totals:   |          |           |           | <input type="text" value="0"/> |              |      | <input type="text" value="0"/> |                            |      | <input type="text" value="0"/> |        |      |  |             |                               |
| (4) Date:   | Air temp | Veg cover | Turbidity |                                |              |      |                                |                            |      |                                |        |      |  |             |                               |
| Adult totals:   |          |           |           | <input type="text" value="0"/> |              |      | <input type="text" value="0"/> |                            |      | <input type="text" value="0"/> |        |      |  |             |                               |
| (5) Date:   | Air temp | Veg cover | Turbidity |                                |              |      |                                |                            |      |                                |        |      |  |             |                               |
| Adult totals:   |          |           |           | <input type="text" value="0"/> |              |      | <input type="text" value="0"/> |                            |      | <input type="text" value="0"/> |        |      |  |             |                               |
| (6) Date:   | Air temp | Veg cover | Turbidity |                                |              |      |                                |                            |      |                                |        |      |  |             |                               |
| Adult totals:   |          |           |           | <input type="text" value="0"/> |              |      | <input type="text" value="0"/> |                            |      | <input type="text" value="0"/> |        |      |  |             |                               |
| (7) Date:   | Air temp | Veg cover | Turbidity |                                |              |      |                                |                            |      |                                |        |      |  |             |                               |
| Adult totals:   |          |           |           | <input type="text" value="0"/> |              |      | <input type="text" value="0"/> |                            |      | <input type="text" value="0"/> |        |      |  |             |                               |
| (8) Date:   | Air temp | Veg cover | Turbidity |                                |              |      |                                |                            |      |                                |        |      |  |             |                               |
| Adult totals:   |          |           |           | <input type="text" value="0"/> |              |      | <input type="text" value="0"/> |                            |      | <input type="text" value="0"/> |        |      |  |             |                               |
| <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |          |           |           |                                |              |      | <input type="text" value="0"/> |                            |      |                                |        |      |  |             |                               |

Comments and constraints:



03. LTC GCN Method Statement

TBC: Lower Thames Crossing

C4.3 Aquatic amphibian survey (conventional methods)- GCN results (cont - Pond 12)

NB: This page prints in landscape format

| Pond reference (e.g. Pond 12)   |          |           |           | Method:       | Torch        |      |      | Bottle-trap                |      |      | Net    |      |  | Egg search<br>eggs found? | Larvae<br>larvae found?<br>(any method) |
|---|----------|-----------|-----------|---------------|--------------|------|------|----------------------------|------|------|--------|------|--|---------------------------|---|
| No. of survey visits to this pond:  |          |           |           |               | Torch power: |      |      | No. of traps used in pond: |      |      |        |      |  |                           |   |
| Sex/life stage:   |          |           |           | Male          | Female       | Imm. | Male | Female                     | Imm. | Male | Female | Imm. |  |                           |   |
| (1) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (2) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (3) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (4) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (5) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (6) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (7) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (8) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |          |           |           |               |              |      | 0    |                            |      |      |        |      |  |                           |   |

Comments and constraints:

03. LTC GCN Method Statement

TBC: Lower Thames Crossing

C4.3 Aquatic amphibian survey (conventional surveys- GCN results (cont - Pond 13)

NB: This page prints in landscape format

| Pond reference (e.g. Pond 13)   |          |           |           | Method:       | Torch        |      |      | Bottle-trap                |      |      | Net    |      |  | Egg search  | Larvae                        |
|---|----------|-----------|-----------|---------------|--------------|------|------|----------------------------|------|------|--------|------|--|-------------|-------------------------------|
| No. of survey visits to this pond:  |          |           |           |               | Torch power: |      |      | No. of traps used in pond: |      |      |        |      |  | eggs found? | larvae found?<br>(any method) |
| Sex/life stage:   |          |           |           | Male          | Female       | Imm. | Male | Female                     | Imm. | Male | Female | Imm. |  |             |                               |
| (1) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |             |                               |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |             |                               |
| (2) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |             |                               |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |             |                               |
| (3) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |             |                               |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |             |                               |
| (4) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |             |                               |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |             |                               |
| (5) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |             |                               |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |             |                               |
| (6) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |             |                               |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |             |                               |
| (7) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |             |                               |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |             |                               |
| (8) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |             |                               |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |             |                               |
| <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |          |           |           |               |              |      | 0    |                            |      |      |        |      |  |             |                               |
| Comments and constraints:   |          |           |           |               |              |      |      |                            |      |      |        |      |  |             |                               |

03. LTC GCN Method Statement

TBC: Lower Thames Crossing

C4.3 Aquatic amphibian survey (conventional methods) - GCN results (cont- Pond 14)

NB: This page prints in landscape format

| Pond reference (e.g. Pond 14)   |          |           |           | Method:       | Torch        |      |      | Bottle-trap                |      |      | Net    |      |  | Egg search<br>eggs found? | Larvae<br>larvae found?<br>(any method) |
|---|----------|-----------|-----------|---------------|--------------|------|------|----------------------------|------|------|--------|------|--|---------------------------|---|
| No. of survey visits to this pond:  |          |           |           |               | Torch power: |      |      | No. of traps used in pond: |      |      |        |      |  |                           |   |
| Sex/life stage:   |          |           |           | Male          | Female       | Imm. | Male | Female                     | Imm. | Male | Female | Imm. |  |                           |   |
| (1) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (2) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (3) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (4) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (5) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (6) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (7) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (8) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |          |           |           |               |              |      | 0    |                            |      |      |        |      |  |                           |   |

Comments and constraints:

03. LTC GCN Method Statement

TBC: Lower Thames Crossing

C4.3 Aquatic amphibian survey (conventional methods) - GCN results (cont - Pond 15)

NB: This page prints in landscape format

| Pond reference (e.g. Pond 15)   |          |           |           | Method:       | Torch        |      |      | Bottle-trap                |      |      | Net    |      |  | Egg search<br>eggs found? | Larvae<br>larvae found?<br>(any method) |
|---|----------|-----------|-----------|---------------|--------------|------|------|----------------------------|------|------|--------|------|--|---------------------------|---|
| No. of survey visits to this pond:  |          |           |           |               | Torch power: |      |      | No. of traps used in pond: |      |      |        |      |  |                           |   |
| Sex/life stage:   |          |           |           | Male          | Female       | Imm. | Male | Female                     | Imm. | Male | Female | Imm. |  |                           |   |
| (1) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (2) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (3) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (4) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (5) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (6) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (7) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (8) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |          |           |           |               |              |      | 0    |                            |      |      |        |      |  |                           |   |

Comments and constraints:

03. LTC GCN Method Statement

TBC: Lower Thames Crossing

C4.3 Aquatic amphibian survey (conventional methods) - GCN results (cont - Pond 16)

NB: This page prints in landscape format

| Pond reference (e.g. Pond 16)   |          |           |           | Method:       | Torch        |      |      | Bottle-trap                |      |      | Net    |      |  | Egg search<br>eggs found? | Larvae<br>larvae found?<br>(any method) |
|---|----------|-----------|-----------|---------------|--------------|------|------|----------------------------|------|------|--------|------|--|---------------------------|---|
| No. of survey visits to this pond:  |          |           |           |               | Torch power: |      |      | No. of traps used in pond: |      |      |        |      |  |                           |   |
| Sex/life stage:   |          |           |           | Male          | Female       | Imm. | Male | Female                     | Imm. | Male | Female | Imm. |  |                           |   |
| (1) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (2) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (3) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (4) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (5) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (6) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (7) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (8) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |          |           |           |               |              |      | 0    |                            |      |      |        |      |  |                           |   |

Comments and constraints:

03. LTC GCN Method Statement

TBC: Lower Thames Crossing

C4.3 Aquatic amphibian survey (conventional methods) - GCN results (cont - Pond 17)

NB: This page prints in landscape format

| Pond reference (e.g. Pond 17)   |          |           |           | Method:       | Torch        |      |      | Bottle-trap                |      |      | Net    |      |  | Egg search<br>eggs found? | Larvae<br>larvae found?<br>(any method) |
|---|----------|-----------|-----------|---------------|--------------|------|------|----------------------------|------|------|--------|------|--|---------------------------|---|
| No. of survey visits to this pond:  |          |           |           |               | Torch power: |      |      | No. of traps used in pond: |      |      |        |      |  |                           |   |
| Sex/life stage:   |          |           |           | Male          | Female       | Imm. | Male | Female                     | Imm. | Male | Female | Imm. |  |                           |   |
| (1) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (2) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (3) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (4) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (5) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (6) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (7) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (8) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |          |           |           |               |              |      | 0    |                            |      |      |        |      |  |                           |   |

Comments and constraints:

03. LTC GCN Method Statement

TBC: Lower Thames Crossing

C4.3 Aquatic amphibian survey (conventional methods)- GCN results (cont - Pond 18)

NB: This page prints in landscape format

| Pond reference (e.g. Pond 18)   |          |           |           | Method:       | Torch        |      |      | Bottle-trap                |      |      | Net    |      |  | Egg search<br>eggs found? | Larvae<br>larvae found?<br>(any method) |
|---|----------|-----------|-----------|---------------|--------------|------|------|----------------------------|------|------|--------|------|--|---------------------------|---|
| No. of survey visits to this pond:  |          |           |           |               | Torch power: |      |      | No. of traps used in pond: |      |      |        |      |  |                           |   |
| Sex/life stage:   |          |           |           | Male          | Female       | Imm. | Male | Female                     | Imm. | Male | Female | Imm. |  |                           |   |
| (1) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (2) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (3) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (4) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (5) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (6) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (7) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (8) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |          |           |           |               |              |      | 0    |                            |      |      |        |      |  |                           |   |

Comments and constraints:

03. LTC GCN Method Statement

TBC: Lower Thames Crossing

C4.3 Aquatic amphibian survey (conventional methods) - GCN results (cont - Pond 19)

NB: This page prints in landscape format

| Pond reference (e.g. Pond 19):  |          |           |           | Method:       | Torch        |      |      | Bottle-trap                |      |      | Net    |      |  | Egg search<br>eggs found? | Larvae<br>larvae found?<br>(any method) |
|---|----------|-----------|-----------|---------------|--------------|------|------|----------------------------|------|------|--------|------|--|---------------------------|---|
| No. of survey visits to this pond:  |          |           |           |               | Torch power: |      |      | No. of traps used in pond: |      |      |        |      |  |                           |   |
| Sex/life stage:   |          |           |           | Male          | Female       | Imm. | Male | Female                     | Imm. | Male | Female | Imm. |  |                           |   |
| (1) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (2) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (3) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (4) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (5) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (6) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (7) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (8) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |          |           |           |               |              |      | 0    |                            |      |      |        |      |  |                           |   |

Comments and constraints:



03. LTC GCN Method Statement

TBC: Lower Thames Crossing

C4.3 Aquatic amphibian survey (conventional methods) - GCN results (cont - Pond 20)

NB: This page prints in landscape format

| Pond reference (e.g. Pond 20)   |          |           |           | Method:       | Torch        |      |      | Bottle-trap                |      |      | Net    |      |  | Egg search<br>eggs found? | Larvae<br>larvae found?<br>(any method) |
|---|----------|-----------|-----------|---------------|--------------|------|------|----------------------------|------|------|--------|------|--|---------------------------|---|
| No. of survey visits to this pond:  |          |           |           |               | Torch power: |      |      | No. of traps used in pond: |      |      |        |      |  |                           |   |
| Sex/life stage:   |          |           |           | Male          | Female       | Imm. | Male | Female                     | Imm. | Male | Female | Imm. |  |                           |   |
| (1) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (2) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (3) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (4) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (5) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (6) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (7) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (8) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |          |           |           |               |              |      | 0    |                            |      |      |        |      |  |                           |   |

Comments and constraints:

03. LTC GCN Method Statement

TBC: Lower Thames Crossing

**C4.3 Aquatic amphibian survey (conventional methods) - GCN results - Pond 21**

Was an aquatic amphibian survey done?  If no, proceed to next section. Return to [Ponds 1 - 10 tab](#)

Total no. of ponds surveyed:

Surveyor name(s):

**Important. Read before completing this section:** Enter GCN survey data in relevant boxes in the table below (for Pond 1) and those on subsequent sheets (for up to 9 other ponds). Enter "0" where you did a survey and found no newts; leave box blank if no survey was done. This format is designed for a typical single season survey with typical methods and effort. Explain atypical methods/effort later. For multiple year surveys, give details in annex (convert data to this format if possible). Use these tables to provide details only for the most recent season's survey. Append older survey results in full. Automatic yellow highlight indicates possible detectability problem (see Evaluation & interpretation section, later).

| Pond reference (e.g. "Pond 21") - below   |          |           |           | Method:                        | Torch        |      |                                | Bottle-trap                |      |                                | Net    |      |  | Egg search  | Larvae                        |
|---|----------|-----------|-----------|--------------------------------|--------------|------|--------------------------------|----------------------------|------|--------------------------------|--------|------|--|-------------|-------------------------------|
|   |          |           |           |                                | Torch power: |      |                                | No. of traps used in pond: |      |                                |        |      |  | eggs found? | larvae found?<br>(any method) |
| No. of survey visits to this pond:  |          |           |           | <input type="text" value="0"/> |              |      |                                |                            |      |                                |        |      |  |             |                               |
| Sex/life stage:   |          |           |           | Male                           | Female       | Imm. | Male                           | Female                     | Imm. | Male                           | Female | Imm. |  |             |                               |
| (1) Date:   | Air temp | Veg cover | Turbidity |                                |              |      |                                |                            |      |                                |        |      |  |             |                               |
| Adult totals:   |          |           |           | <input type="text" value="0"/> |              |      | <input type="text" value="0"/> |                            |      | <input type="text" value="0"/> |        |      |  |             |                               |
| (2) Date:   | Air temp | Veg cover | Turbidity |                                |              |      |                                |                            |      |                                |        |      |  |             |                               |
| Adult totals:   |          |           |           | <input type="text" value="0"/> |              |      | <input type="text" value="0"/> |                            |      | <input type="text" value="0"/> |        |      |  |             |                               |
| (3) Date:   | Air temp | Veg cover | Turbidity |                                |              |      |                                |                            |      |                                |        |      |  |             |                               |
| Adult totals:   |          |           |           | <input type="text" value="0"/> |              |      | <input type="text" value="0"/> |                            |      | <input type="text" value="0"/> |        |      |  |             |                               |
| (4) Date:   | Air temp | Veg cover | Turbidity |                                |              |      |                                |                            |      |                                |        |      |  |             |                               |
| Adult totals:   |          |           |           | <input type="text" value="0"/> |              |      | <input type="text" value="0"/> |                            |      | <input type="text" value="0"/> |        |      |  |             |                               |
| (5) Date:   | Air temp | Veg cover | Turbidity |                                |              |      |                                |                            |      |                                |        |      |  |             |                               |
| Adult totals:   |          |           |           | <input type="text" value="0"/> |              |      | <input type="text" value="0"/> |                            |      | <input type="text" value="0"/> |        |      |  |             |                               |
| (6) Date:   | Air temp | Veg cover | Turbidity |                                |              |      |                                |                            |      |                                |        |      |  |             |                               |
| Adult totals:   |          |           |           | <input type="text" value="0"/> |              |      | <input type="text" value="0"/> |                            |      | <input type="text" value="0"/> |        |      |  |             |                               |
| (7) Date:   | Air temp | Veg cover | Turbidity |                                |              |      |                                |                            |      |                                |        |      |  |             |                               |
| Adult totals:   |          |           |           | <input type="text" value="0"/> |              |      | <input type="text" value="0"/> |                            |      | <input type="text" value="0"/> |        |      |  |             |                               |
| (8) Date:   | Air temp | Veg cover | Turbidity |                                |              |      |                                |                            |      |                                |        |      |  |             |                               |
| Adult totals:   |          |           |           | <input type="text" value="0"/> |              |      | <input type="text" value="0"/> |                            |      | <input type="text" value="0"/> |        |      |  |             |                               |
| <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |          |           |           |                                |              |      | <input type="text" value="0"/> |                            |      |                                |        |      |  |             |                               |

Comments and constraints:

03. LTC GCN Method Statement

TBC: Lower Thames Crossing

C4.3 Aquatic amphibian survey (conventional methods)- GCN results (cont.)

NB: This page prints in landscape format

| Pond reference (e.g. Pond 22)   |          |           |           | Method:       | Torch        |      |      | Bottle-trap                |      |      | Net    |      |  | Egg search<br>eggs found? | Larvae<br>larvae found?<br>(any method) |
|---|----------|-----------|-----------|---------------|--------------|------|------|----------------------------|------|------|--------|------|--|---------------------------|---|
| No. of survey visits to this pond:  |          |           |           |               | Torch power: |      |      | No. of traps used in pond: |      |      |        |      |  |                           |   |
| Sex/life stage:   |          |           |           | Male          | Female       | Imm. | Male | Female                     | Imm. | Male | Female | Imm. |  |                           |   |
| (1) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (2) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (3) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (4) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (5) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (6) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (7) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (8) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |          |           |           |               |              |      | 0    |                            |      |      |        |      |  |                           |   |

Comments and constraints:

03. LTC GCN Method Statement

TBC: Lower Thames Crossing

C4.3 Aquatic amphibian survey (conventional surveys- GCN results (cont.))

NB: This page prints in landscape format

| Pond reference (e.g. Pond 23)   |          |           |           | Method:       | Torch        |      |      | Bottle-trap                |      |      | Net    |      |  | Egg search<br>eggs found? | Larvae<br>larvae found?<br>(any method) |
|---|----------|-----------|-----------|---------------|--------------|------|------|----------------------------|------|------|--------|------|--|---------------------------|---|
| No. of survey visits to this pond:  |          |           |           |               | Torch power: |      |      | No. of traps used in pond: |      |      |        |      |  |                           |   |
| Sex/life stage:   |          |           |           | Male          | Female       | Imm. | Male | Female                     | Imm. | Male | Female | Imm. |  |                           |   |
| (1) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (2) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (3) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (4) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (5) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (6) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (7) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (8) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |          |           |           |               |              |      | 0    |                            |      |      |        |      |  |                           |   |

Comments and constraints:

03. LTC GCN Method Statement

TBC: Lower Thames Crossing

C4.3 Aquatic amphibian survey (conventional methods) - GCN results (cont.)

NB: This page prints in landscape format

| Pond reference (e.g. Pond 24)   |          |           |           | Method:       | Torch        |      |      | Bottle-trap                |      |      | Net    |      |  | Egg search<br>eggs found? | Larvae<br>larvae found?<br>(any method) |
|---|----------|-----------|-----------|---------------|--------------|------|------|----------------------------|------|------|--------|------|--|---------------------------|---|
| No. of survey visits to this pond:  |          |           |           |               | Torch power: |      |      | No. of traps used in pond: |      |      |        |      |  |                           |   |
| Sex/life stage:   |          |           |           | Male          | Female       | Imm. | Male | Female                     | Imm. | Male | Female | Imm. |  |                           |   |
| (1) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (2) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (3) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (4) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (5) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (6) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (7) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (8) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |          |           |           |               |              |      | 0    |                            |      |      |        |      |  |                           |   |

Comments and constraints:

03. LTC GCN Method Statement

TBC: Lower Thames Crossing

C4.3 Aquatic amphibian survey (conventional methods) - GCN results (cont.)

NB: This page prints in landscape format

| Pond reference (e.g. Pond 25)   |          |           |           | Method:       | Torch        |      |      | Bottle-trap                |      |      | Net    |      |  | Egg search<br>eggs found? | Larvae<br>larvae found?<br>(any method) |
|---|----------|-----------|-----------|---------------|--------------|------|------|----------------------------|------|------|--------|------|--|---------------------------|---|
| No. of survey visits to this pond:  |          |           |           |               | Torch power: |      |      | No. of traps used in pond: |      |      |        |      |  |                           |   |
| Sex/life stage:   |          |           |           | Male          | Female       | Imm. | Male | Female                     | Imm. | Male | Female | Imm. |  |                           |   |
| (1) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (2) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (3) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (4) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (5) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (6) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (7) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (8) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |          |           |           |               |              |      | 0    |                            |      |      |        |      |  |                           |   |

Comments and constraints:

03. LTC GCN Method Statement

TBC: Lower Thames Crossing

C4.3 Aquatic amphibian survey (conventional methods) - GCN results (cont.)

NB: This page prints in landscape format

| Pond reference (e.g. Pond 26)   |          |           |           | Method:       | Torch        |      |      | Bottle-trap                |      |      | Net    |      |  | Egg search<br>eggs found? | Larvae<br>larvae found?<br>(any method) |
|---|----------|-----------|-----------|---------------|--------------|------|------|----------------------------|------|------|--------|------|--|---------------------------|---|
| No. of survey visits to this pond:  |          |           |           |               | Torch power: |      |      | No. of traps used in pond: |      |      |        |      |  |                           |   |
| Sex/life stage:   |          |           |           | Male          | Female       | Imm. | Male | Female                     | Imm. | Male | Female | Imm. |  |                           |   |
| (1) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (2) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (3) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (4) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (5) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (6) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (7) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (8) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |          |           |           |               |              |      | 0    |                            |      |      |        |      |  |                           |   |

Comments and constraints:

03. LTC GCN Method Statement

TBC: Lower Thames Crossing

C4.3 Aquatic amphibian survey (conventional methods) - GCN results (cont.)

NB: This page prints in landscape format

| Pond reference (e.g. Pond 27)   |          |           |           | Method:       | Torch        |      |      | Bottle-trap                |      |      | Net    |      |  | Egg search<br>eggs found? | Larvae<br>larvae found?<br>(any method) |
|---|----------|-----------|-----------|---------------|--------------|------|------|----------------------------|------|------|--------|------|--|---------------------------|---|
| No. of survey visits to this pond:  |          |           |           |               | Torch power: |      |      | No. of traps used in pond: |      |      |        |      |  |                           |   |
| Sex/life stage:   |          |           |           | Male          | Female       | Imm. | Male | Female                     | Imm. | Male | Female | Imm. |  |                           |   |
| (1) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (2) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (3) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (4) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (5) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (6) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (7) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (8) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |          |           |           |               |              |      | 0    |                            |      |      |        |      |  |                           |   |

Comments and constraints:



03. LTC GCN Method Statement

TBC: Lower Thames Crossing

C4.3 Aquatic amphibian survey (conventional methods)- GCN results (cont.)

NB: This page prints in landscape format

| Pond reference (e.g. Pond 28)   |          |           |           | Method:       | Torch        |      |      | Bottle-trap                |      |      | Net    |      |  | Egg search<br>eggs found? | Larvae<br>larvae found?<br>(any method) |
|---|----------|-----------|-----------|---------------|--------------|------|------|----------------------------|------|------|--------|------|--|---------------------------|---|
| No. of survey visits to this pond:  |          |           |           |               | Torch power: |      |      | No. of traps used in pond: |      |      |        |      |  |                           |   |
| Sex/life stage:   |          |           |           | Male          | Female       | Imm. | Male | Female                     | Imm. | Male | Female | Imm. |  |                           |   |
| (1) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (2) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (3) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (4) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (5) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (6) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (7) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (8) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |          |           |           |               |              |      | 0    |                            |      |      |        |      |  |                           |   |

Comments and constraints:

03. LTC GCN Method Statement

TBC: Lower Thames Crossing

C4.3 Aquatic amphibian survey (conventional methods) - GCN results (cont.)

NB: This page prints in landscape format

| Pond reference (e.g. Pond 29):  |          |           |           | Method:       | Torch        |      |      | Bottle-trap                |      |      | Net    |      |  | Egg search<br>eggs found? | Larvae<br>larvae found?<br>(any method) |
|---|----------|-----------|-----------|---------------|--------------|------|------|----------------------------|------|------|--------|------|--|---------------------------|---|
| No. of survey visits to this pond:  |          |           |           |               | Torch power: |      |      | No. of traps used in pond: |      |      |        |      |  |                           |   |
| Sex/life stage:   |          |           |           | Male          | Female       | Imm. | Male | Female                     | Imm. | Male | Female | Imm. |  |                           |   |
| (1) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (2) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (3) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (4) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (5) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (6) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (7) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (8) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |          |           |           |               |              |      | 0    |                            |      |      |        |      |  |                           |   |

Comments and constraints:

03. LTC GCN Method Statement

TBC: Lower Thames Crossing

C4.3 Aquatic amphibian survey (conventional methods) - GCN results (cont.)

NB: This page prints in landscape format

| Pond reference (e.g. Pond 30)   |          |           |           | Method:       | Torch        |      |      | Bottle-trap                |      |      | Net    |      |  | Egg search<br>eggs found? | Larvae<br>larvae found?<br>(any method) |
|---|----------|-----------|-----------|---------------|--------------|------|------|----------------------------|------|------|--------|------|--|---------------------------|---|
| No. of survey visits to this pond:  |          |           |           |               | Torch power: |      |      | No. of traps used in pond: |      |      |        |      |  |                           |   |
| Sex/life stage:   |          |           |           | Male          | Female       | Imm. | Male | Female                     | Imm. | Male | Female | Imm. |  |                           |   |
| (1) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (2) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (3) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (4) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (5) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (6) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (7) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (8) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |          |           |           |               |              |      | 0    |                            |      |      |        |      |  |                           |   |

Comments and constraints:

03. LTC GCN Method Statement

TBC: Lower Thames Crossing

**C4.3 Aquatic amphibian survey (conventional methods) - GCN results - Pond 31**

Was an aquatic amphibian survey done?  If no, proceed to next section. Return to [Ponds 1 - 10 tab](#)

Total no. of ponds surveyed:

Surveyor name(s):

**Important. Read before completing this section:** Enter GCN survey data in relevant boxes in the table below (for Pond 1) and those on subsequent sheets (for up to 9 other ponds). Enter "0" where you did a survey and found no newts; leave box blank if no survey was done. This format is designed for a typical single season survey with typical methods and effort. Explain atypical methods/effort later. For multiple year surveys, give details in annex (convert data to this format if possible). Use these tables to provide details only for the most recent season's survey. Append older survey results in full. Automatic yellow highlight indicates possible detectability problem (see Evaluation & interpretation section, later).

| Pond reference (e.g. "Pond 31") - below |          |           |           | Method:   | Torch        |        |      | Bottle-trap                |        |      | Net  |        |      | Egg search  | Larvae                        |
|---|----------|-----------|-----------|---|--------------|--------|------|----------------------------|--------|------|------|--------|------|-------------|-------------------------------|
|   |          |           |           |   | Torch power: |        |      | No. of traps used in pond: |        |      |      |        |      | eggs found? | larvae found?<br>(any method) |
| No. of survey visits to this pond:      |          |           |           |   |              |        |      |                            |        |      |      |        |      |             |                               |
|   |          |           |           | Sex/life stage:   | Male         | Female | Imm. | Male                       | Female | Imm. | Male | Female | Imm. |             |                               |
| (1) Date:                               | Air temp | Veg cover | Turbidity |   |              |        |      |                            |        |      |      |        |      |             |                               |
|   |          |           |           | Adult totals:   | 0            |        |      | 0                          |        |      | 0    |        |      |             |                               |
| (2) Date:                               | Air temp | Veg cover | Turbidity |   |              |        |      |                            |        |      |      |        |      |             |                               |
|   |          |           |           | Adult totals:   | 0            |        |      | 0                          |        |      | 0    |        |      |             |                               |
| (3) Date:                               | Air temp | Veg cover | Turbidity |   |              |        |      |                            |        |      |      |        |      |             |                               |
|   |          |           |           | Adult totals:   | 0            |        |      | 0                          |        |      | 0    |        |      |             |                               |
| (4) Date:                               | Air temp | Veg cover | Turbidity |   |              |        |      |                            |        |      |      |        |      |             |                               |
|   |          |           |           | Adult totals:   | 0            |        |      | 0                          |        |      | 0    |        |      |             |                               |
| (5) Date:                               | Air temp | Veg cover | Turbidity |   |              |        |      |                            |        |      |      |        |      |             |                               |
|   |          |           |           | Adult totals:   | 0            |        |      | 0                          |        |      | 0    |        |      |             |                               |
| (6) Date:                               | Air temp | Veg cover | Turbidity |   |              |        |      |                            |        |      |      |        |      |             |                               |
|   |          |           |           | Adult totals:   | 0            |        |      | 0                          |        |      | 0    |        |      |             |                               |
| (7) Date:                               | Air temp | Veg cover | Turbidity |   |              |        |      |                            |        |      |      |        |      |             |                               |
|   |          |           |           | Adult totals:   | 0            |        |      | 0                          |        |      | 0    |        |      |             |                               |
| (8) Date:                               | Air temp | Veg cover | Turbidity |   |              |        |      |                            |        |      |      |        |      |             |                               |
|   |          |           |           | Adult totals:   | 0            |        |      | 0                          |        |      | 0    |        |      |             |                               |
|   |          |           |           | <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |              |        |      | 0                          |        |      |      |        |      |             |                               |

Comments and constraints:

03. LTC GCN Method Statement

TBC: Lower Thames Crossing

C4.3 Aquatic amphibian survey (conventional methods)- GCN results (cont.)

NB: This page prints in landscape format

| Pond reference (e.g. Pond 32)   |          |           |           | Method:       | Torch        |      |      | Bottle-trap                |      |      | Net    |      |  | Egg search<br>eggs found? | Larvae<br>larvae found?<br>(any method) |
|---|----------|-----------|-----------|---------------|--------------|------|------|----------------------------|------|------|--------|------|--|---------------------------|---|
| No. of survey visits to this pond:  |          |           |           |               | Torch power: |      |      | No. of traps used in pond: |      |      |        |      |  |                           |   |
| Sex/life stage:   |          |           |           | Male          | Female       | Imm. | Male | Female                     | Imm. | Male | Female | Imm. |  |                           |   |
| (1) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (2) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (3) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (4) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (5) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (6) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (7) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (8) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |          |           |           |               |              |      | 0    |                            |      |      |        |      |  |                           |   |

Comments and constraints:

03. LTC GCN Method Statement

TBC: Lower Thames Crossing

C4.3 Aquatic amphibian survey (conventional surveys- GCN results (cont.))

NB: This page prints in landscape format

| Pond reference (e.g. Pond 33)   |          |           |           | Method:       | Torch        |      |      | Bottle-trap                |      |      | Net    |      |  | Egg search<br>eggs found? | Larvae<br>larvae found?<br>(any method) |
|---|----------|-----------|-----------|---------------|--------------|------|------|----------------------------|------|------|--------|------|--|---------------------------|---|
| No. of survey visits to this pond:  |          |           |           |               | Torch power: |      |      | No. of traps used in pond: |      |      |        |      |  |                           |   |
| Sex/life stage:   |          |           |           | Male          | Female       | Imm. | Male | Female                     | Imm. | Male | Female | Imm. |  |                           |   |
| (1) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (2) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (3) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (4) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (5) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (6) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (7) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (8) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |          |           |           |               |              |      | 0    |                            |      |      |        |      |  |                           |   |

Comments and constraints:

03. LTC GCN Method Statement

TBC: Lower Thames Crossing

C4.3 Aquatic amphibian survey (conventional methods) - GCN results (cont.)

NB: This page prints in landscape format

| Pond reference (e.g. Pond 34)   |          |           |           | Method:       | Torch        |      |      | Bottle-trap                |      |      | Net    |      |  | Egg search<br>eggs found? | Larvae<br>larvae found?<br>(any method) |
|---|----------|-----------|-----------|---------------|--------------|------|------|----------------------------|------|------|--------|------|--|---------------------------|---|
| No. of survey visits to this pond:  |          |           |           |               | Torch power: |      |      | No. of traps used in pond: |      |      |        |      |  |                           |   |
| Sex/life stage:   |          |           |           | Male          | Female       | Imm. | Male | Female                     | Imm. | Male | Female | Imm. |  |                           |   |
| (1) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (2) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (3) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (4) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (5) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (6) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (7) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (8) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |          |           |           |               |              |      | 0    |                            |      |      |        |      |  |                           |   |

Comments and constraints:

03. LTC GCN Method Statement

TBC: Lower Thames Crossing

C4.3 Aquatic amphibian survey (conventional methods) - GCN results (cont.)

NB: This page prints in landscape format

| Pond reference (e.g. Pond 35)   |          |           |           | Method:       | Torch        |      |      | Bottle-trap                |      |      | Net    |      |  | Egg search<br>eggs found? | Larvae<br>larvae found?<br>(any method) |
|---|----------|-----------|-----------|---------------|--------------|------|------|----------------------------|------|------|--------|------|--|---------------------------|---|
| No. of survey visits to this pond:  |          |           |           |               | Torch power: |      |      | No. of traps used in pond: |      |      |        |      |  |                           |   |
| Sex/life stage:   |          |           |           | Male          | Female       | Imm. | Male | Female                     | Imm. | Male | Female | Imm. |  |                           |   |
| (1) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (2) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (3) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (4) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (5) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (6) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (7) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (8) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |          |           |           |               |              |      | 0    |                            |      |      |        |      |  |                           |   |

Comments and constraints:



03. LTC GCN Method Statement

TBC: Lower Thames Crossing

C4.3 Aquatic amphibian survey (conventional methods) - GCN results (cont.)

NB: This page prints in landscape format

| Pond reference (e.g. Pond 16)   |          |           |           | Method:       | Torch        |      |      | Bottle-trap                |      |      | Net    |      |  | Egg search<br>eggs found? | Larvae<br>larvae found?<br>(any method) |
|---|----------|-----------|-----------|---------------|--------------|------|------|----------------------------|------|------|--------|------|--|---------------------------|---|
| No. of survey visits to this pond:  |          |           |           |               | Torch power: |      |      | No. of traps used in pond: |      |      |        |      |  |                           |   |
| Sex/life stage:   |          |           |           | Male          | Female       | Imm. | Male | Female                     | Imm. | Male | Female | Imm. |  |                           |   |
| (1) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (2) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (3) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (4) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (5) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (6) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (7) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (8) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |          |           |           |               |              |      | 0    |                            |      |      |        |      |  |                           |   |

Comments and constraints:

03. LTC GCN Method Statement

TBC: Lower Thames Crossing

C4.3 Aquatic amphibian survey (conventional methods) - GCN results (cont.)

NB: This page prints in landscape format

| Pond reference (e.g. Pond 37)   |          |           |           | Method:       | Torch        |      |      | Bottle-trap                |      |      | Net    |      |  | Egg search<br>eggs found? | Larvae<br>larvae found?<br>(any method) |
|---|----------|-----------|-----------|---------------|--------------|------|------|----------------------------|------|------|--------|------|--|---------------------------|---|
| No. of survey visits to this pond:  |          |           |           |               | Torch power: |      |      | No. of traps used in pond: |      |      |        |      |  |                           |   |
| Sex/life stage:   |          |           |           | Male          | Female       | Imm. | Male | Female                     | Imm. | Male | Female | Imm. |  |                           |   |
| (1) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (2) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (3) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (4) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (5) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (6) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (7) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (8) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |          |           |           |               |              |      | 0    |                            |      |      |        |      |  |                           |   |

Comments and constraints:

03. LTC GCN Method Statement

TBC: Lower Thames Crossing

C4.3 Aquatic amphibian survey (conventional methods)- GCN results (cont.)

NB: This page prints in landscape format

| Pond reference (e.g. Pond 38)   |          |           |           | Method:       | Torch        |      |      | Bottle-trap                |      |      | Net    |      |  | Egg search<br>eggs found? | Larvae<br>larvae found?<br>(any method) |
|---|----------|-----------|-----------|---------------|--------------|------|------|----------------------------|------|------|--------|------|--|---------------------------|---|
| No. of survey visits to this pond:  |          |           |           |               | Torch power: |      |      | No. of traps used in pond: |      |      |        |      |  |                           |   |
| Sex/life stage:   |          |           |           | Male          | Female       | Imm. | Male | Female                     | Imm. | Male | Female | Imm. |  |                           |   |
| (1) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (2) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (3) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (4) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (5) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (6) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (7) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (8) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |          |           |           |               |              |      | 0    |                            |      |      |        |      |  |                           |   |

Comments and constraints:

03. LTC GCN Method Statement

TBC: Lower Thames Crossing

C4.3 Aquatic amphibian survey (conventional methods) - GCN results (cont.)

NB: This page prints in landscape format

| Pond reference (e.g. Pond 39):  |          |           |           | Method:       | Torch        |      |      | Bottle-trap                |      |      | Net    |      |  | Egg search<br>eggs found? | Larvae<br>larvae found?<br>(any method) |
|---|----------|-----------|-----------|---------------|--------------|------|------|----------------------------|------|------|--------|------|--|---------------------------|---|
| No. of survey visits to this pond:  |          |           |           |               | Torch power: |      |      | No. of traps used in pond: |      |      |        |      |  |                           |   |
| Sex/life stage:   |          |           |           | Male          | Female       | Imm. | Male | Female                     | Imm. | Male | Female | Imm. |  |                           |   |
| (1) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (2) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (3) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (4) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (5) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (6) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (7) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (8) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |          |           |           |               |              |      | 0    |                            |      |      |        |      |  |                           |   |

Comments and constraints:

03. LTC GCN Method Statement

TBC: Lower Thames Crossing

C4.3 Aquatic amphibian survey (conventional methods) - GCN results (cont.)

NB: This page prints in landscape format

| Pond reference (e.g. Pond 40)   |          |           |           | Method:       | Torch        |      |      | Bottle-trap                |      |      | Net    |      |  | Egg search<br>eggs found? | Larvae<br>larvae found?<br>(any method) |
|---|----------|-----------|-----------|---------------|--------------|------|------|----------------------------|------|------|--------|------|--|---------------------------|---|
| No. of survey visits to this pond:  |          |           |           |               | Torch power: |      |      | No. of traps used in pond: |      |      |        |      |  |                           |   |
| Sex/life stage:   |          |           |           | Male          | Female       | Imm. | Male | Female                     | Imm. | Male | Female | Imm. |  |                           |   |
| (1) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (2) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (3) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (4) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (5) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (6) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (7) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| (8) Date:   | Air temp | Veg cover | Turbidity |               |              |      |      |                            |      |      |        |      |  |                           |   |
|   |          |           |           | Adult totals: | 0            |      | 0    |                            | 0    |      |        |      |  |                           |   |
| <b>Peak adult count for this pond in any one visit (by torch, trap or net):</b> |          |           |           |               |              |      | 0    |                            |      |      |        |      |  |                           |   |

Comments and constraints:

**Additional Sheet C - Detailed Metapopulation Descriptions**

For the purposes of this licence, GCN are considered to be part of the same metapopulation where ponds are located within close proximity to each other (usually up to 250m), there is presence of good habitat connectivity, and there is absence of barriers between ponds.

All peak counts across a population are derived from total number of GCN counted during a single night using one survey method. Where surveys have been constrained due to access or other limitations, assumed populations have been included within the metapopulations described below.

As per correspondence with Natural England, ponds for which no population class estimates have been undertaken for example eDNA surveys, a medium population has been assumed on a reasonable worst-case basis.

Although, assumptions have been made for several populations, the data present below is considered to be robust and the reasonable worst-case scenario has been used in the absence of data.

**Metapopulation S01**

Ponds P003S P004S P064S P178S P179S P182S P203S P221S (peak count 30/04/2018 = 19)

The peak count for Metapopulation S01 includes survey data collected from conventional surveys undertaken at P003S, P004S, P064S, P203S and P221S in 2018, eDNA surveys undertaken at P182S in 2020, and desk study information received from KMBRC for ponds P178S and P179S.

**Survey results and constraints for Metapopulation S01**

| <b>Pond</b> | <b>HSI</b>    | <b>Survey Result</b> | <b>Constraints</b>  | <b>Limiting</b>   | <b>Revised Result</b> |
|-------------|---------------|----------------------|---|---|-----------------------|
| P003S       | Below Average | Small population     | Low detectability due to high vegetation cover on visits 3 and 5. | No – sufficient bottle traps deployed to offset the lower detection rates of torching and egg searches. | Small population      |
| P004S       | Below Average | Medium population    | Low detectability due to high turbidity on all visits.            | No – sufficient bottle traps deployed to offset the lower detection rates of torching and egg searches. | Medium population     |
| P063S       | Dry           | Absent               | N/A   | N/A – dry ponds are generally considered to be unsuitable for breeding GCN                              | Absent                |
| P064S       | Poor          | Small population     | None  | N/A   | Small population      |

Additional Sheet C - Detailed Metapopulation Descriptions

| Pond  | HSI                       | Survey Result                          | Constraints   | Limiting  | Revised Result            |
|-------|---------------------------|--|---|---|---------------------------|
| P178S | Excellent                 | Unknown                                | No access – desk study data from the local records centre GCN presence from 2014.   | Yes – population size class could not be determined from existing information | Assumed medium population |
| P179S | Good                      | Unknown                                | No access – desk study data from the local records centre GCN presence from 2014.   | Yes – population size class could not be determined from existing information | Assumed medium population |
| P180S | Unsuitable - fishing lake | Absent                                 | N/A   | N/A   | Absent                    |
| P181S | Unsuitable - fishing lake | Absent                                 | N/A   | N/A   | Absent                    |
| P182S | Good                      | Presence confirmed through eDNA survey | None  | Yes – GCN presence and population size class could not be determined          | Assumed medium population |
| P202S | Unsuitable - fishing lake | Absent                                 | N/A   | N/A   | Absent                    |
| P203S | Good                      | Small population                       | None  | N/A   | Small population          |
| P221S | Below Average             | Small population                       | Bottle trapping not undertaken on visit 1 due to time constraints and torching not undertaken on visits 5 and 6 due to high vegetation cover and high turbidity. Only 25% of shoreline was accessible for survey (between 4 and 10 bottle traps deployed) and there was limited suitable vegetation for egg laying. | No – netting undertaken as additional method                                  | Small population          |

Metapopulation S01 is within close proximity to Metapopulation S02. However, the A2 forms a physical barrier between these two metapopulations, preventing the interchange of GCN between them and they are therefore considered separate metapopulations.

Metapopulation S01 was determined to be in the “**medium**” population size class. Despite the constraints, it was not considered likely that P178S, P179S, and P182S would support sufficient GCN to increase the metapopulation size class to “large”.

### Metapopulation S02

Ponds P021S P039S P040S P183S P184S P185S P186S P204S P219S P220S P249S (peak count 01/05/2018 = 220)

The peak count for Metapopulation S02 includes survey data collected from conventional surveys undertaken at P021S, P039S, P040S, P183S, P184S, P185S, P186S, P204S, P219S, P220S and P249S in 2018.

A large population was recorded across ponds P039S, P183S, P184S, P185S, P186S, P204S, P219S, P220S and P249S (which were all less than 250m from at least one other pond in this group) during visit 3 (01/05/2018) and P183S during visit 1 (01/05/2018) as this pond was not found during previous surveys. On the 01/05/2018, 220 individual great crested newts were recorded during torching surveys, of which 74, 48, 44 and 30 GCN were recorded in ponds P184S, P186S, P039S and P249S, respectively. Fewer GCN (three to 14 GCN) were recorded within the other ponds (P183S, P204S, P220S). No GCN were found within P185S. P021S and P040S were not surveyed on this night.

By implementing licence policy 4 (reduced survey data requirements where the impacts of the development can be confidently predicted), no more surveys were undertaken within this area. The survey data collected to date provided enough information to assess the impact of the development within the vicinity of these ponds confidently as the highest population size class had already been recorded. Six visits were undertaken at P021S and P040S (as these were further than 250m from the other ponds in this metapopulation and each other so could potentially form part of a separate population).

#### Survey results and constraints for Metapopulation S02

| Pond  | HSI                               | Survey Result     | Constraints  | Limiting  | Revised Result    |
|-------|-----------------------------------|-------------------|--|---|-------------------|
| P019S | Unsuitable – stocked fishing lake | Absent            | N/A  | N/A   | Absent            |
| P021S | Below Average                     | Small population  | Low detectability due to high turbidity throughout season. Dry on visit 6. | No – sufficient bottle traps deployed to offset the lower detection rates of torching and egg searches. | Small population  |
| P039S | Average                           | Medium population | Low detectability due to high vegetation cover on visit 3.                 | No – all other surveys undertaken in optimal conditions   | Medium population |



Additional Sheet C - Detailed Metapopulation Descriptions

| <b>Pond</b> | <b>HSI</b>                        | <b>Survey Result</b> | <b>Constraints</b>  | <b>Limiting</b>   | <b>Revised Result</b>     |
|-------------|-----------------------------------|----------------------|---|---|---------------------------|
| P040S       | Poor                              | Medium population    | Low detectability due to high turbidity on visit 5.   | No – all other surveys undertaken in optimal conditions   | Medium population         |
| P115S       | Excellent                         | Absent               | Low detectability due to high vegetation cover on visits 3 and 4 and high turbidity on visit 4.   | No – sufficient bottle traps deployed to offset the lower detection rates of torching and egg searches, and netting undertaken as additional method | Absent                    |
| P183S       | Excellent                         | Medium population    | None  | No  | Medium population         |
| P184S       | Excellent                         | Medium population    | Low detectability due to high vegetation cover on visit 2. Only 50% of shoreline was accessible for survey (between 10 and 25 bottle traps deployed). | No – large population already recorded  | Medium population         |
| P185S       | Excellent                         | Absent               | Low detectability due to high vegetation cover on visit 2.  | No – large population already recorded  | Assumed medium population |
| P186S       | Below Average                     | Medium population    | None  | No  | Medium population         |
| P187S       | Unsuitable – stocked fishing lake | Absent               | N/A   | N/A   | Absent                    |
| P188S       | Unsuitable – stocked fishing lake | Absent               | N/A   | N/A   | Absent                    |
| P204S       | Below Average                     | Medium population    | None  | No  | Medium population         |
| P217S       | Unsuitable – stocked fishing lake | Absent               | N/A   | N/A   | Absent                    |

| Pond  | HSI                               | Survey Result     | Constraints  | Limiting  | Revised Result    |
|-------|-----------------------------------|-------------------|--|---|-------------------|
| P218S | Unsuitable – stocked fishing lake | Absent            | N/A  | N/A   | Absent            |
| P219S | Good                              | Small population  | None   | No  | Small population  |
| P220S | Average                           | Small population  | Low detectability due to high vegetation cover on visit 2. | No – sufficient bottle traps deployed to offset the lower detection rates of torching and egg searches. | Small population  |
| P249S | Poor                              | Medium population | Low detectability due to high vegetation cover on visit 2. | No – sufficient bottle traps deployed to offset the lower detection rates of torching and egg searches. | Medium population |
| P250S | Dry                               | Absent            | N/A  | N/A – dry ponds are generally considered to be unsuitable for breeding GCN                              | Absent            |
| P251S | Dry                               | Absent            | N/A  | N/A – dry ponds are generally considered to be unsuitable for breeding GCN                              | Absent            |

Although P021S and P040S were located over 250m away from the main population source, given the high-quality terrestrial habitat between these ponds, the cluster of ponds to their south-west, and the large population of GCN across the area, it was considered likely that there is interchange of GCN between all ponds shown to support GCN and therefore that all ponds form part of the same metapopulation.

Metapopulation S02 is within close proximity to Metapopulation S01. However, the A2 forms a physical barrier between these two metapopulations, preventing the interchange of GCN between them and they are therefore considered separate metapopulations.

Metapopulation S02 was determined to be in the “**large**” population size class based on the peak count of GCN across all ponds in a single night. This assessment was not considered to be limited by any of the survey constraints.

### Metapopulation S03

Pond P053S P120S (24/04/2018 – GCN eggs only)

GCN presence for Metapopulation S03 was confirmed through conventional surveys undertaken at P120S in 2018 that found GCN eggs to be present on visit 2. No further evidence of GCN was recorded within this pond during the six visits. Six ponds were located within 250m of pond P120S. Ponds P015S, P016S, P042S, P052S and P232S were surveyed using conventional survey methods in 2018.

**Survey results and constraints for Metapopulation S03**

| <b>Pond</b> | <b>HSI</b>    | <b>Survey Result</b> | <b>Constraints</b>   | <b>Limiting</b>   | <b>Revised Result</b> |
|-------------|---------------|----------------------|--|---|-----------------------|
| P015S       | Below Average | Absent               | None   | N/A   | Absent                |
| P014S       | Poor          | Absent               | Low detectability due to high turbidity on visits 1 and 4  | No – sufficient bottle traps deployed to offset the lower detection rates of torching and egg searches and netting used as a supplementary method on visit 3.                   | Absent                |
| P016S       | Below Average | Absent               | Low detectability due to high vegetation cover on visit 1 and livestock present on visit 4 so only two methods used. | No – sufficient bottle traps deployed to offset the lower detection rates of torching and egg searches on visit 1, two methods still used on visit 4, and other surveys optimal | Absent                |
| P042S       | Poor          | Absent               | Structure and topology of pond prevented use of bottle traps. No access on visit 4 due to livestock.                 | Yes – netting undertaken as additional method on visit 2 only; however, given HSI score, attributes of pond, and presence of fish, result considered to stand                   | Assumed absent        |

| Pond  | HSI     | Survey Result                    | Constraints  | Limiting  | Revised Result            |
|-------|---------|----------------------------------|--|---|---------------------------|
| P053S | Unknown | Unknown                          | No access  | Yes – GCN presence and population size class could not be determined  | Assumed medium population |
| P120S | Average | Presence confirmed from GCN eggs | Bottle trapping not undertaken on visit 3 (due to unsuitable survey temperature) and visit 4.              | Yes – netting undertaken as additional method on visit 3 only but all other surveys optimal; however, population size class could not be determined | Assumed small population  |
| P232S | Unknown | Absent                           | Low detectability due to high vegetation cover on visits 1 and 4, bottle trapping not possible on visit 1. | No – netting undertaken as additional method  | Absent                    |

Due to the inclusion of an unknown presence pond for which population size has been assumed medium (P053S), the overall size for Metapopulation S03 was assumed to be in the “**medium**” population size class.

#### Metapopulation S04

Ponds P027S P028S P029S P030S P044S P121S P125S P126S P127S P128S P129S P130S P131S P196S P454S P455S P456S P457S (presence confirmed through incidental sightings)

Metapopulation S04 comprises a network of ditches and larger waterbodies. The area has been napped as 18 “ponds” (P008S, P010S, P017S, P018S, P027S, P028S, P029S, P030S, P044S, P121S, P125S, P126S, P127S, P128S, P129S, P130S, P131S, P196S and P456S) although all are interconnected at varying times of the year. Due to the presence of nesting marsh harrier within Shorne Marshes, conventional surveys were not possible. However, incidental sightings of GCN on multiple occasions in various locations were recorded during water vole surveys undertaken later in 2018/2019. Therefore, GCN are known to be present but the population size is unknown.

## Survey results and constraints for Metapopulation S04

| Pond  | HSI           | Survey Result                                   | Constraints   | Limiting   | Revised Result |
|-------|---------------|---|---|--|----------------|
| P008S | Average       | Absent  | 10% of shoreline sampled during eDNA surveys. Deep steep sided canal prevented bottle trapping, netting and egg searches to be undertaken. Low detectability warning recorded during visit 2 due to high vegetation cover | Although only 10% of the shore line was sampled, the canal is approximately 2km long and therefore this is still a large area surveys.<br><br>Although the surveys were constrained to torch surveys, 3 of the 4 visits were undertaken in optimal conditions. | Assumed absent |
| P010S | Below Average | Absent  | Due to bulls within field, torching and bottle trapping could not be undertaken during visit 4. Egg searches and netting as still undertaken.   | Potential to under record GCN during visit 4; however, as two survey methods (netting and egg search) were undertaken and all other surveys were undertaken in optimal conditions, the data is valid.  | Assumed absent |
| P017S | Average       | Absent  | None  | N/A  | Absent         |
| P018S | Below Average | Absent  | None  | N/A  | Absent         |
| P027S | Unknown       | Presence confirmed through incidental sightings | Survey not possible due to nesting marsh harrier  | Yes – population size class could not be determined  | Assumed large  |
| P028S | Unknown       | Presence confirmed through incidental sightings | Survey not possible due to nesting marsh harrier  | Yes – population size class could not be determined  | Assumed large  |

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| <b>Pond</b> | <b>HSI</b> | <b>Survey Result</b>                            | <b>Constraints</b>  | <b>Limiting</b>   | <b>Revised Result</b> |
|-------------|------------|---|---|---|-----------------------|
| P029S       | Unknown    | Presence confirmed through incidental sightings | Survey not possible due to nesting marsh harrier  | Yes – population size class could not be determined                       | Assumed large         |
| P031S       | Excellent  | Absent  | Low detectability due to only torch method used on all visits and high vegetation cover on visits 1 to 3. Dry on visit 4. | No – dry ponds are generally considered to be unsuitable for breeding GCN | Absent                |
| P044S       | Unknown    | Presence confirmed through incidental sightings | Survey not possible due to nesting marsh harrier  | Yes – population size class could not be determined                       | Assumed large         |
| P121S       | Unknown    | Presence confirmed through incidental sightings | Survey not possible due to nesting marsh harrier  | Yes – population size class could not be determined                       | Assumed large         |
| P123S       | Dry        | Absent  | N/A   | No – dry ponds are generally considered to be unsuitable for breeding GCN | Absent                |
| P124S       | Dry        | Absent  | N/A   | No – dry ponds are generally considered to be unsuitable for breeding GCN | Absent                |
| P125S       | Unknown    | Presence confirmed through incidental sightings | Survey not possible due to nesting marsh harrier  | Yes – population size class could not be determined                       | Assumed large         |
| P126S       | Unknown    | Presence confirmed through incidental sightings | Survey not possible due to nesting marsh harrier  | Yes – population size class could not be determined                       | Assumed large         |
| P127S       | Unknown    | Presence confirmed through incidental sightings | Survey not possible due to nesting marsh harrier  | Yes – population size class could not be determined                       | Assumed large         |

| Pond  | HSI     | Survey Result                                   | Constraints                                      | Limiting  | Revised Result |
|-------|---------|---|--|---|----------------|
| P128S | Unknown | Presence confirmed through incidental sightings | Survey not possible due to nesting marsh harrier | Yes – population size class could not be determined | Assumed large  |
| P129S | Unknown | Presence confirmed through incidental sightings | Survey not possible due to nesting marsh harrier | Yes – population size class could not be determined | Assumed large  |
| P130S | Unknown | Presence confirmed through incidental sightings | Survey not possible due to nesting marsh harrier | Yes – population size class could not be determined | Assumed large  |
| P131S | Unknown | Presence confirmed through incidental sightings | Survey not possible due to nesting marsh harrier | Yes – population size class could not be determined | Assumed large  |
| P196S | Unknown | Presence confirmed through incidental sightings | Survey not possible due to nesting marsh harrier | Yes – population size class could not be determined | Assumed large  |
| P454S | Unknown | Presence confirmed through incidental sightings | Survey not possible due to nesting marsh harrier | Yes – population size class could not be determined | Assumed large  |
| P456S | Unknown | Presence confirmed through incidental sightings | Survey not possible due to nesting marsh harrier | Yes – population size class could not be determined | Assumed large  |

No population size assessment could be made on Metapopulation S04 due to the lack of survey data. Given the network of waterbodies in the area and the large amount of high quality of habitat adjacent to the ponds, Metapopulation S04 was assumed to be in the “**large**” population size class on a precautionary basis.

#### **Assumed Metapopulation S05**

Ponds P361S P362S

Metapopulation S05 comprises two ponds (P361S and P362S). Due access being denied, surveys could not be undertaken at these ponds.

**Survey results and constraints for Metapopulation S05**

| Pond  | HSI     | Survey Result | Constraints | Limiting   | Revised Result            |
|-------|---------|---------------|-------------|--|---------------------------|
| P361S | Unknown | Unknown       | No access   | Yes – GCN presence and population size class could not be determined | Assumed medium population |
| P362S | Unknown | Unknown       | No access   | Yes – GCN presence and population size class could not be determined | Assumed medium population |

No population size assessment could be made on Metapopulation S05 due to the lack of survey data caused by access constraints. Metapopulation S05 was assumed to be in the “**medium**” population size class on a precautionary basis.

**Assumed Metapopulation S06**

Pond P296S

Assumed Metapopulation S06 comprises one pond (P296S). Due access being denied, surveys could not be undertaken at this pond.

**Survey results and constraints for Assumed Metapopulation S06**

| Pond  | HSI     | Survey Result | Constraints | Limiting   | Revised Result            |
|-------|---------|---------------|-------------|--|---------------------------|
| P296S | Unknown | Unknown       | No access   | Yes – GCN presence and population size class could not be determined | Assumed medium population |

No population size assessment could be made on Assumed Metapopulation S06 due the lack of survey data caused by access constraints. Despite this, Assumed Metapopulation S06 was assumed to be in the “**medium**” population size class on a precautionary basis.

**Assumed Metapopulation S07**

Pond P373S

Assumed Metapopulation S07 comprises one pond (P373S). Due access being denied, surveys could not be undertaken at this pond. One pond (P371S) was found within 250m of P373S and was dry.



**Survey results and constraints for Assumed Metapopulation S07**

| Pond  | HSI     | Survey Result | Constraints | Limiting   | Revised Result            |
|-------|---------|---------------|-------------|--|---------------------------|
| P371S | Dry     | Absent        | N/A         | N/A – dry ponds are generally considered to be unsuitable for breeding GCN | Absent                    |
| P373S | Unknown | Unknown       | No access   | Yes – GCN presence and population size class could not be determined       | Assumed medium population |

Assumed Metapopulation S07 is in close proximity to Assumed Metapopulation S08. However, the A2 is physical barrier between these two metapopulations, preventing the interchange of GCN between them and they are therefore considered separate metapopulations.

No population size assessment could be made on Assumed Metapopulation S07 due the lack of survey data caused by access constraints. As such, Assumed Metapopulation S07 was assumed to be in the “**medium**” population size class on a precautionary basis.

**Assumed Metapopulation S08**

Pond P374S

Assumed Metapopulation S08 comprises one pond (P374S). Due access being denied, surveys could not be undertaken at this pond. One pond (P375S) was found within 50m of P374S and was dry, although no access was obtained for this pond either this could be clearly seen from adjacent land holding.

**Survey results and constraints for Assumed Metapopulation S08**

| Pond  | HSI     | Survey Result | Constraints | Limiting   | Revised Result            |
|-------|---------|---------------|-------------|--|---------------------------|
| P374S | Unknown | Unknown       | No access   | Yes – GCN presence and population size class could not be determined       | Assumed medium population |
| P375S | Dry     | Absent        | N/A         | N/A – dry ponds are generally considered to be unsuitable for breeding GCN | Absent                    |

Assumed Metapopulation S08 is in close proximity to Assumed Metapopulation S07. However, the A2 is physical barrier between these two Metapopulations, preventing the interchange of GCN between them and they are therefore considered separate Metapopulations.

No population size assessment could be made on Metapopulation S08 due the lack of survey data caused by access constraints. As such, Assumed Metapopulation S08 was assumed to be in the “**medium**” population size class on a precautionary basis.

**Assumed Metapopulation S09**

Pond P351S

The eDNA survey conducted at P351S was inconclusive. The other pond found within 500m of P351S was dry.

**Survey results and constraints for Assumed Metapopulation S09**

| Pond  | his     | Survey Result | Constraints        | Limiting   | Revised Result |
|-------|---------|---------------|--------------------|--|----------------|
| P351S | Average | Unknown       | eDNA inconclusive. | Yes – GCN presence and population size class could not be determined       | Assumed medium |
| P473S | Dry     | Absent        | N/A                | N/A – dry ponds are generally considered to be unsuitable for breeding GCN | Absent         |

Given the constraints of the inconclusive eDNA result for P351S, Assumed Metapopulation S09 was assumed to be in the “**medium**” population size class on a precautionary basis.

**Metapopulation S10**

Pond P294S P350S P383S P385S P398S P483S P501S P502S P503S P504S P505S

eDNA surveys undertaken at P483S found GCN to be present. Surveys could not be undertaken at P294S, P350S, P383S, P385S, P398S, P501S, P502S, P503S, P504S, P505S due to access restrictions. eDNA surveys conducted at P292S and P483S returned a negative result, no pond was found at P293S and P463S was a swimming pool.

| Pond  | HSI     | Survey Result | Constraints | Limiting   | Revised Result |
|-------|---------|---------------|-------------|--|----------------|
| P190S | Dry     | Absent        | N/A         | N/A – dry ponds are generally considered to be unsuitable for breeding GCN | Absent         |
| P292S | Average | Absent        | None        | N/A  | Absent         |
| P293S | No pond | N/A           | N/A         | N/A  | N/A            |

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| <b>Pond</b> | <b>HSI</b>                 | <b>Survey Result</b> | <b>Constraints</b>   | <b>Limiting</b>  | <b>Revised Result</b>     |
|-------------|----------------------------|----------------------|--|--|---------------------------|
| P294S       | Unknown                    | Unknown              | No access  | Yes – GCN presence and population size class could not be determined | Assumed medium population |
| P350S       | Unknown                    | Unknown              | No access  | Yes – GCN presence and population size class could not be determined | Assumed medium population |
| P382S       | N/A                        | Unknown              | Scoped out as over 250m from minor construction works                                    | N/A  | N/A                       |
| P383S       | Unknown                    | Unknown              | No access  | Yes – GCN presence and population size class could not be determined | Assumed medium population |
| P384S       | N/A                        | Unknown              | Scoped out as over 250m from minor construction works                                    | N/A  | N/A                       |
| P385S       | Unknown                    | Unknown              | No access  | Yes – GCN presence and population size class could not be determined | Assumed medium population |
| P398S       | Unknown                    | Unknown              | No access  | Yes – GCN presence and population size class could not be determined | Assumed medium population |
| P463S       | Unsuitable - swimming pool | Absent               | N/A  | N/A  | Absent                    |
| P474S       | Good                       | Absent               | 70% of shoreline surveyed during eDNA surveys due to dense vegetation restricting access | No - The majority of the perimeter was surveyed.                     | Assumed absent            |
| P482S       | Average                    | Absent               | N/A  | N/A  | Absent                    |
| P483S       | Average                    | Present              | 10% of shoreline surveyed during eDNA surveys due to dense vegetation restricting access | No – GCN found to be present   | N/A                       |

| Pond  | HSI     | Survey Result | Constraints | Limiting   | Revised Result            |
|-------|---------|---------------|-------------|--|---------------------------|
| P501S | Unknown | Unknown       | No access   | Yes – GCN presence and population size class could not be determined | Assumed medium population |
| P502S | Unknown | Unknown       | No access   | Yes – GCN presence and population size class could not be determined | Assumed medium population |
| P503S | Unknown | Unknown       | No access   | Yes – GCN presence and population size class could not be determined | Assumed medium population |
| P504S | Unknown | Unknown       | No access   | Yes – GCN presence and population size class could not be determined | Assumed medium population |
| P505S | Unknown | Unknown       | No access   | Yes – GCN presence and population size class could not be determined | Assumed medium population |

Assumed Metapopulation S10 was assumed to be in the “**medium**” population size class on a precautionary basis, due to access constraints meaning there is a lack of survey data.

**Assumed Metapopulation S11**

Ponds P396S P464S P465S

All three ponds within Metapopulation S11 (P396S, P464S, P465S) could not be surveyed due to access restrictions.

**Survey results and constraints for Assumed Metapopulation S11**

| Pond  | HSI     | Survey Result | Constraints | Limiting   | Revised Result            |
|-------|---------|---------------|-------------|--|---------------------------|
| P396S | Unknown | Unknown       | No access   | Yes – GCN presence and population size class could not be determined | Assumed medium population |

| Pond  | HSI     | Survey Result | Constraints | Limiting   | Revised Result            |
|-------|---------|---------------|-------------|--|---------------------------|
| P464S | Unknown | Unknown       | No access   | Yes – GCN presence and population size class could not be determined | Assumed medium population |
| P465S | Unknown | Unknown       | No access   | Yes – GCN presence and population size class could not be determined | Assumed medium population |

Given the lack of survey data due to the constraints on access, Assumed Metapopulation S11 is assumed to be in the “**medium**” population size class on a precautionary basis.

### Assumed Metapopulation S12

Pond P287S

Surveys could not be undertaken at P287S as it was considered unsafe to do so. Three ponds (P288S, P289S and P291S) were found to be dry, and ponds P009S, P286S and P290S were no longer present. P285S, P399S and P400S was scoped out due to its distance from the construction works.

### Survey results and constraints for Assumed Metapopulation S12

| Pond  | HSI     | Survey Result | Constraints   | Limiting   | Revised Result |
|-------|---------|---------------|---|--|----------------|
| P009S | No pond | N/A           | N/A   | N/A  | N/A            |
| P285S | Unknown | Unknown       | Scoped out as over 250m from minor construction works | N/A  | N/A            |
| P286S | No pond | N/A           | N/A   | N/A  | N/A            |
| P287S | Unknown | Unknown       | Unsafe to survey                                      | Yes - GCN presence and population size class could not be determined       | Assumed medium |
| P288S | Dry     | Absent        | N/A   | N/A – dry ponds are generally considered to be unsuitable for breeding GCN | Absent         |
| P289S | Dry     | Absent        | N/A   | N/A – dry ponds are generally considered to be unsuitable for breeding GCN | Absent         |

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| Pond  | HSI     | Survey Result | Constraints   | Limiting   | Revised Result |
|-------|---------|---------------|---|--|----------------|
| P290S | No pond | N/A           | N/A   | N/A  | N/A            |
| P291S | Dry     | Absent        | N/A   | N/A – dry ponds are generally considered to be unsuitable for breeding GCN | Absent         |
| P399S | Unknown | Unknown       | Scoped out as over 250m from minor construction works | N/A  | N/A            |
| P400S | Unknown | Unknown       | Scoped out as over 250m from minor construction works | N/A  | N/A            |

Assumed Metapopulation S12 is assumed to be in the “**medium**” population size class on a precautionary basis, due to the survey constraints outlined above.

**Assumed Metapopulation S13**

Ponds P497S P498S P499S and P500S

Ponds P497S, P498S, P499S and P500S could not be surveyed due to access restrictions and no pond found at P484S.

**Survey results and constraints for Assumed Metapopulation S13**

| Pond  | HSI     | Survey Result | Constraints                           | Limiting   | Revised Result            |
|-------|---------|---------------|---------------------------------------|--|---------------------------|
| P484S | No pond | N/A           | N/A                                   | N/A  | N/A                       |
| P496S | Unknown | Unknown       | Scoped out due to barrier to movement | N/A  | N/A                       |
| P497S | Unknown | Unknown       | No access                             | Yes – GCN presence and population size class could not be determined | Assumed medium population |
| P498S | Unknown | Unknown       | No access.                            | Yes – GCN presence and population size class could not be determined | Assumed medium population |
| P499S | Unknown | Unknown       | No access.                            | Yes – GCN presence and population size class could not be determined | Assumed medium population |

| Pond  | HSI     | Survey Result | Constraints | Limiting   | Revised Result            |
|-------|---------|---------------|-------------|--|---------------------------|
| P500S | Unknown | Unknown       | No access.  | Yes – GCN presence and population size class could not be determined | Assumed medium population |

Assumed Metapopulation S13 is assumed to be in the “**medium**” population size class on a precautionary basis, due to the survey constraints outlined above.

### Metapopulation N01

Ponds P193N P195N (peak count 15/04/2018 = 5)

The peak count for Metapopulation N01 includes survey data from conventional surveys undertaken in 2019 at P193N. Surveys could not be undertaken at P195N as access was denied by the landowner due to nesting nightingale in this area.

#### Survey results and constraints for Metapopulation N01

| Pond  | HSI   | Survey Result    | Constraints   | Limiting   | Revised Result  |
|-------|---|------------------|---|--|---|
| P193N | Below Average                                     | Small population | 95% of shoreline inaccessible due to dense vegetation, steep sides and deep water. Torching, netting and egg search were undertaken where safe to do so | Yes – GCN are likely to have been under-recorded during surveys      | Assumed medium population   |
| P195N | Average (undertaken outside breeding bird season) | Unknown          | No access due to nesting nightingale <i>Luscinia megarhynchos</i>   | Yes – GCN presence and population size class could not be determined | Assumed medium population (due to proximity to known populations) |
| P194N | Unsuitable - saline moat                          | Absent           | N/A   | N/A  | Absent  |
| P207N | Unsuitable - saline moat                          | Absent           | N/A   | N/A  | Absent  |

P193N and P195N are considered to form part of the same metapopulation on the basis of weak dispersal potential between these two ponds.

Given the survey constraints outlined above, Metapopulation N01 was assumed to be in the “**medium**” population size class on a precautionary basis.

**Metapopulation N02**

Ponds P001N P216N P222N P467N (peak count 12/06/2018 - 26)

The peak count for Metapopulation N02 includes survey data from conventional surveys undertaken in 2018 at P001N, P216N and P222N. An eDNA survey at P467N returned a negative result.

**Survey results and constraints for Metapopulation N02**

| Pond  | HSI     | Survey Result     | Constraints  | Limiting   | Revised Result            |
|-------|---------|-------------------|--|--|---------------------------|
| P001N | Average | Medium population | Only 50% of shoreline was accessible for survey due to dense vegetation and deep water (between 8 and 20 bottle traps deployed).   | Yes – GCN are likely to have been under-recorded during surveys; however, not considered likely that pond would support a large population                                       | Assumed medium population |
| P002N | Average | Absent            | Unable to bottle trap or net on visit 2. Unable to torch, bottle trap, or net on visit 3. Largely dry on visit 4.  | No – dry ponds are generally considered to be unsuitable for breeding GCN  | Absent                    |
| P020N | Poor    | Absent            | Large fishing lake so unsuitable for bottle trapping. Low detectability due to high turbidity on visits 1 to 3. Restricted access to the shoreline due to safety concerns. | Yes – GCN are likely to have been under-recorded during surveys; however, not considered likely that pond would support a GCN population   | Assumed absent            |
| P065N | Poor    | Absent            | Unable to bottle trap on visit 2. Low detectability due to high turbidity on visits 2 and 3. Only 10% of shoreline was accessible due to dense vegetation.                 | No – netting undertaken as additional method on visit 2 and sufficient bottle traps deployed to offset the lower detection rates of torching and egg searches on visits 1 and 3. | Absent                    |
| P066N | No pond | N/A               | N/A  | N/A  | N/A                       |
| P133N | No pond | N/A               | N/A  | N/A  | N/A                       |



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| <b>Pond</b> | <b>HSI</b> | <b>Survey Result</b> | <b>Constraints</b>   | <b>Limiting</b>   | <b>Revised Result</b> |
|-------------|------------|----------------------|--|---|-----------------------|
| P215N       | Average    | Absent               | Unable to bottle trap on visit 2. Low detectability due to high vegetation on visits 2 and 3. Dry in June/July.                    | No – netting undertaken as additional method on visit 2 and sufficient bottle traps deployed to offset the lower detection rates of torching and egg searches on visit 3. Dry ponds are generally considered to be unsuitable for breeding GCN. | Absent                |
| P216N       | Excellent  | Small population     | Low detectability due to high turbidity on visits 1 and 6.   | No – sufficient bottle traps deployed to offset the lower detection rates of torching and egg searches.   | Small population      |
| P222N       | Excellent  | Small population     | Unable to torch on visit 5. Low detectability due to high vegetation cover on visits 1, 2, 3, and 5 and high turbidity on visit 5. | No – sufficient bottle traps deployed to offset the lower detection rates of torching and egg searches.   | Small population      |
| P230N       | Average    | Absent               | Low detectability due to high vegetation cover on visit 3 and high turbidity on visit 4. Dry in June/July.                         | No – sufficient bottle traps deployed to offset the lower detection rates of torching and egg searches and dry ponds are generally considered to be unsuitable for breeding GCN   | Absent                |

| Pond  | HSI     | Survey Result                      | Constraints  | Limiting  | Revised Result   |
|-------|---------|------------------------------------|--|---|--|
| P231N | Average | Absent                             | Low detectability due to high vegetation cover on visit 2 and 4 and high turbidity on visit 4. Dry in June/July. | No – sufficient bottle traps deployed to offset the lower detection rates of torching and egg searches and dry ponds are generally considered to be unsuitable for breeding GCN | Absent   |
| P467N | Good    | Absence confirmed from eDNA survey | Only 20% of the shoreline was accessible for survey.   | Yes – potential for false negative, and GCN presence and population size class could not be determined  | Assumed medium (due to proximity to known populations) |

P001N is considered to be part of the same Metapopulation as P216N and P222N on the basis of weak dispersal potential between these ponds.

Metapopulation N02 was determined to be in the “**medium**” population size class. Despite the constraints, it is not considered likely that P001N could support sufficient GCN to increase the metapopulation size class to “large” (considering 50% of the shoreline was surveyed, extrapolating under the assumption that GCN were evenly distributed around the pond would still only result in a “medium” population for this pond).

### Metapopulation N03

Pond P301N (presence confirmed from positive eDNA result only)

GCN presence for Metapopulation N03 was confirmed through an eDNA survey undertaken at P301N in 2019.

#### Survey results and constraints for Metapopulation N03

| Pond  | HSI                        | Survey Result | Constraints | Limiting | Revised Result |
|-------|----------------------------|---------------|-------------|----------|----------------|
| P254N | Unsuitable – sporting lake | Absent        | N/A         | N/A      | Absent         |

| Pond  | HSI           | Survey Result                       | Constraints   | Limiting   | Revised Result |
|-------|---------------|-------------------------------------|---|--|----------------|
| P301N | Poor          | Presence confirmed from eDNA survey | Only 10% of the shoreline was accessible for survey.  | Yes – potential for false negative but eDNA survey result was positive; however, population size class could not be determined | Assumed medium |
| P302N | Below Average | Absent                              | None  | N/A  | Absent         |
| P468N | Unknown       | Unknown                             | Scoped out as over 250m from minor construction works | N/A  | N/A            |

Considering the constraints, Metapopulation N03 was assumed to be in the “**medium**” population size class on a precautionary basis.

#### Metapopulation N04

Ponds P023N P051N P135N P307N and P411N (peak count 16/04/2018 = 1)

The peak count for Metapopulation N04 includes survey data from conventional surveys undertaken at P023N in 2018, an incidental sighting at P135N in 2019, an eDNA survey at P411N in 2020 and desk study information (positive eDNA survey result) obtained from Natural England (District Licencing Open Source data) for P307N.

#### Survey results and constraints for Metapopulation N04

| Pond  | HSI     | Survey Result    | Constraints   | Limiting  | Revised Result            |
|-------|---------|------------------|---|---|---------------------------|
| P023N | Poor    | Small population | Low detectability due to high turbidity on visit 1. | No – sufficient bottle traps deployed to offset the lower detection rates of torching and egg searches. | Small population          |
| P051N | Unknown | Unknown          | No access.  | Yes – GCN presence and population size class could not be determined                                    | Assumed medium population |
| P073N | No pond | N/A              | N/A   | N/A   | N/A                       |

Additional Sheet C - Detailed Metapopulation Descriptions

| Pond  | HSI     | Survey Result   | Constraints   | Limiting   | Revised Result   |
|-------|---------|---|---|--|--|
| P135N | Unknown | Incidental sighting of an adult during walkover survey in late 2019 | No access during breeding seasons in 2018, 2019.  | Yes – population size class could not be determined                                  | Assumed medium population  |
| P200N | Dry     | Absent  | N/A   | N/A - dry ponds are generally considered to be unsuitable for breeding GCN           | Absent   |
| P307N | Unknown | Unknown   | No access - Presence confirmed through desk study data (positive eDNA result; Natural England data) | Yes – population size class could not be determined                                  | Assumed medium population  |
| P318N | Dry     | Absent  | N/A   | N/A – dry ponds are generally considered to be unsuitable for breeding GCN           | Absent   |
| P347N | Unknown | Unknown   | Scoped out as over 250m from minor construction works   | N/A  | N/A  |
| P411N | Unknown | Unknown   | No access.  | Yes – GCN presence and population size class could not be determined                 | Assumed medium population  |
| P410N | Poor    | Absence confirmed from eDNA survey                                  | Only 30% of the shoreline was accessible for survey due to safety concerns.                         | Yes – potential for false negative and population size class could not be determined | Assumed absent as considered unlikely to be suitable for GCN based on Poor HSI score |

Although a peak count of 1 was recorded in P023N, this was on a pond with a poor HSI and the least suitable pond for GCN within Metapopulation N04. As incidental and eDNA evidence recorded presence at two other ponds it was considered likely that larger peak counts would have been recorded if population assessments were possible. Considering the constraints, Metapopulation N04 was assumed to be in the “**medium**” population size class on a precautionary basis.

### Metapopulation N05

Ponds P045N P116N (peak count 21/05/2018 = 9)

The peak count for Metapopulation N5 includes data from conventional surveys undertaken at P045N and P116N in 2018.

#### Survey results and constraints for Metapopulation N05

| Pond  | HSI  | Survey Result    | Constraints  | Limiting   | Revised Result   |
|-------|------|------------------|--|--|------------------|
| P045N | Dry  | Small population | Low detectability due to high turbidity on visits 1 and 5 and high vegetation cover on visits 1, 2, 3, and 5. Torching not undertaken on visit 4.  | No – netting undertaken as additional method on visit 4 and sufficient bottle traps deployed to offset the lower detection rates of torching and egg searches.       | Small population |
| P116N | Poor | Small population | Low detectability due to high turbidity on visit 4 and high vegetation on visits 3 and 6. Only 10% of shoreline was accessible for survey on visit 3 due to deep silt and scrub. Torching not undertaken on visit 3 and 6. Egg search not undertaken on visit 4. | No – netting undertaken as additional method on visit 3 and 4 and sufficient bottle traps deployed to offset the lower detection rates of torching and egg searches. | Small population |

Metapopulation N05 was determined to be in the “**small**” population size class.

### Metapopulation N06

Ponds P257N P258N (presence confirmed from positive eDNA results only)

GCN presence for Metapopulation N06 was confirmed through eDNA surveys undertaken at P257N and P258N in 2019.

#### Survey results and constraints for Metapopulation N6

| Pond  | HSI           | Survey Result                       | Constraints  | Limiting  | Revised Result            |
|-------|---------------|-------------------------------------|--|---|---------------------------|
| P257N | Below Average | Presence confirmed from eDNA survey | Only 40% of the shoreline was accessible for survey. | Yes – population size class could not be determined | Assumed medium population |

| Pond  | HSI           | Survey Result                       | Constraints   | Limiting  | Revised Result            |
|-------|---------------|-------------------------------------|---|---|---------------------------|
| P258N | Below Average | Presence confirmed from eDNA survey | None  | Yes – population size class could not be determined | Assumed medium population |
| P414N | Unknown       | Unknown                             | Scoped out as over 250m from minor construction works | N/A   | N/A                       |

Considering the constraints, Metapopulation N06 was assumed to be in the “**medium**” population size class on a precautionary basis.

### Metapopulation N07

Ponds P075N P076N P077N P079N P095N P096N P197N (peak count 02/05/2018 = 13)

The peak count for Metapopulation N07 includes survey data from conventional surveys undertaken at P079N and P197N and eDNA surveys at P075N, P076N, P077N, P095N and P096N in 2018.

#### Survey results and constraints for Metapopulation N07

| Pond  | HSI           | Survey Result                       | Constraints  | Limiting   | Revised Result  |
|-------|---------------|-------------------------------------|--|--|---|
| P047N | No pond       | N/A                                 | N/A  | N/A  | N/A   |
| P048N | No pond       | N/A                                 | N/A  | N/A  | N/A   |
| P074N | No pond       | N/A                                 | N/A  | N/A  | N/A   |
| P075N | Good          | Absence confirmed from eDNA survey  | Only 30% of the shoreline was accessible for survey due to dense vegetation. | Yes – potential for false negative and population size class could not be determined | Assumed medium population (due to proximity to known populations) |
| P076N | Below Average | Presence confirmed from eDNA survey | Unsafe to survey using conventional methods.                                 | Yes – population size class could not be determined                                  | Assumed medium population   |
| P077N | Below Average | Unknown – eDNA survey inconclusive  | Unsafe to survey using conventional methods. eDNA survey inconclusive.       | Yes – GCN presence and population size class could not be determined                 | Assumed medium population (due to proximity to known populations) |
| P079N | Poor          | Medium population                   | None   | N/A  | Medium population   |

| Pond  | HSI       | Survey Result                       | Constraints   | Limiting   | Revised Result  |
|-------|-----------|-------------------------------------|---|--|---|
| P095N | Good      | Absence confirmed from eDNA survey  | Only 10% of shoreline was accessible for survey due to dense vegetation.  | Yes – potential for false negative and population size class could not be determined                         | Assumed medium population (due to proximity to known populations) |
| P096N | Excellent | Presence confirmed from eDNA survey | None  | Yes – population size class could not be determined  | Assumed medium  |
| P117N | Poor      | Absent                              | Bottle trapping not undertaken on visit 1. Only 85% of shoreline was accessible for survey on visit 1 and only 75% on visit 2 due to dense vegetation. Dead vegetation covering the pond surface constrained torching on visit 3. | No – other surveys on visit 1 were not constrained and sufficient bottle traps deployed on visits 2, 3 and 4 | Absent  |
| P197N | Average   | Small population                    | Only one survey visit was undertaken in 2018 as subsequent visits were deemed unsafe due to safety issues (deep silt and mud preventing from surveyors accessing the shoreline).  | Yes – GCN are likely to have been under-recorded; population size class could not be determined              | Assumed medium  |
| P235N | Average   | Absent                              | Bottle trapping and netting not undertaken as pond was too shallow. Only 75% of shoreline was accessible for torch survey on visit 2.   | No – torch surveys and egg searches undertaken in optimal conditions and considered sufficient               | Absent  |

Given the survey constraints outlined above, the large number of ponds in the area and the high quality habitat present Metapopulation N07 was assumed to be in the “**large**” population size class on a precautionary basis.

### Metapopulation N08

Ponds P262N P263N P264N P265N (presence confirmed from positive eDNA result only)

GCN presence for Metapopulation N08 was confirmed through an eDNA survey undertaken at P263N in 2019. eDNA surveys undertaken at P260N, P264N, P316N, P261N and P265N in 2019 returned

three negative and two inconclusive results, respectively. GCN were assumed to be present at P264N and P265N. Absence was assumed at P260N, P261N and P316N due to poor HSI scores and distance from known GCN populations in neighbouring ponds.

**Survey results and constraints for Metapopulation N08**

| <b>Pond</b> | <b>HSI</b>    | <b>Survey Result</b>                | <b>Constraints</b>   | <b>Limiting</b>   | <b>Revised Result</b>                                  |
|-------------|---------------|-------------------------------------|--|---|--|
| P260N       | Poor          | Absence confirmed from eDNA survey  | None   | N/A   | Absent   |
| P261N       | Poor          | Unknown - eDNA inconclusive         | eDNA inconclusive and only 75% of the shoreline was accessible for survey. | Yes – GCN presence and population size class could not be determined. However, given the poor HSI score the high proportion of the pond which was surveyed, GCN are considered unlikely to be present | Assumed absent   |
| P262N       | Unknown       | Unknown                             | No access  | Yes – GCN presence and population size class could not be determined  | Assumed medium population                              |
| P263N       | Good          | Presence confirmed from eDNA survey | Only 10% of the shoreline was accessible for survey.                       | Yes – eDNA survey result was positive; however, population size class could not be determined   | Assumed medium   |
| P264N       | Poor          | Absence confirmed from eDNA survey  | Only 20% of the shoreline was accessible for the survey.                   | Yes – potential for false negative and population size class could not be determined  | Assumed medium (due to proximity to known populations) |
| P265N       | Below Average | Unknown – eDNA survey inconclusive  | None   | Yes – GCN presence and population size class could not be determined  | Assumed medium (due to proximity to known populations) |



| Pond  | HSI  | Survey Result                      | Constraints  | Limiting   | Revised Result |
|-------|------|------------------------------------|--|--|----------------|
| P316N | Poor | Absence confirmed from eDNA survey | Less than 75% of the shoreline was accessible to survey due to dense vegetation. | Yes - potential for false negative and population size class could not be determined | Assumed absent |

Considering the constraints, Metapopulation N08 was assumed to be in the “**medium**” population size class on a precautionary basis.

### Metapopulation N09

Ponds P317N P319N P321N (presence confirmed from positive eDNA results only)

GCN presence for Metapopulation N09 was confirmed through eDNA surveys undertaken at P317N, P319N and P321N in 2019. eDNA surveys undertaken at P320N in 2019 returned negative results.

#### Survey results and constraints for Metapopulation N09

| Pond  | HSI           | Survey Result                       | Constraints   | Limiting  | Revised Result |
|-------|---------------|-------------------------------------|---|---|----------------|
| P314N | Unknown       | Unknown                             | Scoped out as over 250m from minor construction works | N/A   | Assumed medium |
| P317N | Good          | Presence confirmed from eDNA survey | None  | Yes – population size class could not be determined   | Assumed medium |
| P319N | Below Average | Presence confirmed from eDNA survey | None  | Yes – population size class could not be determined   | Assumed medium |
| P320N | Below Average | Absence confirmed from eDNA survey  | None  | N/A   | Absent         |
| P321N | Excellent     | Presence confirmed from eDNA survey | Only 70% of the shoreline was accessible for survey.  | Yes – eDNA survey result was positive however population size class could not be determined | Assumed medium |

Considering the constraints, Metapopulation N09 was assumed to be in the “**medium**” population size class on a precautionary basis.

**Metapopulation N10**

Ponds P137N P206N (peak count 21/05/2018 = 113)

The peak count for Metapopulation N10 includes survey data from conventional surveys undertaken at P206N and P137N in 2018. No GCN were recorded during conventional surveys at P089N in 2018. eDNA surveys at P091N and P118N returned negative results.

**Survey results and constraints for Metapopulation N10**

| <b>Pond</b> | <b>HSI</b> | <b>Survey Result</b>               | <b>Constraints</b>   | <b>Limiting</b>   | <b>Revised Result</b> |
|-------------|------------|------------------------------------|--|---|-----------------------|
| P089N       | Poor       | Absent                             | Low detectability due to high turbidity on visits 1, 2, 3, and 4. Bottle trapping and egg searches not undertaken on visits 1 and 4. | Yes – possible for GCN to have been under-recorded; however two surveys undertaken in optimal conditions and HSI score poor   | Assumed absent        |
| P091N       | Poor       | Absence confirmed from eDNA survey | None   | N/A   | Absent                |
| P137N       | Poor       | Medium population                  | Low detectability due to high vegetation cover on visit 3 and high turbidity on visit 6. Bottle trapping not undertaken on visit 3.  | No – netting undertaken as an additional method on visit 3 and sufficient bottle traps deployed to offset the lower detection rates of torching and egg searches on all other visits. | Medium population     |
| P118N       | Poor       | Absence confirmed from eDNA survey | Access restricted by dense scrub around 90% of the shoreline.  | Yes – potential for false negative and GCN population size class could not be determined; however, poor HSI score and adjacent pond also absent.                                      | Assumed absent.       |

| Pond  | HSI     | Survey Result     | Constraints   | Limiting  | Revised Result    |
|-------|---------|-------------------|---|---|-------------------|
| P206N | Average | Medium population | Low detectability due to high turbidity on visit 6. | No – sufficient bottle traps deployed to offset the lower detection rates of torching and egg searches. | Medium population |

The M25 forms a physical barrier to movement of GCN between Metapopulation N10 and other populations east of the M25.

Metapopulation N10 was determined to be in the “**large**” population size class due to the peak count recorded across all ponds.

### Metapopulation N11/N12

Ponds P166N P227N P240N P241N P242N (peak count 09/05/2018 = 7)

The peak count for Metapopulation N11/N12 includes survey data from conventional surveys undertaken at P166N and P227N in 2018. No GCN were recorded during conventional surveys undertaken at P199N and P163N in 2018. GCN presence for P240N and P241N was confirmed through eDNA surveys undertaken in 2018. eDNA surveys undertaken at P239N and P247N in 2018 returned negative results.

#### Survey results and constraints for Metapopulation N11/N12

| Pond  | HSI                               | Survey Result    | Constraints  | Limiting  | Revised Result   |
|-------|-----------------------------------|------------------|--|---|------------------|
| P161N | No pond                           | N/A              | N/A  | N/A   | N/A              |
| P163N | Average                           | Absent           | No torching undertaken due to night-time access restrictions. Fish were present.                           | No – netting undertaken as additional method on all visits and sufficient bottle traps deployed | Absent           |
| P164N | Unsuitable – stocked fishing lake | Absent           | N/A  | N/A   | Absent           |
| P165N | Unsuitable – stocked fishing lake | Absent           | N/A  | N/A   | Absent           |
| P166N | Good                              | Small population | No torching undertaken due to night-time access restrictions. Netting not undertaken on visits 3, 5 and 6. | No – sufficient bottle traps deployed   | Small population |

Additional Sheet C - Detailed Metapopulation Descriptions

| <b>Pond</b> | <b>HSI</b>                            | <b>Survey Result</b>                | <b>Constraints</b>  | <b>Limiting</b>  | <b>Revised Result</b>     |
|-------------|---------------------------------------|-------------------------------------|---|--|---------------------------|
| P167N       | Unsuitable – stocked fishing lake     | Absent                              | N/A   | N/A  | Absent                    |
| P199N       | Average                               | Absent                              | No torching undertaken due to night-time access restrictions. Dry on visit 2. | No – sufficient bottle traps deployed to offset the lower detection rates of torching and egg searches on visit 1 and dry ponds are generally considered to be unsuitable for breeding GCN | Absent                    |
| P212N       | Dry                                   | Absent                              | N/A   | N/A  | Absent                    |
| P227N       | Unknown                               | Small population                    | No torching undertaken due to night-time access restrictions.                 | No – sufficient bottle traps deployed to offset the lower detection rates of torching and egg searches and netting undertaken as additional method on visits 1, 2, and 4                   | Small population          |
| P238N       | Unsuitable – held large fish for sale | Absent                              | N/A   | N/A  | Absent                    |
| P239N       | Average                               | Absence confirmed from eDNA survey  | None  | N/A  | Absent                    |
| P240N       | Average                               | Presence confirmed from eDNA survey | None  | Yes – population size class could not be determined  | Assumed medium population |
| P241N       | Average                               | Presence confirmed from eDNA survey | None  | Yes – population size class could not be determined  | Assumed medium population |

| Pond  | HSI  | Survey Result                      | Constraints | Limiting   | Revised Result            |
|-------|--|------------------------------------|-------------|--|---------------------------|
| P242N | Unknown  | Unknown                            | No access   | Yes – GCN presence and population size class could not be determined | Assumed medium population |
| P247N | Below Average  | Absence confirmed from eDNA survey | None        | N/A  | Absent                    |
| P248N | Unsuitable – a series of containers used for aquaculture | Absent                             | N/A         | N/A  | Absent                    |
| P266N | Unsuitable – stocked fishing lake                        | Absent                             | N/A         | N/A  | Absent                    |

The M25 forms a physical barrier to movement of GCN between Metapopulation N11/N12 and other populations west of the M25.

Considering the constraints, Metapopulation N11/N12 was assumed to be in the “**medium**” population size class on a precautionary basis.

### Metapopulation N13

Ponds P157N P158N P159N P299N P300N (peak count 23/05/2018 = 89)

The peak count for Metapopulation N13 includes results from conventional surveys undertaken at P157N, P158N, and P159N in 2018. No GCN were recorded during conventional surveys undertaken at P086N, P087N, P088N, P160N, P162N, P209N and P299N.

#### Survey results and constraints for Metapopulation N13

| Pond | HSI  | Survey Result | Constraints  | Limiting  | Revised Result |
|------|------|---------------|--|---|----------------|
| P86N | Good | Absent        | Low detectability due to high turbidity on all 4 visits. Too shallow to bottle trap or net on visit 1. Egg searches not undertaken on visit 2. | No – netting undertaken as an additional method on visit 2, sufficient bottle traps deployed to offset the lower detection rates of torching and egg searches on all visits other than 1. | Absent         |

Additional Sheet C - Detailed Metapopulation Descriptions

| Pond  | HSI     | Survey Result     | Constraints  | Limiting   | Revised Result |
|-------|---------|-------------------|--|--|----------------|
| P087N | Average | Absent            | Low detectability due to high turbidity on all 4 visits. Bottle trapping and egg searches not undertaken on visit 1.   | No – netting undertaken as an additional method on visit 2, sufficient bottle traps deployed to offset the lower detection rates of torching and egg searches on all visits other than 1 and HSI score poor. | Absent         |
| P088N | Poor    | Absent            | Low detectability due to high turbidity on visits 1 and 2. Bottle trapping not undertaken on visit 1. Egg searches not undertaken on visits 1 and 2.                       | Yes – possible for GCN to have been under-recorded; however netting undertaken as an additional method on visit 2 and two surveys undertaken in optimal conditions. Also HSI score poor                      | Assumed absent |
| P157N | Poor    | Medium population | Only 75% of shoreline was accessible for survey due to access restrictions. Low detectability due to high turbidity on visit 2. Bottle trapping not undertaken on visit 2. | Yes – sufficient bottle traps deployed and netting undertaken as additional method on visits 2 and 4; however, still potential for GCN to have been under recorded   | Assumed large  |

Additional Sheet C - Detailed Metapopulation Descriptions

| Pond  | HSI     | Survey Result                    | Constraints   | Limiting  | Revised Result           |
|-------|---------|----------------------------------|---|---|--------------------------|
| P158N | Good    | Small population                 | Only 75% of shoreline was accessible for survey due to access restrictions on visits 2 and 3.   | No – sufficient bottle traps deployed to offset the lower detection rates of torching and egg searches and netting undertaken as additional method on visits 1 and 4          | Small population         |
| P159N | Poor    | Presence confirmed from GCN eggs | Only 75% of shoreline was accessible for survey due to access restrictions. Bottle trapping not undertaken on visit 2. Low detectability due to high turbidity on visits 1 and 5. | No – sufficient bottle traps deployed to offset the lower detection rates of torching and egg searches and netting undertaken as additional method on visits 2 and 4          | Assumed small population |
| P160N | Poor    | Absent                           | Low detectability due to high turbidity on visits 1 and 2.  | No – sufficient bottle traps deployed to offset the lower detection rates of torching and egg searches, and netting undertaken as additional method on visits 2.              | Absent                   |
| P162N | Average | Absent                           | Low detectability due to high turbidity on visit 2. Bottle trapping and egg searches not undertaken on visit 4.   | No – sufficient bottle traps deployed to offset the lower detection rates of torching and egg searches on visits 1-3 and netting undertaken as additional method on visits 2. | Absent                   |

| Pond  | HSI     | Survey Result | Constraints   | Limiting  | Revised Result            |
|-------|---------|---------------|---|---|---------------------------|
| P209N | Poor    | Absent        | Low detectability due to high turbidity on visits 1 and 2. Bottle trapping and egg searches not undertaken on visits 1 and 2. | Yes - possible for GCN to have been under-recorded; however, HSI score poor and neighbouring ponds absent or unknown. | Assumed absent            |
| P299N | Unknown | Unknown       | No access   | Yes – GCN presence and population size class could not be determined  | Assumed medium population |
| P300N | Unknown | Unknown       | No access   | Yes – GCN presence and population size class could not be determined  | Assumed medium population |
| P333N | Unknown | Unknown       | Scoped out as over 250m from minor construction works   | N/A   | N/A                       |
| P437N | Unknown | Unknown       | Scoped out as over 250m from minor construction works   | N/A   | N/A                       |
| P438N | Unknown | Unknown       | Scoped out as over 250m from minor construction works   | N/A   | N/A                       |

The M25 forms a physical barrier to movement of GCN between Metapopulation N13 and other populations east of the M25.

Considering the constraints, Metapopulation N13 was assumed to be in the “**large**” population size class on a precautionary basis.

#### **Metapopulation N14**

Ponds P149N P150N P276N P440N P510N and P511N (peak count 22/04/2018 = 10)

The peak count for Metapopulation N14 includes survey data from conventional surveys undertaken at P149N and P150N in 2018. P151N and P277N were dry at the time of survey. P315N was newly excavated and therefore unsuitable. No pond was found at P494N and due to access restriction P510N and P511N were not surveyed.



## Survey results and constraints for Metapopulation N14

| Pond  | HSI                               | Survey Result    | Constraints   | Limiting  | Revised Result            |
|-------|-----------------------------------|------------------|---|---|---------------------------|
| P149N | Below Average                     | Small population | Only 50% of shoreline accessible for survey due to dense vegetation. Low detectability due to high turbidity on visit 5. No visit 6 due to continuous livestock presence until end of survey season (multiple attempts made). | Yes – netting undertaken as additional method on visit 4; however, still potential for GCN to have been under-recorded during surveys | Assumed medium population |
| P150N | Good                              | Small population | Very limited access to shoreline all around pond due to dense vegetation. Only 3 visits due to revoked access. Bottle trapping not undertaken on visit 3. Low detectability due to high turbidity on visits 2 and 3.          | Yes – netting undertaken as additional method on visit 3; however, still potential for GCN to have been under-recorded during surveys | Assumed medium population |
| P151N | Dry                               | Absent           | N/A   | N/A – dry ponds are generally considered to be unsuitable for breeding GCN  | Absent                    |
| P276N | Unknown                           | Unknown          | No access   | Yes – GCN presence and population size class could not be determined  | Assumed medium population |
| P277N | Dry                               | Absent           | N/A   | N/A – dry ponds are generally considered to be unsuitable for breeding GCN  | Absent                    |
| P315N | Unsuitable – newly excavated pond | Absent           | N/A   | N/A   | Absent                    |
| P329N | Unknown                           | Unknown          | Scoped out as over 250m from minor construction works   | N/A   | N/A                       |
| P331N | Unknown                           | Unknown          | Scoped out as over 250m from minor construction works   | N/A   | N/A                       |

| Pond  | HSI     | Survey Result | Constraints | Limiting   | Revised Result            |
|-------|---------|---------------|-------------|--|---------------------------|
| P440N | Unknown | Unknown       | No access.  | Yes – GCN presence and population size class could not be determined | Assumed medium population |
| P494N | No pond | N/A           | N/A         | N/A  | N/A                       |
| P510N | Unknown | Unknown       | No access.  | Yes – GCN presence and population size class could not be determined | Assumed medium population |
| P511N | Unknown | Unknown       | No access.  | Yes – GCN presence and population size class could not be determined | Assumed medium population |

The M25 and A127 form physical barriers to movement of GCN between Metapopulation N14 and other populations west of the M25 and south of the A127.

Metapopulation N14 was assumed to be in the “**medium**” population size category on a precautionary basis. Despite the constraints, it was not considered that P149N and P150N would support sufficient GCN to increase the metapopulation size class to “large”.

### Metapopulation N15

Pond P210N (peak count 23/04/2018 and 13/06/2018 = 1)

The peak count for Metapopulation N15 includes survey data from conventional surveys undertaken at P210N in 2018. GCN eggs were also recorded on visit 3.

#### Survey results and constraints for Metapopulation N15

| Pond  | HSI  | Survey Result | Constraints  | Limiting  | Revised Result |
|-------|------|---------------|--|---|----------------|
| P146N | Good | Absent        | Low detectability due to high turbidity on visits 1 and 2. | No – sufficient bottle traps deployed to offset the lower detection rates of torching and egg searches. | Absent         |

| Pond  | HSI     | Survey Result    | Constraints  | Limiting  | Revised Result   |
|-------|---------|------------------|--|---|------------------|
| P210N | Average | Small population | Low detectability due to high vegetation on visit 1 and high turbidity on visit 2. | No – sufficient bottle traps deployed to offset the lower detection rates of torching and egg searches. | Small population |

The M25 forms a physical barrier to movement of GCN between Metapopulation N15 and other populations east of the M25.

Metapopulation N15 was determined to be in the “**small**” population size class.

### Metapopulation N16

Ponds P097N P098N P099N and P313N (presence confirmed from positive eDNA results only)

GCN presence for Metapopulation N16 was confirmed through eDNA surveys undertaken at P098N and P313N in 2020. eDNA surveys undertaken at P097N and P099N returned negative and inconclusive results respectively.

#### Survey results and constraints for Metapopulation N16

| Pond  | HSI           | Survey Result                       | Constraints       | Limiting   | Revised Result            |
|-------|---------------|-------------------------------------|-------------------|--|---------------------------|
| P097N | Unknown       | Unknown                             | No access         | Yes – population size class could not be determined                  | Assumed medium population |
| P098N | Below average | Presence confirmed from eDNA survey | None              | Yes – population size class could not be determined                  | Assumed medium population |
| P099N | Below average | Unknown – eDNA inconclusive         | eDNA inconclusive | Yes - GCN presence and population size class could not be determined | Assumed medium population |
| P313N | Average       | Presence confirmed from eDNA survey | None              | Yes – population size class could not be determined                  | Assumed medium population |
| P469N | Average       | Absence confirmed from eDNA survey  | None              | No   | Absent                    |

Considering the constraints, Metapopulation N16 was assumed to be in the “**medium**” population size class on a precautionary basis.

### Assumed Metapopulation N17

Ponds P402N

Surveys could not be undertaken at P402N and P043N due to access restrictions. The four other ponds within 500m were unsuitable for GCN.

#### Survey results and constraints for Assumed Metapopulation N17

| Pond  | HSI                           | Survey Result | Constraints                               | Limiting   | Revised Result            |
|-------|-------------------------------|---------------|---|--|---------------------------|
| P043N | Unknown                       | Unknown       | No access - Results provided by Tilbury 2 | None   | Absent                    |
| P172N | Unsuitable – saline waterbody | Absent        | N/A                                       | N/A  | Absent                    |
| P174N | Unsuitable – saline waterbody | Absent        | N/A                                       | N/A  | Absent                    |
| P175N | Unsuitable – saline waterbody | Absent        | N/A                                       | N/A  | Absent                    |
| P198N | Unsuitable – saline waterbody | Absent        | N/A                                       | N/A  | Absent                    |
| P402N | Unknown                       | Unknown       | No access                                 | Yes - GCN presence and population size class could not be determined | Assumed medium population |

Given the constraints listed above, Assumed Metapopulation N17 was assumed to be in the “**medium**” population size class on a precautionary basis.

### Assumed Metapopulation N18

Ponds P252N P253N P303N

Metapopulation N18 comprises three ponds (P252N, P253N and P303N). Due access being denied, surveys could not be undertaken at these ponds.

**Survey results and constraints for Assumed Metapopulation N18**

| Pond  | HSI     | Survey Result | Constraints | Limiting   | Revised Result            |
|-------|---------|---------------|-------------|--|---------------------------|
| P252N | Unknown | Unknown       | No access   | Yes - GCN presence and population size class could not be determined | Assumed medium population |
| P253N | Unknown | Unknown       | No access   | Yes - GCN presence and population size class could not be determined | Assumed medium population |
| P303N | Unknown | Unknown       | No access   | Yes - GCN presence and population size class could not be determined | Assumed medium population |

Assumed Metapopulation N18 was assumed to be in the “**medium**” population size class on a precautionary basis, due to the constraints above.

**Assumed Metapopulation N19**

Ponds P403N P404N

Surveys could not be undertaken at ponds P403N and P404N due to access restrictions. P349N was scoped out due to the distance between the pond and construction works.

**Survey results and constraints for Metapopulation N19**

| Pond  | HSI     | Survey Result | Constraints   | Limiting   | Revised Result            |
|-------|---------|---------------|---|--|---------------------------|
| P349N | Unknown | Unknown       | Scoped out as over 250m from minor construction works | N/A  | N/A                       |
| P403N | Unknown | Unknown       | No access   | Yes - GCN presence and population size class could not be determined | Assumed medium population |
| P404N | Unknown | Unknown       | No access   | Yes - GCN presence and population size class could not be determined | Assumed medium population |

No population size assessment could be made on Assumed Metapopulation N19 due the lack of survey data caused by access constraints. Despite this, Assumed Metapopulation N19 was assumed to be in the “**medium**” population size class on a precautionary basis.

**Assumed Metapopulation N20**

Pond P338N

Surveys could not be conducted at P338N due to access restrictions. eDNA surveys conducted at P311N and P312N returned negative results.

**Survey results and constraints for Assumed Metapopulation N20**

| <b>Pond</b> | <b>HSI</b> | <b>Survey Result</b> | <b>Constraints</b>                                    | <b>Limiting</b>  | <b>Revised Result</b>     |
|-------------|------------|----------------------|---|--|---------------------------|
| P271N       | Unknown    | Unknown              | Scoped out as over 250m from minor construction works | N/A  | N/A                       |
| P272N       | Unknown    | Unknown              | Scoped out as over 250m from minor construction works | N/A  | N/A                       |
| P273N       | Unknown    | Unknown              | Scoped out as over 250m from minor construction works | N/A  | N/A                       |
| P274N       | Unknown    | Unknown              | Scoped out as over 250m from minor construction works | N/A  | N/A                       |
| P275N       | Unknown    | Unknown              | Scoped out as over 250m from minor construction works | N/A  | N/A                       |
| P338N       | Unknown    | Unknown              | No access   | Yes - GCN presence and population size class could not be determined       | Assumed medium population |
| P339N       | Unknown    | Unknown              | Scoped out as over 250m from minor construction works | N/A  | N/A                       |
| P423N       | Dry        | Absent               | N/A   | N/A – dry ponds are generally considered to be unsuitable for breeding GCN | Absent                    |
| P424N       | Unknown    | Unknown              | Scoped out as over 250m from minor construction works | N/A  | N/A                       |
| P425N       | Unknown    | Unknown              | Scoped out as over 250m from minor construction works | N/A  | N/A                       |

| Pond  | HSI     | Survey Result | Constraints   | Limiting | Revised Result |
|-------|---------|---------------|---|----------|----------------|
| P426N | Unknown | Unknown       | Scoped out as over 250m from minor construction works | N/A      | N/A            |
| P427N | Unknown | Unknown       | Scoped out as over 250m from minor construction works | N/A      | N/A            |
| P428N | Unknown | Unknown       | Scoped out as over 250m from minor construction works | N/A      | N/A            |

Given the constraints listed above, Assumed Metapopulation N20 was assumed to be in the “**medium**” population size class on a precautionary basis.

**Assumed Metapopulation N21**

Pond P168N P169N

Both ponds within Metapopulation N21 (P168N and P169N) could not be surveyed due to access restrictions. An eDNA survey conducted at P170N returned a negative result.

**Survey results and constraints for Assumed Metapopulation N21**

| Pond  | HSI                               | Survey Result                         | Constraints | Limiting   | Revised Result            |
|-------|-----------------------------------|---------------------------------------|-------------|--|---------------------------|
| P167N | Unsuitable – stocked fishing lake | Absent                                | N/A         | N/A  | Absent                    |
| P168N | Unknown                           | Unknown                               | No access   | Yes - GCN presence and population size class could not be determined | Assumed medium population |
| P169N | Unknown                           | Unknown                               | No access   | Yes - GCN presence and population size class could not be determined | Assumed medium population |
| P170N | Average                           | Absence confirmed through eDNA survey | None        | N/A  | Absent                    |

Given the constraints listed above, Assumed Metapopulation N21 was assumed to be in the “**medium**” population size class on a precautionary basis.

**Assumed Metapopulation N22**

Pond P279N

No surveys were undertaken at P279N due to access restrictions. P446N was found to be dry, and three other ponds were scoped out due to their distance from the construction works.

**Survey results and constraints for Assumed Metapopulation N22**

| Pond  | HSI     | Survey Result | Constraints   | Limiting   | Revised Result            |
|-------|---------|---------------|---|--|---------------------------|
| P142N | Unknown | Unknown       | Scoped out as over 250m from minor construction works | N/A  | N/A                       |
| P279N | Unknown | Unknown       | No access   | Yes - GCN presence and population size class could not be determined | Assumed medium population |
| P278N | Unknown | Unknown       | Scoped out as over 250m from minor construction works | N/A  | N/A                       |
| P445N | Unknown | Unknown       | Scoped out as over 250m from minor construction works | N/A  | N/A                       |

Given the constraints listed above, Assumed Metapopulation N22 was assumed to be in the “**medium**” population size class on a precautionary basis.

**Assumed Metapopulation N23**

Pond P325N

No surveys were undertaken at P325N due to access restrictions. An eDNA survey at P326N returned a negative result.

**Survey results and constraints for Assumed Metapopulation N23**

| Pond  | HSI     | Survey Result | Constraints | Limiting   | Revised Result            |
|-------|---------|---------------|-------------|--|---------------------------|
| P325N | Unknown | Unknown       | No access   | Yes - GCN presence and population size class could not be determined | Assumed medium population |



| Pond  | HSI           | Survey Result                         | Constraints   | Limiting   | Revised Result |
|-------|---------------|---------------------------------------|---|--|----------------|
| P326N | Below average | Absence confirmed through eDNA survey | Water sample quality low and no egg searches undertaken due to lack of suitable vegetation. | Yes – potential for false negative and GCN population size class could not be determined; however, HSI score is below average and no GCN presence confirmed at neighbouring ponds. | Assumed absent |

Given the constraints listed above, Assumed Metapopulation N23 was assumed to be in the “**medium**” population size class on a precautionary basis.

**Assumed Metapopulation N24**

Ponds P458N and P459N

Ponds P458N and P459N could not be surveyed due to access restrictions. An eDNA survey at P323N returned an inconclusive result.

**Survey results and constraints for Assumed Metapopulation N24**

| Pond  | HSI     | Survey Result               | Constraints   | Limiting   | Revised Result  |
|-------|---------|-----------------------------|---|--|-----------------|
| P323N | Good    | Unknown – eDNA inconclusive | eDNA inconclusive. Pond almost dry during survey.     | Yes - GCN presence and population size class could not be determined; however, pond was almost dry during survey which is generally considered unsuitable for breeding GCN | Assumed absent. |
| P447N | Unknown | Unknown                     | Scoped out as over 250m from minor construction works | N/A  | N/A             |
| P450N | Unknown | Unknown                     | Scoped out as over 250m from minor construction works | N/A  | N/A             |

| Pond  | HSI     | Survey Result | Constraints | Limiting   | Revised Result            |
|-------|---------|---------------|-------------|--|---------------------------|
| P458N | Unknown | Unknown       | No access   | Yes - GCN presence and population size class could not be determined | Assumed medium population |
| P459N | Unknown | Unknown       | No access   | Yes - GCN presence and population size class could not be determined | Assumed medium population |

The M25 forms a physical barrier to movement of GCN between Assumed Metapopulation N24 and other populations east of the M25.

Given the constraints listed above, Assumed Metapopulation N24 was assumed to be in the “**medium**” population size class on a precautionary basis.

#### Assumed Metapopulation N25

Ponds P506N P507N and P508N

Ponds P506N, P507N AND P508N could not be surveyed due to access restrictions. An eDNA survey at P326N a negative result. No pond was found at P489N, P490N, P492N AND P495N.

#### Survey results and constraints for Assumed Metapopulation N25

| Pond  | HSI           | Survey Result                         | Constraints   | Limiting   | Revised Result |
|-------|---------------|---------------------------------------|---|--|----------------|
| P326N | Below average | Absence confirmed through eDNA survey | Water sample quality low and no egg searches undertaken due to lack of suitable vegetation. | Yes – potential for false negative and GCN population size class could not be determined; however, HSI score is below average and no GCN presence confirmed at neighbouring ponds. | Assumed absent |
| P327N | Good          | Absent                                | 10% of shoreline surveyed during eDNA surveys due to dense vegetation restricting access    | N/A  | Assumed absent |

Additional Sheet C - Detailed Metapopulation Descriptions

| Pond  | HSI       | Survey Result | Constraints  | Limiting   | Revised Result                              |
|-------|-----------|---------------|--|--|---|
| P478N | Excellent | Absent        | 70% of shoreline surveyed during eDNA surveys due to dense vegetation restricting access | No - majority of the shoreline surveyed                              | Assumed absent                              |
| P479N | Average   | Absent        | None   | N/A  | Assumed absent                              |
| P480N | Poor      | Absent        | None   | N/A  | Assumed absent                              |
| P481N | Average   | Absent        | None   | N/A  | Assumed absent                              |
| P489N | No pond   | N/A           | N/A  | N/A  | N/A   |
| P490N | No pond   | N/A           | N/A  | N/A  | N/A   |
| P492N | No pond   | N/A           | N/A  | N/A  | N/A   |
| P495N | No pond   | N/A           | N/A  | N/A  | N/A   |
| P506N | Unknown   | Unknown       | No access  | Yes - GCN presence and population size class could not be determined | Assumed present with medium population size |
| P507N | Unknown   | Unknown       | No access  | Yes - GCN presence and population size class could not be determined | Assumed present with medium population size |
| P508N | Unknown   | Unknown       | No access  | Yes - GCN presence and population size class could not be determined | Assumed present with medium population size |

Assumed Metapopulation N25 is assumed to be in the “**medium**” population size class on a precautionary basis, due to the survey constraints outlined above.

**Assumed Metapopulation N26**

Pond P509N

Ponds P509N could not be surveyed due to access restrictions. P475N No pond was found P491N and P476N and P477N were fishponds and therefore unsuitable for GCN.

**Survey results and constraints for Assumed Metapopulation N26**

| <b>Pond</b> | <b>HSI</b>                     | <b>Survey Result</b> | <b>Constraints</b>   | <b>Limiting</b>  | <b>Revised Result</b>                       |
|-------------|--------------------------------|----------------------|--|--|---|
| P475N       | Good                           | Absent               | 60% of shoreline surveyed during eDNA surveys due to dense vegetation restricting access | No – large proportion of the perimeter was surveyed                  | Assumed absent                              |
| P476N       | Unsuitable-ornamental fishpond | Absent               | N/A  | N/A  | Absent                                      |
| P477N       | Unsuitable-fishpond            | Absent               | N/A  | N/A  | Absent                                      |
| P491N       | No pond                        | No pond              | N/A  | N/A  | Absent                                      |
| P509N       | Unknown                        | Unknown              | No access  | Yes - GCN presence and population size class could not be determined | Assumed present with medium population size |

Assumed Metapopulation N26 is assumed to be in the “**medium**” population size class on a precautionary basis, due to the survey constraints outlined above.

**Additional Sheet C1.3 - Pre-existing Data**

A desk study was undertaken in 2022 which considered all protected species records including GCN within 1km of the site boundary. Records were requested from Kent & Medway Biological Records Centre (KMBRC), Essex Wildlife Trust Biological Records Centre (EWTBRC), Essex Field Club (EFC) and Greenspace Information for Greater London (GiGL).

**South of the River Thames**

According to Kent Reptile and Amphibian Group, Kent has good populations of GCN. The desk study data from the KMBRC indicate that since 2007, there were 16 GCN records within 1km of the site boundary. No statutory designated sites for which GCN are a designating or qualifying feature were identified within 1km of the site boundary.

**Records of GCN in Kent since 2007 obtained from KMBRC**

| <b>Location</b>                | <b>Grid Reference</b> | <b>Observation Date</b> | <b>Relation to ponds within 500m of site boundary</b>   |
|--------------------------------|-----------------------|-------------------------|---|
| Private Address                | TQ730605              | 05/01/2017              | Outside 500m of site boundary   |
| Ashenbank Wood                 | TQ6779269443          | 13/05/2014              | P003S   |
| Ashenbank Wood                 | TQ6777169448          | 13/05/2014              | P003S   |
| Boxley                         | TQ77485880            | 08/05/2013              | Outside 500m of site boundary   |
| Boxley                         | TQ77485880            | 10/05/2013              | Outside 500m of site boundary   |
| Boxley                         | TQ77485880            | 06/06/2013              | Outside 500m of site boundary   |
| Cobham Hall Independent School | TQ6804469173          | 07/05/2014              | P179S   |
| Cobham Hall Independent School | TQ6799669198          | 07/05/2014              | P178S   |
| Shorne Wood Country Park       | TQ678697              | 03/03/2011              | No pond known at this location. GCN known to present within Shorne Woods. No further detail provided. Considered likely to be a terrestrial record. |
| Shorne Wood Country Park       | TQ678697              | 12/03/2011              | No pond known at this location. GCN known to present within Shorne Woods. No further detail provided. Considered likely to be a terrestrial record. |
| Shorne Wood Country Park       | TQ6832970005          | 28/03/2012              | P184S   |
| Shorne Wood Country Park       | TQ6829169907          | 24/06/2014              | P184S   |
| Shorne Wood Country Park       | TQ6828069948          | 13/05/2014              | P184S   |
| Shorne Wood Country Park       | TQ6805669837          | 24/06/2014              | P039S   |
| Shorne Wood Country Park       | TQ6815569938          | 24/06/2014              | P183S   |
| Shorne Wood Country Park       | TQ6827769952          | 17/05/2015              | P184S   |
| Shorne Wood Country Park       | TQ6828769907          | 17/05/2015              | P185S   |
| Shorne Wood Country Park       | TQ6805269833          | 17/05/2015              | P039S   |

**North of the River Thames**

The desk study data from the EWTBRC indicate that since 2007, there were 32 GCN records within 1km of the site boundary. The EFC (2020) returned 73 records of GCN within 2km of the Order Limits since 2007, 24 of which were within the GCN Survey Boundary. The below tables detail these records and relates them to any ponds within the licence application.

## Additional Sheet C1.3 - Pre-existing Data

The GIGL Records centre (2020) returned 73 records of GCN within 2km of the Order Limits. No geographical locations for the records were provided, however the nearest was located adjacent to the Order Limits. Given the small area of the Project this record centre covers, these records are considered likely to relate to metapopulations N10 and N13.

### Records of GCN obtained from GiGL

| Total number of occurrences | Maximum occurrence | Distance (m) of nearest record | Bearing of nearest record | Date of nearest record | Distance (m) of most recent record | Bearing of most recent record | Date of most recent record |
|-----------------------------|--------------------|--------------------------------|---------------------------|------------------------|------------------------------------|-------------------------------|----------------------------|
| 190                         | 20                 | 0                              | N                         | Jun-09                 | 973                                | N                             | 26/05/2021                 |

Cranham Brickfields Local Nature Reserve (LNR), located 600m south west of the site boundary at its closest point, supports GCN. The site appears to support one pond surrounded by woodland. The pond itself is located 900m from the site boundary. Given the distance, abundance of suitable habitat near to the pond and lack of habitat connectivity between the site boundary and this pond, GCN associated with the nature reserve population were considered unlikely to be present within the site boundary.

**Records of GCN in Essex since 2007 obtained from EWTBRC**

| <b>Location</b>               | <b>Sample Date</b>      | <b>Grid reference</b> | <b>Abundance</b> | <b>Relation to ponds within 500m of site boundary</b> |
|-------------------------------|-------------------------|-----------------------|------------------|---|
| Belhus Park Golf Course, pond | 10/05/2012 - 11/05/2012 | TQ5716581441          | 2 Count          | Outside 500m of site boundary                         |

**Records of GCN in Essex since 2007 obtained from EFC**

| <b>Location</b>                        | <b>Date of last record</b> | <b>Grid reference</b> | <b>Abundance</b> | <b>Relation to ponds within 500m of site boundary</b> |
|--|----------------------------|-----------------------|------------------|---|
| A13 near Junction with M25             | 2015                       | TQ576802              | 1 record         | Outside 500m of site boundary                         |
| Basildon                               | 2018                       | TQ6880489914          | 1 record         | Outside 500m of site boundary                         |
| Basildon                               | 2018                       | TQ6885489917          | 1 record         | Outside 500m of site boundary                         |
| Basildon                               | 2018                       | TQ6988290411          | 2 records        | Outside 500m of site boundary                         |
| Basildon                               | 2018                       | TQ6996590650          | 1 record         | Outside 500m of site boundary                         |
| Basildon                               | 2020                       | TQ68448757            | 1 record         | Outside 500m of site boundary                         |
| Basildon, Langdon Hills Nature Reserve | 2018                       | TQ66018737            | 12 records       | Outside 500m of site boundary                         |
| Belhus Golf Course, Cranham            | 2012                       | TQ5711781552          | 6 records        | Outside 500m of site boundary                         |
| Belhus Golf Course, Cranham            | 2012                       | TQ5716381438          | 6 records        | Outside 500m of site boundary                         |
| Billericay                             | 2014                       | TQ6956390754          | 1 record         | Outside 500m of site boundary                         |
| Brentwood                              | 2018                       | TQ5727494170          | 5 records        | Outside 500m of site boundary                         |
| Brentwood                              | 2010                       | TQ6216290066          | 2 records        | Outside 500m of site boundary                         |
| Brentwood                              | 2015                       | TQ6054191603          | 3 records        | Outside 500m of site boundary                         |
| Brentwood                              | 2015                       | TQ6069591393          | 1 record         | Outside 500m of site boundary                         |
| Brentwood                              | 2015                       | TQ6168992255          | 1 record         | Outside 500m of site boundary                         |
| Brentwood                              | 2015                       | TQ6169992240          | 1 record         | Outside 500m of site boundary                         |
| Brentwood                              | 2016                       | TQ6081891200          | 2 records        | Outside 500m of site boundary                         |
| Brentwood                              | 2016                       | TQ6103390717          | 2 records        | Outside 500m of site boundary                         |
| Brentwood                              | 2018                       | TQ6120090900          | 2 records        | Outside 500m of site boundary                         |
| Brentwood                              | 2021                       | TQ60769131            | 2 records        | Outside 500m of site boundary                         |
| Brentwood                              | 2021                       | TQ60779130            | 2 records        | Outside 500m of site boundary                         |

Additional Sheet C1.3 - Pre-existing Data

|  |      |              |            |                               |
|--|------|--------------|------------|-------------------------------|
| Brentwood CM13 3LW                                 | 2017 | TQ6216290066 | 2 records  | Outside 500m of site boundary |
| Brentwood CM13 3LW                                 | 2017 | TQ6263890169 | 1 record   | Outside 500m of site boundary |
| Broadfields Farm Thames Chase Essex                | 2012 | TQ5822985920 | 12 records | P137N                         |
| Broadfields Farm Thames Chase Woodland             | 2012 | TQ5824486127 | 12 records | P206N                         |
| Broadfields Farm, Thames Chase Woodland            | 2012 | TQ58248612   | 12 records | P206N                         |
| Broadfields Farm, Thames Chase Woodland, Upminster | 2012 | TQ5824486127 | 12 records | P206N                         |
| Broadfields Farm, Thames Chase, Essex              | 2012 | TQ58228592   | 12 records | P137N                         |
| Broadfields Farm, Thames Chase, Essex, Upminster   | 2012 | TQ5822985920 | 12 records | P137N                         |
| Chafford Gorges Nature Park                        | 2010 | TQ5983079290 | 1 record   | Outside 500m of site boundary |
| Corringham   | 2013 | TQ6793681698 | 1 record   | Outside 500m of site boundary |
| Corringham   | 2013 | TQ6793681698 | 1 record   | Outside 500m of site boundary |
| Corringham, St Clere'S Hall Golf Course            | 2013 | TQ6759681646 | 3 records  | Outside 500m of site boundary |
| Cranham Golf Course                                | 2012 | TQ5842686760 | 1 record   | P162N                         |
| Cranham Golf Course                                | 2012 | TQ58428676   | 1 record   | P162N                         |
| Cranham Golf Course, Upminster                     | 2012 | TQ5842686760 | 1 record   | P162N                         |
| Cranham, Belhus Golf Course                        | 2012 | TQ5716381438 | 6 records  | Outside 500m of site boundary |
| Cranham, Belhus Golf Course                        | 2012 | TQ5711781552 | 6 records  | Outside 500m of site boundary |
| Dunton Hills Golf Course                           | 2019 | TQ6368588495 | 2 records  | Outside 500m of site boundary |
| Dunton Hills Golf Course                           | 2019 | TQ6376288041 | 1 record   | Outside 500m of site boundary |
| Franks Cottages                                    | 2012 | TQ5857987047 | 12 records | P158N                         |
| Franks Cottages, Upminster                         | 2012 | TQ5857987047 | 12 records | P158N                         |
| Franks Cottages, Upminster (pinpoint)              | 2012 | TQ5857987047 | 12 records | P158N                         |
| Franks Cottages, Upminster                         | 2012 | TQ58578704   | 12 records | P158N                         |
| Franks Farm  | 2012 | TQ5865487384 | 8 records  | P157N                         |
| Franks Farm, Upminster                             | 2012 | TQ5865487384 | 8 records  | P157N                         |
| Franks Farm, Upminster (pinpoint)                  | 2012 | TQ5865487384 | 8 records  | P157N                         |
| Franks Farm, Upminster                             | 2012 | TQ58658738   | 8 records  | P157N                         |
| Hartwood Golf Course Pond, Brentwood               | 2017 | TQ6168892253 | 1 record   | Outside 500m of site boundary |



Additional Sheet C1.3 - Pre-existing Data

|   |      |              |            |                               |
|---|------|--------------|------------|-------------------------------|
| Havering                                | 2020 | TQ56599047   | 2 records  | Outside 500m of site boundary |
| Herongate                               | 2019 | TQ6348790821 | 1 record   | Outside 500m of site boundary |
| Laindon                                 | 2013 | TQ6898587242 | 2 records  | Outside 500m of site boundary |
| Laindon Hill                            | 2018 | TQ6620385567 | 3 records  | Outside 500m of site boundary |
| Laindon, Basildon                       | 2018 | TQ6637685790 | 1 record   | Outside 500m of site boundary |
| Laindon, Basildon                       | 2018 | TQ6630285958 | 1 record   | Outside 500m of site boundary |
| Laindon, Basildon                       | 2018 | TQ6626785410 | 1 record   | Outside 500m of site boundary |
| Laindon, Basildon                       | 2018 | TQ6618385460 | 1 record   | Outside 500m of site boundary |
| Laindon, Basildon                       | 2018 | TQ6623685481 | 1 record   | Outside 500m of site boundary |
| Laindon, lee chaple lane (pinpoint)     | 2013 | TQ6898587242 | 1 record   | Outside 500m of site boundary |
| Laindon, Pound Lane                     | 2017 | TQ688899     | 10 records | Outside 500m of site boundary |
| Langdon Hills Golf Course               | 2018 | TQ6620085500 | 6 records  | Outside 500m of site boundary |
| Langdon Hills Nature Reserve            | 2018 | TQ66018737   | 12 records | Outside 500m of site boundary |
| Little Burstead                         | 2018 | TQ6677592162 | 1 record   | Outside 500m of site boundary |
| Little Warley                           | 2020 | TQ59709054   | 2 records  | Outside 500m of site boundary |
| London Upminster                        | 2018 | TQ5683988691 | 1 record   | Outside 500m of site boundary |
| Nevendon, Wickford (pinpoint)           | 2010 | TQ6940388320 | 5 records  | Outside 500m of site boundary |
| Noak Bridge                             | 2018 | TQ6983190699 | 1 record   | Outside 500m of site boundary |
| Noak Bridge                             | 2018 | TQ6988290408 | 2 records  | Outside 500m of site boundary |
| Noak Bridge                             | 2018 | TQ6996490573 | 2 records  | Outside 500m of site boundary |
| Pound Lane, Basildon                    | 2017 | TQ688896     | 3 records  | Outside 500m of site boundary |
| Pound Lane, Basildon                    | 2017 | TQ688899     | 23 records | Outside 500m of site boundary |
| St Cleres Golf Course, Stanford Le Hope | 2012 | TQ6798181653 | 1 record   | Outside 500m of site boundary |
| St Cleres Golf Course, Stanford Le Hope | 2012 | TQ6793181707 | 1 record   | Outside 500m of site boundary |
| St Cleres Golf Course, Stanford Le Hope | 2012 | TQ6783881833 | 1 record   | Outside 500m of site boundary |
| St Cleres School, Stanford le Hope      | 2018 | TQ6753481474 | 2 records  | Outside 500m of site boundary |
| St Cleres, Stanford Le Hope             | 2012 | TQ6793881707 | 1 record   | Outside 500m of site boundary |
| Stanford le Hope                        | 2018 | TQ6748981876 | 1 record   | P409N                         |
| Stanford Le Hope                        | 2012 | TQ6766281647 | 1 record   | Outside 500m of site boundary |

Additional Sheet C1.3 - Pre-existing Data

|  |      |              |            |                               |
|--|------|--------------|------------|-------------------------------|
| Stanford Le Hope                                   | 2014 | TQ6772381955 | 2 records  | Outside 500m of site boundary |
| Stanford Le Hope                                   | 2012 | TQ6792881658 | 1 record   | Outside 500m of site boundary |
| Stanford le Hope                                   | 2018 | TQ6923081032 | 1 record   | Outside 500m of site boundary |
| Stanford le hope (pinpoint)                        | 2012 | TQ6792881658 | 1 record   | Outside 500m of site boundary |
| Stanford le hope, butts lane                       | 2012 | TQ6766281647 | 1 record   | Outside 500m of site boundary |
| Stanford Le Hope, St Cleres                        | 2012 | TQ6793881707 | 1 record   | Outside 500m of site boundary |
| Stanford Le Hope, St Cleres Golf Course            | 2012 | TQ6783881833 | 1 record   | Outside 500m of site boundary |
| Stanford Le Hope, St Cleres Golf Course            | 2012 | TQ6793181707 | 1 record   | Outside 500m of site boundary |
| Stanford Le Hope, St Cleres Golf Course            | 2012 | TQ6798181653 | 1 record   | Outside 500m of site boundary |
| Stanford-le-Hope                                   | 2018 | TQ6734481240 | 1 record   | Outside 500m of site boundary |
| Stanford-le-Hope                                   | 2018 | TQ6734881239 | 2 records  | Outside 500m of site boundary |
| Stanford-le-Hope                                   | 2018 | TQ6757481210 | 1 record   | Outside 500m of site boundary |
| Stanford-le-Hope                                   | 2018 | TQ6757581212 | 2 records  | Outside 500m of site boundary |
| Stanford-le-Hope                                   | 2018 | TQ6730281253 | 2 records  | Outside 500m of site boundary |
| Thorndon CP North                                  | 2011 | TQ6073391181 | 1 record   | Outside 500m of site boundary |
| Upminster, Broadfields Farm, Thames Chase Woodland | 2012 | TQ5824486127 | 12 records | P206N                         |
| Upminster, Broadfields Farm, Thames Chase, Essex   | 2012 | TQ5822985920 | 12 records | P137N                         |
| Upminster, Cranham Golf Course                     | 2012 | TQ5842686760 | 1 record   | P162N                         |
| Upminster, Franks Cottages                         | 2012 | TQ5857987047 | 12 records | P158N                         |
| Upminster, Franks Farm                             | 2012 | TQ5865487384 | 8 records  | P157N                         |
| Warley   | 2021 | TQ58949272   | 5 records  | Outside 500m of site boundary |
| Warley Place, Brentwood                            | 2017 | TQ5832190858 | 3 records  | Outside 500m of site boundary |
| Warren Gorge Chafford Gorges EWT                   | 2010 | TQ5983079290 | 1 record   | Outside 500m of site boundary |
| West Horndon                                       | 2010 | TQ6103390717 | 2 records  | Outside 500m of site boundary |
| West Horndon                                       | 2016 | TQ6220388576 | 3 records  | Outside 500m of site boundary |
| West Horndon                                       | 2018 | TQ6120090400 | 1 record   | Outside 500m of site boundary |
| West Horndon                                       | 2019 | TQ6369788929 | 1 record   | Outside 500m of site boundary |
| Westley Green                                      | 2021 | TQ68938715   | 1 record   | Outside 500m of site boundary |

Additional Sheet C1.3 - Pre-existing Data

|                    |      |              |           |                               |
|--------------------|------|--------------|-----------|-------------------------------|
| Westley Green      | 2021 | TQ69478671   | 1 record  | Outside 500m of site boundary |
| Westley Green      | 2021 | TQ69478672   | 1 record  | Outside 500m of site boundary |
| Wickford, Nevendon | 2010 | TQ6940388320 | 5 records | Outside 500m of site boundary |

**Additional Sheet D - Detailed Impact Assessment**

The below provides a detailed description of the proposed pre- and mid- development impacts within close proximity to each metapopulation. Areas of proposed temporary and permanent impacts are shown on the Figure D Impact Map for each metapopulation. All impacts are described to current design. Where the details of impacts are yet to be confirmed, mainly in relation exact locations for utility works, a worst-case scenario has been assumed and as such, the extent of habitat loss shown on Figure D is larger than will be the case at the time of construction. Further details of utility works will be provided within the final licence submission.

Where mitigation proposals are within 500m of a metapopulation, the impacts of these have been included in Section D5 – Other Impacts.

As agreed with Natural England, where one habitat type is being lost to construction and replaced by a different habitat as part of the landscaping proposals, this has been included as a “Permanent habitat loss (landscaping)” on figure D with the subsequent habitat creation included in Section E. Only habitats that are being temporarily lost and reinstated as the same habitat type are shown as “Temporary habitat loss”. This same principle also applies to mitigation areas where one habitat is being replaced by another habitat. Where this occurs, this has been included as “Permanent habitat loss”. These permanent loss figures relating to mitigation habitat creation are included in the corresponding habitat impacts tables, in addition to the habitat lost to the road construction.

**Metapopulation S01**

Ponds P003S P004S P064S P178S P179S P182S P203S P221S (Medium population)

The A2 is located to the north of Metapopulation S01 and forms a physical barrier between this population and any impacts associated with the project. As such, any impacts to the north of the A2 within 500m of these ponds have not been included below.

**D1 – Habitat Impact tables**

**D1.1 Breakdown of terrestrial impacts**

| Permanent                          |                | Temporary                          |                   |
|------------------------------------|----------------|------------------------------------|-------------------|
| Habitat type                       | Area lost (ha) | Habitat type                       | Area damaged (ha) |
| Woodland                           | 3.56           | Woodland                           | 0.73              |
| Scrub                              | 0.02           | Semi-improved neutral grassland    | 0.02              |
| Semi-improved neutral grassland    | 1.39           | Unimproved calcareous grassland    | 0.08              |
| Semi-improved calcareous grassland | 0.25           | Semi-improved calcareous grassland | 0.18              |
| Poor semi-improved grassland       | 0.59           | Poor-semi-improved grassland       | 0.12              |
| Tall herb and fern                 | 0              | Tall herb and fern                 | 0                 |
| Amenity grassland                  | 0.01           | Amenity grassland                  | 0                 |
| Bracken                            | 0.02           | Bracken                            | 0.01              |
| <b>Total Loss</b>                  | <b>5.84</b>    | <b>Total Damage</b>                | <b>1.14</b>       |

**D1.2 Core, Intermediate and distant terrestrial impacts**

|                       | Permanent      | Temporary         |
|-----------------------|----------------|-------------------|
|                       | Area lost (ha) | Area damaged (ha) |
| Core (<50m from pond) | 0              | 0                 |

|                                  | Permanent      | Temporary         |
|----------------------------------|----------------|-------------------|
|                                  | Area lost (ha) | Area damaged (ha) |
| Intermediate (50-250m from pond) | 1.51           | 0.52              |
| Distant (>250m from pond)        | 4.33           | 0.62              |
| Total (ha)                       | 5.84           | 1.14              |

### D1.3 Impacts to Linear Features

|                                  | Permanent  | Temporary  |
|----------------------------------|------------|------------|
|                                  | Length (m) | Length (m) |
| Core (<50m from pond)            | 0          | 0.05       |
| Intermediate (50-250m from pond) | 0          | 0.15       |
| Distant (>250m from pond)        | 0          | 0.04       |
| Total (m)                        | 0          | 0.24       |

### D1.4 Aquatic Impacts

|             | Permanent   |                             | Temporary      |                                |
|-------------|-------------|-----------------------------|----------------|--------------------------------|
|             | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
| GCN Ponds   | 0           | 0                           | 0              | 0                              |
| Other Ponds | 0           | 0                           | 0              | 0                              |
| Total       | 0           | 0                           | 0              | 0                              |

## D2 – Pre and mid Development Impacts

### D2.2 Core, intermediate and distant terrestrial impacts

|                                  | Permanent  | Temporary  |
|----------------------------------|--|--|
|                                  | Description  | Description  |
| Core (<50m from pond)            | No permanent habitat loss within core zone of all ponds.   | No temporary habitat loss within the core zone of all ponds.   |
| Intermediate (50-250m from pond) | Loss of bracken, woodland, and grassland; these areas fall within the intermediate zone of P003S, P004S, P064S, P203S, P221S, P178S, P179S & P182S | Loss of woodland and grassland within the intermediate zone of P003S, P004S, P064S, P203S, P221S & P182S |

|                           | Permanent   | Temporary   |
|---------------------------|---|---|
|                           | Description   | Description   |
| Distant (>250m from pond) | Loss of woodland, scrub, SI calcareous grassland, SI grassland and amenity grassland for main carriageway and cycle path works; these areas fall within the distant zone of P003S, P004S, P064S, P203S, P221S, P178S, P179S & P182S | Loss of woodland, SI calcareous grassland, unimproved calcareous and SI grassland for main carriageway construction within the distant zone of P003S, P004S & P182S |

### D3 – Long Term Impacts

The A2/M2, located to the north of population S01, is an existing physical barrier to movement and therefore the proposed widening of this road is not considered to cause any further fragmentation effects. As such, no long-term impacts are anticipated.

### D4 – Post-development Interference Impacts

The proposed new carriageway would pose a direct risk of injury and mortality of GCN due to road collisions. Population S01 is already located in close proximity to the existing A2/M2 and, although the widening of the road would bring it slightly closer to the GCN ponds, this is considered marginal. Therefore, the risk of injury and mortality would be no higher than current conditions and therefore negligible.

### D5 – Other impacts

A GCN and dormouse receptor area is proposed within the intermediate zone for P003S and P004S and distant zones of P064S, P203S, P221S, P178S and P179S. No earth works or vegetation clearance are proposed within this area.

### Scale of Impact

This is considered to have a **Minor** impact.

### Metapopulation S02

Ponds P021S P039S P040S P183S P184S P185S P186S P204S P219S P220S and P249S (Large population)

The A2 is located to the south of Metapopulation S02 and forms a physical barrier between this population and any impacts associated with the project. As such, any impacts to the south of the A2 within 500m of the ponds have not been included below.

### D1 – Habitat Impact tables

#### D1.1 Breakdown of terrestrial impacts

| Permanent                       |                | Temporary                       |                   |
|---------------------------------|----------------|---------------------------------|-------------------|
| Habitat type                    | Area lost (ha) | Habitat type                    | Area damaged (ha) |
| Woodland                        | 2.44           | Woodland                        | 0.28              |
| Scrub                           | 0.67           | Scrub                           | 0.02              |
| Semi-improved neutral grassland | 4.74           | Semi-improved neutral grassland | 0.31              |
| Improved grassland              | 7.85           | Improved grassland              | 0.11              |

| Permanent                    |                | Temporary                    |                   |
|------------------------------|----------------|------------------------------|-------------------|
| Habitat type                 | Area lost (ha) | Habitat type                 | Area damaged (ha) |
| Poor semi-improved grassland | 4.00           | Poor semi-improved grassland | 4.60              |
| Tall herb and fern           | 0.18           | Rock exposure and waste      | 0                 |
| Arable                       | 6.67           | Arable                       | 0.76              |
| Amenity grassland            | 0.29           | Amenity grassland            | 0.16              |
| Gardens / allotments         | 0              | Gardens / allotments         | 0.20              |
| <b>Total Loss</b>            | <b>26.84</b>   | <b>Total Damage</b>          | <b>6.54</b>       |

### D1.2 Core, Intermediate and distant terrestrial impacts

|                                  | Permanent      | Temporary         |
|----------------------------------|----------------|-------------------|
|                                  | Area lost (ha) | Area damaged (ha) |
| Core (<50m from pond)            | 1.14           | 0.02              |
| Intermediate (50-250m from pond) | 8.09           | 1.16              |
| Distant (>250m from pond)        | 17.62          | 5.36              |
| <b>Total (ha)</b>                | <b>26.84</b>   | <b>6.54</b>       |

### D1.3 Impacts to linear features

|                                  | Permanent   | Temporary   |
|----------------------------------|-------------|-------------|
|                                  | Length (m)  | Length (m)  |
| Core (<50m from pond)            | 0           | 0           |
| Intermediate (50-250m from pond) | 0           | 0.15        |
| Distant (>250m from pond)        | 0.02        | 0.11        |
| <b>Total (m)</b>                 | <b>0.02</b> | <b>0.26</b> |

### D1.4 Aquatic impacts

|             | Permanent   |                             | Temporary      |                                |
|-------------|-------------|-----------------------------|----------------|--------------------------------|
|             | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
| GCN Ponds   | 1 (P249S)   | 420.71                      | 0              | 0                              |
| Other Ponds | 0           | 0                           | 0              | 0                              |
|             | <b>1</b>    | <b>420.71</b>               | <b>0</b>       | <b>0</b>                       |

## D2 – Pre and mid Development Impacts

### D1.2 Core, intermediate and distant terrestrial impacts

|                                     | Permanent<br>Description  | Temporary<br>Description  |
|-------------------------------------|---|---|
| Core<br>(<50m from pond)            | Loss of woodland and SI grassland within the core zone of P021S, P249S, P219S, P220S & P185S.   | Loss of 0.02ha of habitat within the core zone.   |
| Intermediate<br>(50-250m from pond) | Loss of 8.09ha of habitat within the intermediate of P012S, P040S, P039S, P183S, P184S, P185S, P220S, P219S & P249S.  | Loss of woodland adjacent to widening for diversion of utilities including a gas pipe, bridge works and drainage works within the intermediate zone of P039S, P219S, P220S, P185S, P183S, P184S & P249S<br><br>Loss of SI and I grassland for utilities works and a construction compound within the intermediate zone of P021S   |
| Distant<br>(>250m from pond)        | Loss of woodland, scrub, SI grassland, improved grassland, arable land, amenity grassland and tall herb and fern to facilitate the widening of the A2/M2 within distant zones of P039S, P219S, P220S, P185S, P183S, P184S, P249S, P040S, P204S, P186S & P294S | Loss of woodland adjacent to widening for diversion of utilities including a gas pipe, bridge works and drainage works within the distant zone of P039S, P219S, P220S, P185S, P183S, P184S, P249S, P040S, & P186S<br><br>Loss of arable fields and SI grassland for utilities works including a gas pipeline, a construction compound and access route, an NMU route and earthworks associated with the construction of the new carriageway within the distant zone of P021S<br><br>Loss of woodland, amenity grassland, gardens and allotments scrub and improved grassland for bridge reworks, utilities work including a gas pipeline, and earthworks within the distant zone of P040S and P021S |

## D3 – Long Term Impacts

The A2/M2, located to the south of population S02, is an existing physical barrier to movement and therefore the proposed widening of this road is not considered to cause any further fragmentation effects. As such, no long-term impacts are anticipated.

## D4 – Post-development Interference Impacts

The proposed new carriageway would pose a direct risk of injury and mortality of GCN due to road collisions. Population S02 is already located in close proximity to the existing A2/M2 and, although the widening of the road would bring it slightly closer to the GCN ponds, this is considered marginal. Therefore, the risk of injury and mortality would be no higher than current conditions and therefore negligible.



### D5 – Other impacts

A GCN and reptile mitigation area is proposed within the core and intermediate zones of P120S and the intermediate zone of P040S. The management of the area would be changed to alleviate agricultural pressure and allow the area to rough up. The creation of ponds, hibernaculum and refugia would require vegetation clearance of semi-improved and improved grassland to facilitate earth works within the area.

A GCN receptor area is proposed within the intermediate areas of P039S, P183S, P184S, P185S P219S and P220S. No earth works or vegetation clearance are proposed within this area.

### Scale of Impact

This is considered to have a **Major** impact.

### Metapopulation S03

Ponds P053S P120S (Assumed medium population)

### D1 – Habitat Impact tables

#### D1.1 Breakdown of terrestrial impacts

| Permanent         |                | Temporary                    |                   |
|-------------------|----------------|------------------------------|-------------------|
| Habitat type      | Area lost (ha) | Habitat type                 | Area damaged (ha) |
|                   |                | Scrub                        | 0                 |
|                   |                | Poor semi-improved grassland | 0                 |
|                   |                | Tall herb and fern           | 0                 |
|                   |                | Arable                       | 3.37              |
| <b>Total Loss</b> | <b>0</b>       | <b>Total Damage</b>          | <b>3.37</b>       |

#### D1.2 Core, Intermediate and distant terrestrial impacts

|                                  | Permanent      | Temporary         |
|----------------------------------|----------------|-------------------|
|                                  | Area lost (ha) | Area damaged (ha) |
| Core (<50m from pond)            | 0              | 0                 |
| Intermediate (50-250m from pond) | 0              | 0                 |
| Distant (>250m from pond)        | 0              | 3.37              |
| <b>Total (ha)</b>                | <b>0</b>       | <b>3.37</b>       |

#### D1.3 Impacts to linear features

|      | Permanent  | Temporary  |
|------|------------|------------|
|      | Length (m) | Length (m) |
| Core | 0          | 0          |

|                                  | Permanent  | Temporary  |
|----------------------------------|------------|------------|
|                                  | Length (m) | Length (m) |
| (<50m from pond)                 |            |            |
| Intermediate (50-250m from pond) | 0          | 0          |
| Distant (>250m from pond)        | 0          | 0.12       |
| Total (m)                        | 0          | 0.12       |

#### D1.4 Aquatic impacts

|             | Permanent   |                             | Temporary      |                                |
|-------------|-------------|-----------------------------|----------------|--------------------------------|
|             | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
| GCN Ponds   | 0           | 0                           | 0              | 0                              |
| Other Ponds | 0           | 0                           | 0              | 0                              |
|             | 0           | 0                           | 0              | 0                              |

#### D2 – Pre and mid Development Impacts

##### D2.2 Core, intermediate and distant terrestrial impacts

|                                  | Permanent  | Temporary  |
|----------------------------------|--|--|
|                                  | Description  | Description  |
| Core (<50m from pond)            | No permanent habitat loss within core zone of Pond P120S         | No temporary habitat loss within core zone of Pond P120S                                       |
| Intermediate (50-250m from pond) | No permanent habitat loss within intermediate zone of Pond P120S | No temporary habitat loss within intermediate zone of Pond P120S                               |
| Distant (>250m from pond)        | No permanent habitat loss within intermediate zone of Pond P120S | Loss of arable land for a construction compound within the distant zone of Ponds P120S & P053S |

#### D3 – Long Term Impacts

Metapopulation S03 is located over 1km from the proposed new carriageway and any other permanent works. As such, there would be no potential impact of fragmentation and therefore, no long-term impacts are anticipated.

#### D4 – Post-development Interference Impacts

Metapopulation S03 is over 1km from the proposed carriageway and any other permanent works and as such no post-development impacts are anticipated.

**D5 – Other impacts**

No other impacts are anticipated.

**Scale of Impact**

This is considered to have a **Negligible** impact. This metapopulation is therefore not considered further in this licence.

**Metapopulation S04**

Ponds P027S P028S P029S P044S P121S P125S P126S P127S P128S P129S P130S P131S P196S and P456S (Assumed large population).

**D1 – Habitat Impact tables**

**D1.1 Breakdown of terrestrial impacts**

| Permanent                    |                | Temporary                    |                   |
|------------------------------|----------------|------------------------------|-------------------|
| Habitat type                 | Area lost (ha) | Habitat type                 | Area damaged (ha) |
| Scrub                        | 0.06           | Scrub                        | 0                 |
| Poor semi-improved grassland | 0.14           | Poor semi-improved grassland | 0                 |
| Swamp                        | 0.11           | Tall herb and fern           | 0                 |
| Tall herb and fern           | 1.78           | Swamp                        | 0.12              |
| <b>Total Loss</b>            | <b>2.10</b>    | <b>Total Damage</b>          | <b>0.12</b>       |

**D1.2 Core, Intermediate and distant terrestrial impacts**

|                                  | Permanent      | Temporary         |
|----------------------------------|----------------|-------------------|
|                                  | Area lost (ha) | Area damaged (ha) |
| Core (<50m from pond)            | 0              | 0                 |
| Intermediate (50-250m from pond) | 0.12           | 0                 |
| Distant (>250m from pond)        | 1.98           | 0.12              |
| <b>Total (ha)</b>                | <b>2.10</b>    | <b>0.12</b>       |

**D1.3 Impacts to linear features**

|                                  | Permanent  | Temporary  |
|----------------------------------|------------|------------|
|                                  | Length (m) | Length (m) |
| Core (<50m from pond)            | 0          | 0          |
| Intermediate (50-250m from pond) | 0          | 0          |

|                           | Permanent  | Temporary  |
|---------------------------|------------|------------|
|                           | Length (m) | Length (m) |
| Distant (>250m from pond) | 0          | 0          |
| Total (m)                 | 0          | 0          |

#### D1.4 Aquatic impacts

|             | Permanent   |                             | Temporary      |                                |
|-------------|-------------|-----------------------------|----------------|--------------------------------|
|             | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
| GCN Ponds   | 0           | 0                           | 0              | 0                              |
| Other Ponds | 0           | 0                           | 0              | 0                              |
|             | 0           | 0                           | 0              | 0                              |

### D2 – Pre and mid Development Impacts

#### D2.2 Core, intermediate and distant terrestrial impacts

|                                  | Permanent   | Temporary   |
|----------------------------------|---|---|
|                                  | Description   | Description   |
| Core (<50m from pond)            | No permanent habitat loss within core zone of all ponds.  | No temporary habitat loss within core zone of all ponds.      |
| Intermediate (50-250m from pond) | Permanent loss of SI grassland and tall ruderal in the intermediate zone of P044 and P126.          | No temporary habitat loss within core zone of all ponds.      |
| Distant (>250m from pond)        | Permanent loss of scrub, swamp, SI grassland and tall ruderal in the distant zone of P044 and P126. | Temporary loss of swamp in the distant zone of P044 and P126. |

#### D3 – Long Term Impacts

Metapopulation S04 is located over 1km from the proposed new carriageway and any other permanent works. As such, there would be no potential impact of fragmentation and therefore, no long-term impacts are anticipated.

#### D4 – Post-development Interference Impacts

As metapopulation S04 is located over 1km from the proposed carriageway and any other permanent works and as such no post-development impacts are anticipated.

#### D5 – Other impacts

No other impacts are anticipated.

### Scale of Impact

This is considered to have a **Minor** impact.

### Assumed Metapopulation S05

Ponds P361S P362S (Assumed medium population)

### D1 – Habitat Impact tables

#### D1.1 Breakdown of terrestrial impacts

| Permanent         |                | Temporary           |                   |
|-------------------|----------------|---------------------|-------------------|
| Habitat type      | Area lost (ha) | Habitat type        | Area damaged (ha) |
|                   |                | Gardens/allotments  | 0.01              |
| <b>Total Loss</b> | <b>0</b>       | <b>Total Damage</b> | <b>0.01</b>       |

#### D1.2 Core, Intermediate and distant terrestrial impacts

|                                  | Permanent      | Temporary         |
|----------------------------------|----------------|-------------------|
|                                  | Area lost (ha) | Area damaged (ha) |
| Core (<50m from pond)            | 0              | 0                 |
| Intermediate (50-250m from pond) | 0              | 0.01              |
| Distant (>250m from pond)        | 0              | 0                 |
| <b>Total (ha)</b>                | <b>0</b>       | <b>0.01</b>       |

#### D1.3 Impacts to linear features

|                                  | Permanent  | Temporary   |
|----------------------------------|------------|-------------|
|                                  | Length (m) | Length (m)  |
| Core (<50m from pond)            | 0          | 0           |
| Intermediate (50-250m from pond) | 0          | 0.01        |
| Distant (>250m from pond)        | 0          | 0.04        |
| <b>Total (m)</b>                 | <b>0</b>   | <b>0.05</b> |

#### D1.4 Aquatic impacts

|           | Permanent   |                             | Temporary      |                                |
|-----------|-------------|-----------------------------|----------------|--------------------------------|
|           | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
| GCN Ponds | 0           | 0                           | 0              | 0                              |

|             |   |   |   |   |
|-------------|---|---|---|---|
| Other Ponds | 0 | 0 | 0 | 0 |
|             | 0 | 0 | 0 | 0 |

## D2 – Pre and mid Development Impacts

### D2.2 Core, intermediate and distant terrestrial impacts

|                                  | Permanent  | Temporary   |
|----------------------------------|--|---|
|                                  | Description  | Description   |
| Core (<50m from pond)            | No permanent habitat loss within the core zone of all ponds.         | No temporary habitat loss within the core zones of all ponds.                                   |
| Intermediate (50-250m from pond) | No permanent habitat loss within the intermediate zone of all ponds. | Temporary loss of gardens and length of hedgerow within the intermediate zone of P361S & P362S. |
| Distant (>250m from pond)        | No permanent habitat loss within the distant zone of all ponds.      | Temporary loss of length of hedgerow within the distant zone of P361S & P362S.                  |

## D3 – Long Term Impacts

Assumed metapopulation S05 is located over 2km from the proposed new carriageway and any other permanent works. As such, there would be no potential impact of fragmentation and therefore, no long-term impacts are anticipated.

## D4 – Post-development Interference Impacts

As assumed metapopulation S05 is located over 2 km from the proposed carriageway and any other permanent works and as such no post-development impacts are anticipated.

## D5 – Other impacts

No other impacts are anticipated.

## Scale of Impact

This is considered to have a **Negligible** impact. This metapopulation is therefore not considered further in this licence.

## Assumed Metapopulation S06

Pond P296S (Assumed medium population)

The A2 is located to the north of Assumed Metapopulation S06 and forms a physical barrier between this population and any impacts associated with the project. As such, any impacts to the north of the A2 within 500m of the ponds have not been included below.

## D1 – Habitat Impact tables

### D1.1 Breakdown of terrestrial impacts

| Permanent    |                | Temporary    |                   |
|--------------|----------------|--------------|-------------------|
| Habitat type | Area lost (ha) | Habitat type | Area damaged (ha) |

|                              |             |                              |             |
|------------------------------|-------------|------------------------------|-------------|
| Woodland                     | 0.42        | Woodland                     | 1.07        |
| Poor semi-improved grassland | 0.22        | Poor semi-improved grassland | 3.43        |
|                              |             | Scrub                        | 0.02        |
| <b>Total Loss</b>            | <b>0.64</b> | <b>Total Damage</b>          | <b>4.52</b> |

### D1.2 Core, Intermediate and distant terrestrial impacts

|                                  | Permanent      | Temporary         |
|----------------------------------|----------------|-------------------|
|                                  | Area lost (ha) | Area damaged (ha) |
| Core (<50m from pond)            | 0              | 0.43              |
| Intermediate (50-250m from pond) | 0.21           | 2.34              |
| Distant (>250m from pond)        | 0.42           | 1.75              |
| <b>Total (ha)</b>                | <b>0.63</b>    | <b>4.52</b>       |

### D1.3 Impacts to linear features

|                                  | Permanent  | Temporary  |
|----------------------------------|------------|------------|
|                                  | Length (m) | Length (m) |
| Core (<50m from pond)            | 0          | 0          |
| Intermediate (50-250m from pond) | 0          | 0          |
| Distant (>250m from pond)        | 0          | 0          |
| <b>Total (m)</b>                 | <b>0</b>   | <b>0</b>   |

### D1.4 Aquatic impacts

|             | Permanent   |                             | Temporary      |                                |
|-------------|-------------|-----------------------------|----------------|--------------------------------|
|             | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
| GCN Ponds   | 0           | 0                           | 0              | 0                              |
| Other Ponds | 0           | 0                           | 0              | 0                              |
|             | <b>0</b>    | <b>0</b>                    | <b>0</b>       | <b>0</b>                       |

## D2 – Pre and mid Development Impacts

### D2.2 Core, intermediate and distant terrestrial impacts

|  | Permanent   | Temporary   |
|--|-------------|-------------|
|  | Description | Description |

|                                  |   |   |
|----------------------------------|---|---|
| Core (<50m from pond)            | No permanent habitat loss within the core zone of pond P296S.                           | Temporary loss of woodland and SI grassland within the core zone of pond P296S.           |
| Intermediate (50-250m from pond) | Permanent loss of woodland and SI grassland within the intermediate zone of pond P296S. | Temporary loss of woodland and SI grassland within the intermediate zone of pond P296S.   |
| Distant (>250m from pond)        | Permanent loss of woodland and SI grassland within the distant zone of pond P296S.      | Temporary loss of woodland, scrub and SI grassland within the distant zone of pond P296S. |

### D3 – Long Term Impacts

The A2 is located to the north of assumed metapopulation S06 and is an existing physical barrier to movement. Therefore, the proposed widening of this road is not considered to cause any further fragmentation effects. As such, no long-term impacts are anticipated.

### D4 – Post-development Interference Impacts

The proposed new carriageway would pose a direct risk of injury and mortality of GCN due to road collisions. Assumed Metapopulation N14 is already located in close proximity to the existing A2 and, although the widening of the road would bring it slightly closer to the GCN pond, this is considered marginal. Therefore, the risk of injury and mortality would be no higher than current conditions and therefore negligible.

### D5 – Other impacts

No other impacts are anticipated.

### Scale of Impact

This is considered to have a **Moderate** impact.

### Assumed Metapopulation S07

Pond P373S (Assumed medium population)

The A2 is located to the north of Assumed Metapopulation S07 and forms a physical barrier between this population and any impacts associated with the project. As such, any impacts to the north of the A2 within 500m of the ponds have not been included below.

### D1 – Habitat Impact tables

#### D1.1 Breakdown of terrestrial impacts

| Permanent         |                | Temporary                    |                   |
|-------------------|----------------|------------------------------|-------------------|
| Habitat type      | Area lost (ha) | Habitat type                 | Area damaged (ha) |
|                   |                | Woodland                     | 0.30              |
|                   |                | Poor semi-improved grassland | 1.23              |
| <b>Total Loss</b> | <b>0</b>       | <b>Total Damage</b>          | <b>1.53</b>       |



**D1.2 Core, Intermediate and distant terrestrial impacts**

|                                  | Permanent      | Temporary         |
|----------------------------------|----------------|-------------------|
|                                  | Area lost (ha) | Area damaged (ha) |
| Core (<50m from pond)            | 0              | 0.04              |
| Intermediate (50-250m from pond) | 0              | 0.24              |
| Distant (>250m from pond)        | 0              | 1.25              |
| Total (ha)                       | 0              | 1.53              |

**D1.3 Impacts to linear features**

|                                  | Permanent  | Temporary  |
|----------------------------------|------------|------------|
|                                  | Length (m) | Length (m) |
| Core (<50m from pond)            | 0          | 0          |
| Intermediate (50-250m from pond) | 0          | 0          |
| Distant (>250m from pond)        | 0          | 0          |
| Total (m)                        | 0          | 0          |

**D1.4 Aquatic impacts**

|             | Permanent   |                             | Temporary      |                                |
|-------------|-------------|-----------------------------|----------------|--------------------------------|
|             | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
| GCN Ponds   | 0           | 0                           | 0              | 0                              |
| Other Ponds | 0           | 0                           | 0              | 0                              |
|             | 0           | 0                           | 0              | 0                              |

**D2 – Pre and mid Development Impacts**

**D2.2 Core, intermediate and distant terrestrial impacts**

|                       | Permanent   | Temporary  |
|-----------------------|---|--|
|                       | Description   | Description  |
| Core (<50m from pond) | No permanent habitat loss within the core zone of pond P373S. | Temporary loss of woodland within the core zone of pond P373S. |

|  |   |   |
|--|---|---|
| Intermediate<br>(50-250m<br>from pond) | No permanent habitat loss within the intermediate zone of pond P373S. | Temporary loss of woodland and SI grassland within the intermediate zone of pond P373S. |
| Distant<br>(>250m<br>from pond)        | No permanent habitat loss within the distant zone of pond P373S.      | Temporary loss of woodland and SI grassland within the distant zone of pond P373S.      |

### D3 – Long Term Impacts

The A2 is located to the north of assumed metapopulation S07 and is an existing physical barrier to movement. Therefore, the proposed utility works are not considered to cause any further fragmentation effects. As such, no long-term impacts are anticipated.

### D4 – Post-development Interference Impacts

P373S is located over 1km from the proposed new carriageway and any other permanent works. As such, there would be no potential impact of fragmentation and therefore, no long-term impacts are anticipated.

### D5 – Other impacts

No other impacts are anticipated.

### Scale of Impact

This is considered to have a **Minor** impact.

### Assumed Metapopulation S08

Pond P374S (Assumed medium population)

The A2 is located to the south of Assumed Metapopulation S08 and forms a physical barrier between this population and any impacts associated with the project. As such, any impacts to the south of the A2 within 500m of these ponds have not been included below.

### D1 – Habitat Impact tables

#### D1.1 Breakdown of terrestrial impacts

| Permanent                    |                | Temporary                      |                   |
|------------------------------|----------------|--------------------------------|-------------------|
| Habitat type                 | Area lost (ha) | Habitat type                   | Area damaged (ha) |
| Woodland                     | 0.18           | Woodland                       | 0.38              |
| Poor semi-improved grassland | 0              | Semi-improved neutral woodland | 0.05              |
|                              |                | Improved grassland             | 0.03              |
|                              |                | Poor semi-improved grassland   | 0.89              |
|                              |                | Amenity grassland              | 0.08              |
| <b>Total Loss</b>            | <b>0.18</b>    | <b>Total Damage</b>            | <b>1.43</b>       |

**D1.2 Core, Intermediate and distant terrestrial impacts**

|                                  | Permanent      | Temporary         |
|----------------------------------|----------------|-------------------|
|                                  | Area lost (ha) | Area damaged (ha) |
| Core (<50m from pond)            | 0.03           | 0.05              |
| Intermediate (50-250m from pond) | 0.15           | 1.03              |
| Distant (>250m from pond)        | 0              | 0.36              |
| Total (ha)                       | 0.18           | 1.44              |

**D1.3 Impacts to linear features**

|                                  | Permanent  | Temporary  |
|----------------------------------|------------|------------|
|                                  | Length (m) | Length (m) |
| Core (<50m from pond)            | 0          | 0          |
| Intermediate (50-250m from pond) | 0          | 0          |
| Distant (>250m from pond)        | 0          | 0          |
| Total (m)                        | 0          | 0          |

**D1.4 Aquatic impacts**

|             | Permanent   |                             | Temporary      |                                |
|-------------|-------------|-----------------------------|----------------|--------------------------------|
|             | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
| GCN Ponds   | 0           | 0                           | 0              | 0                              |
| Other Ponds | 0           | 0                           | 0              | 0                              |
|             | 0           | 0                           | 0              | 0                              |

**D2 – Pre and mid Development Impacts**

**D2.2 Core, intermediate and distant terrestrial impacts**

|                       | Permanent  | Temporary   |
|-----------------------|--|---|
|                       | Description  | Description   |
| Core (<50m from pond) | Permanent loss of woodland within the core zone of pond P374S. | Temporary loss of woodland and SI grassland within the core zone of pond P374S. |

|  | Permanent<br>Description   | Temporary<br>Description   |
|--|--|--|
| Intermediate<br>(50-250m<br>from pond) | Permanent loss of woodland within the intermediate zone of pond P374S. | Temporary loss of amenity grassland, woodland, improved grassland and SI grassland within the intermediate zone of pond P374S. |
| Distant<br>(>250m<br>from pond)        | No permanent habitat loss within the distant zone of pond P374S.       | Temporary loss of woodland and SI grassland within the distant zone of pond P374S.   |

### D3 – Long Term Impacts

The A2 is located to the north of assumed metapopulation S08 and is an existing physical barrier to movement. Therefore, the proposed utility works are not considered to cause any further fragmentation effects. As such, no long-term impacts are anticipated

### D4 – Post-development Interference Impacts

P374S is located over 1km from the proposed new carriageway and any other permanent works. As such, there would be no potential impact of fragmentation and therefore, no long-term impacts are anticipated.

### D5 – Other impacts

No other impacts are anticipated.

### Scale of Impact

This is considered to have a **Minor** impact.

### Assumed Metapopulation S09

Pond P351S (Assumed medium population)

The A2 is located to the south of Assumed Metapopulation S08 and forms a physical barrier between this population and any impacts associated with the project. As such, any impacts to the south of the A2 within 500m of these ponds have not been included below.

### D1 – Habitat Impact tables

#### D1.1 Breakdown of terrestrial impacts

The habitat losses detailed below are worst-case scenario as the proposed underground utility line will not require the entirety of the width of the site boundary. The exact location will be finalised after DCO and should be included in the final licence submission.

| Permanent         |                | Temporary                    |                   |
|-------------------|----------------|------------------------------|-------------------|
| Habitat type      | Area lost (ha) | Habitat type                 | Area damaged (ha) |
| Woodland          | 0              | Woodland                     | 0.10              |
|                   |                | Semi-improved grassland      | 0.34              |
|                   |                | Poor semi-improved grassland | 0.34              |
|                   |                | Tall herb and fern           | 0.06              |
| <b>Total Loss</b> | <b>0</b>       | <b>Total Damage</b>          | <b>0.84</b>       |

**D1.2 Core, Intermediate and distant terrestrial impacts**

|                                  | Permanent      | Temporary         |
|----------------------------------|----------------|-------------------|
|                                  | Area lost (ha) | Area damaged (ha) |
| Core (<50m from pond)            | 0              | 0                 |
| Intermediate (50-250m from pond) | 0              | 0.20              |
| Distant (>250m from pond)        | 0              | 0.64              |
| Total (ha)                       | 0              | 0.84              |

**D1.3 Impacts to linear features**

|                                  | Permanent  | Temporary  |
|----------------------------------|------------|------------|
|                                  | Length (m) | Length (m) |
| Core (<50m from pond)            | 0          | 0          |
| Intermediate (50-250m from pond) | 0          | 0          |
| Distant (>250m from pond)        | 0          | 0          |
| Total (m)                        | 0          | 0          |

**D1.4 Aquatic impacts**

|             | Permanent   |                             | Temporary      |                                |
|-------------|-------------|-----------------------------|----------------|--------------------------------|
|             | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
| GCN Ponds   | 0           | 0                           | 0              | 0                              |
| Other Ponds | 0           | 0                           | 0              | 0                              |
|             | 0           | 0                           | 0              | 0                              |

**D2 – Pre and mid Development Impacts**

**D2.2 Core, intermediate and distant terrestrial impacts**

|                       | Permanent   | Temporary   |
|-----------------------|---|---|
|                       | Description   | Description   |
| Core (<50m from pond) | No permanent habitat loss within the core zone of pond P351S. | No temporary habitat loss within the core zone of pond P351S. |

|  | Permanent<br>Description  | Temporary<br>Description   |
|--|---|--|
| Intermediate<br>(50-250m<br>from pond) | No permanent habitat loss within the intermediate zone of pond P351S. | Temporary loss of woodland and SI grassland within the intermediate zone of pond P351S.          |
| Distant<br>(>250m<br>from pond)        | No permanent habitat loss within the intermediate zone of pond P351S. | Temporary loss of woodland, tall ruderal and SI grassland within the distant zone of pond P351S. |

### D3 – Long Term Impacts

The A2 is located to the south of Assumed Metapopulation S09 and is an existing physical barrier to movement. Therefore, the proposed utility works are not considered to cause any further fragmentation effects. As such, no long-term impacts are anticipated.

### D4 – Post-development Interference Impacts

P351S is located over 2km from the proposed new carriageway and any other permanent works. As such, there would be no potential impact of fragmentation and therefore, no long-term impacts are anticipated.

### D5 – Other impacts

No other impacts are anticipated.

### Scale of Impact

This is considered to have a **Minor** impact.

### Metapopulation S10

Ponds P294S P350S P383S P385S P398S P483S P501S P502S P503S P504S and P505S  
(Assumed medium population)

### D1 – Habitat Impact tables

#### D1.1 Breakdown of terrestrial impacts

| Permanent                         |                | Temporary                          |                   |
|-----------------------------------|----------------|------------------------------------|-------------------|
| Habitat type                      | Area lost (ha) | Habitat type                       | Area damaged (ha) |
| Woodland                          | 0.12           | Woodland                           | 0.12              |
| Poor semi-improved grassland      | 5.02           | Scrub                              | 0.09              |
| Tall herb and fern                | 0              | Improved grassland                 | 0.03              |
| Arable                            | 31.03          | Gardens / Allotments               | 0.02              |
| Scrub                             | 0.06           | Poor semi-improved grassland       | 0.09              |
| Gardens / Allotments              | 0.04           | Semi – important neutral grassland | 0.31              |
| Semi – improved neutral grassland | 0.13           | Arable                             | 5.86              |
| Improved grassland                | 0.95           | Tall herb and fern                 | 0.07              |
| <b>Total Loss</b>                 | <b>37.35</b>   | <b>Total Damage</b>                | <b>6.59</b>       |

**D1.2 Core, Intermediate and distant terrestrial impacts**

|                                  | Permanent      | Temporary         |
|----------------------------------|----------------|-------------------|
|                                  | Area lost (ha) | Area damaged (ha) |
| Core (<50m from pond)            | 0.61           | 0.01              |
| Intermediate (50-250m from pond) | 18.90          | 0.15              |
| Distant (>250m from pond)        | 17.84          | 6.42              |
| Total (ha)                       | 37.35          | 6.58              |

**D1.3 Impacts to linear features**

|                                  | Permanent  | Temporary  |
|----------------------------------|------------|------------|
|                                  | Length (m) | Length (m) |
| Core (<50m from pond)            | 0          | 0          |
| Intermediate (50-250m from pond) | 0          | 0          |
| Distant (>250m from pond)        | 0          | 0.01       |
| Total (m)                        | 0          | 0.01       |

**D1.4 Aquatic impacts**

|             | Permanent   |                             | Temporary      |                                |
|-------------|-------------|-----------------------------|----------------|--------------------------------|
|             | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
| GCN Ponds   | 0           | 0                           | 0              | 0                              |
| Other Ponds | 0           | 0                           | 0              | 0                              |
|             | 0           | 0                           | 0              | 0                              |

**D2 – Pre and mid Development Impacts**

**D2.2 Core, intermediate and distant terrestrial impacts**

|                       | Permanent  | Temporary   |
|-----------------------|--|---|
|                       | Description  | Description   |
| Core (<50m from pond) | Permanent loss of arable, scrub and SI grassland within the core zone P483, P503 and P505. | Temporary loss of SI grassland within the core zone P483. |

|  |  |   |
|--|--|---|
| Intermediate<br>(50-250m<br>from pond) | Permanent loss of arable, scrub, gardens, SI grassland, woodland and tall ruderal within the intermediate zone of P294, P350, P483, P502, P503, P504 and P505. | Temporary loss of woodland, scrub, and SI grassland within the intermediate zone P483.  |
| Distant<br>(>250m<br>from pond)        | Permanent loss of arable, improved grassland, gardens, SI grassland, woodland and tall ruderal within the distant zone of all ponds.                           | Temporary loss of arable land and small areas of woodland, tall herb and fern, SI grassland and scrub to facilitate utility works within the distant zone of pond P294S |

### D3 – Long Term Impacts

Metapopulation S10 is located over 1km from the proposed new carriageway and any other permanent works. As such, there would be no potential impact of fragmentation and therefore, no long-term impacts are anticipated.

### D4 – Post-development Interference Impacts

Metapopulation S10 is located over 1km from the proposed carriageway and any other permanent works and as such no post-development impacts are anticipated.

### D5 – Other impacts

A woodland planting mitigation area is proposed within the intermediate and distant zones of all ponds involving the planting of individual trees within the arable fields. All other habitat considered to be higher value to GCN will be retained.

### Scale of Impact

Although there is a permanent loss of 37.35ha of terrestrial habitat, this is primarily within arable habitat (considered to be low value to GCN) to facilitate woodland planting and therefore, the impact on GCN is therefore considered to have a **Negligible** impact. Furthermore, given the replacement of the majority of the arable will be with woodland, of higher value to GCN, there is potential for a positive effect. To ensure this is captured in the licence, this population has been included in the mitigation solution.

### Assumed Metapopulation S11

Ponds P396S P464S P465S (Assumed medium population)

### D1 – Habitat Impact tables

No permanent loss of terrestrial habitats is proposed within 500m of Assumed Metapopulation S11 as the Order Limits along the road within this area is for access purposes only.

#### D1.1 Breakdown of terrestrial impacts

| Permanent         |                | Temporary                    |                   |
|-------------------|----------------|------------------------------|-------------------|
| Habitat type      | Area lost (ha) | Habitat type                 | Area damaged (ha) |
|                   |                | Amenity grassland            | 0.04              |
|                   |                | Improved grassland           | 0.01              |
|                   |                | Poor semi-improved grassland | 0.01              |
| <b>Total Loss</b> | <b>0</b>       | <b>Total Damage</b>          | <b>0.06</b>       |



**D1.2 Core, Intermediate and distant terrestrial impacts**

|                                  | Permanent      | Temporary         |
|----------------------------------|----------------|-------------------|
|                                  | Area lost (ha) | Area damaged (ha) |
| Core (<50m from pond)            | 0              | 0                 |
| Intermediate (50-250m from pond) | 0              | 0.04              |
| Distant (>250m from pond)        | 0              | 0.02              |
| Total (ha)                       | 0              | 0.06              |

**D1.3 Impacts to Linear Features**

|                                  | Permanent  | Temporary  |
|----------------------------------|------------|------------|
|                                  | Length (m) | Length (m) |
| Core (<50m from pond)            | 0          | 0          |
| Intermediate (50-250m from pond) | 0          | 0          |
| Distant (>250m from pond)        | 0          | 0          |
| Total (m)                        | 0          | 0          |

**D1.4 Aquatic impacts**

|             | Permanent   |                             | Temporary      |                                |
|-------------|-------------|-----------------------------|----------------|--------------------------------|
|             | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
| GCN Ponds   | 0           | 0                           | 0              | 0                              |
| Other Ponds | 0           | 0                           | 0              | 0                              |
|             | 0           | 0                           | 0              | 0                              |

**D2 – Pre and mid Development Impacts**

**D2.2 Core, intermediate and distant terrestrial impacts**

|                       | Permanent  | Temporary  |
|-----------------------|--|--|
|                       | Description  | Description  |
| Core (<50m from pond) | No permanent habitat loss within the core zone of all ponds. | No temporary habitat loss within the core zone of all ponds. |

|                                  | Permanent  | Temporary  |
|----------------------------------|--|--|
|                                  | Description  | Description  |
| Intermediate (50-250m from pond) | No permanent habitat loss within the intermediate zone of all ponds. | Loss of amenity and SI grassland within the intermediate zone of P396S, P464S, and P465S |
| Distant (>250m from pond)        | No permanent habitat loss within the distant zone of all ponds.      | No temporary habitat loss within the distant zone of all ponds.                          |

### D3 – Long Term Impacts

Assumed metapopulation S11 is located over 1km from the proposed new carriageway and any other permanent works. As such, there would be no potential impact of fragmentation and therefore, no long-term impacts are anticipated.

### D4 – Post-development Interference Impacts

Assumed metapopulation S11 is located over 1km from the proposed carriageway and any other permanent works and as such no post-development impacts are anticipated.

### D5 – Other impacts

No other impacts are anticipated.

### Scale of Impact

This is considered to have a **Negligible** impact. This metapopulation is therefore not considered further in this licence.

### Assumed Metapopulation S12

Pond P287S (Assumed medium population)

### D1 – Habitat Impact tables

#### D1.1 Breakdown of terrestrial impacts

| Permanent         |                | Temporary                    |                   |
|-------------------|----------------|------------------------------|-------------------|
| Habitat type      | Area lost (ha) | Habitat type                 | Area damaged (ha) |
| Woodland          | 0.02           | Woodland                     | 0.01              |
|                   |                | Scrub                        | 0.09              |
|                   |                | Improved grassland           | 0.08              |
|                   |                | Poor semi-improved grassland | 0.01              |
|                   |                | Tall herb and fern           | 0.02              |
|                   |                | Arable                       | 0.03              |
| <b>Total Loss</b> | <b>0.02</b>    | <b>Total Damage</b>          | <b>0.24</b>       |

**D1.2 Core, Intermediate and distant terrestrial impacts**

|                                  | Permanent      | Temporary         |
|----------------------------------|----------------|-------------------|
|                                  | Area lost (ha) | Area damaged (ha) |
| Core (<50m from pond)            | 0              | 0                 |
| Intermediate (50-250m from pond) | 0              | 0                 |
| Distant (>250m from pond)        | 0.02           | 0.24              |
| Total (ha)                       | 0.02           | 0.24              |

**D1.3 Impacts to linear features**

|                                  | Permanent  | Temporary  |
|----------------------------------|------------|------------|
|                                  | Length (m) | Length (m) |
| Core (<50m from pond)            | 0          | 0          |
| Intermediate (50-250m from pond) | 0          | 0          |
| Distant (>250m from pond)        | 0          | 0.01       |
| Total (m)                        | 0          | 0.01       |

**D1.4 Aquatic impacts**

|             | Permanent   |                             | Temporary      |                                |
|-------------|-------------|-----------------------------|----------------|--------------------------------|
|             | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
| GCN Ponds   | 0           | 0                           | 0              | 0                              |
| Other Ponds | 0           | 0                           | 0              | 0                              |
|             | 0           | 0                           | 0              | 0                              |

**D2 – Pre and mid Development Impacts**

**D2.2 Core, intermediate and distant terrestrial impacts**

|                       | Permanent   | Temporary   |
|-----------------------|---|---|
|                       | Description   | Description   |
| Core (<50m from pond) | No permanent habitat loss within the core zone of pond P287S. | No temporary habitat loss within the core zone of pond P287S. |

|  |   |   |
|--|---|---|
| Intermediate<br>(50-250m<br>from pond) | No permanent habitat loss within the intermediate zone of pond P287S. | No temporary habitat loss within the intermediate zone of pond P287S.   |
| Distant<br>(>250m<br>from pond)        | Permanent loss of woodland within the distant zone of pond P287S.     | Temporary loss of small areas of woodland, scrub, arable, improved grassland, gardens, SI grassland and tall ruderal within the distant zone of pond P287S. |

### D3 – Long Term Impacts

Assumed metapopulation S12 is located over 1km from the proposed new carriageway and any other permanent works. As such, there would be no potential impact of fragmentation and therefore, no long-term impacts are anticipated.

### D4 – Post-development Interference Impacts

Assumed metapopulation S12 is located over 1km from the proposed carriageway and any other permanent works and as such no post-development impacts are anticipated.

### D5 – Other impacts

No other impacts are anticipated.

### Scale of Impact

This is considered to have a **Negligible** impact. This metapopulation is therefore not considered further in this licence.

### Assumed Metapopulation S13

Ponds P497S P498S P499S P500S (Assumed medium population)

### D1 – Habitat Impact tables

#### D1.1 Breakdown of terrestrial impacts

| Permanent                    |                | Temporary             |                   |
|------------------------------|----------------|-----------------------|-------------------|
| Habitat type                 | Area lost (ha) | Habitat type          | Area damaged (ha) |
| Arable                       | 34.39          | Tall ruderal and fern | 0.20              |
| Poor semi-improved grassland | 0.02           | Arable                | 0.39              |
| Tall ruderal and fern        | 0.32           |                       |                   |
| <b>Total Loss</b>            | <b>34.73</b>   | <b>Total Damage</b>   | <b>0.59</b>       |

#### D1.2 Core, Intermediate and distant terrestrial impacts

|                          | Permanent      | Temporary         |
|--------------------------|----------------|-------------------|
|                          | Area lost (ha) | Area damaged (ha) |
| Core<br>(<50m from pond) | 0              | 0                 |

|                                  | Permanent      | Temporary         |
|----------------------------------|----------------|-------------------|
|                                  | Area lost (ha) | Area damaged (ha) |
| Intermediate (50-250m from pond) | 5.74           | 0.09              |
| Distant (>250m from pond)        | 28.99          | 0.50              |
| Total (ha)                       | 34.73          | 0.59              |

**D1.3 Impacts to linear features**

|                                  | Permanent  | Temporary  |
|----------------------------------|------------|------------|
|                                  | Length (m) | Length (m) |
| Core (<50m from pond)            | 0          | 0          |
| Intermediate (50-250m from pond) | 0          | 0          |
| Distant (>250m from pond)        | 0          | 0          |
| Total (m)                        | 0          | 0          |

**D1.4 Aquatic impacts**

|             | Permanent   |                             | Temporary      |                                |
|-------------|-------------|-----------------------------|----------------|--------------------------------|
|             | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
| GCN Ponds   | 0           | 0                           | 0              | 0                              |
| Other Ponds | 0           | 0                           | 0              | 0                              |
|             | 0           | 0                           | 0              | 0                              |

**D2 – Pre and mid Development Impacts**

**D2.2 Core, intermediate and distant terrestrial impacts**

|                                  | Permanent  | Temporary  |
|----------------------------------|--|--|
|                                  | Description  | Description  |
| Core (<50m from pond)            | No permanent habitat loss within core zone of all ponds.                             | No temporary habitat loss within core zone of all ponds.                         |
| Intermediate (50-250m from pond) | Permanent loss of arable and tall ruderal within the intermediate zone of all ponds. | Temporary loss of arable and tall ruderal within intermediate zone of all ponds. |

|                           | Permanent<br>Description  | Temporary<br>Description  |
|---------------------------|---|---|
| Distant (>250m from pond) | Permanent loss of arable, SI grassland and tall ruderal within the distant zone of all ponds. | Temporary loss of arable and tall ruderal within distant zone of all ponds. |

### D3 – Long Term Impacts

Assumed metapopulation S13 is located over 1km from the proposed new carriageway and any other permanent works. As such, there would be no potential impact of fragmentation and therefore, no long-term impacts are anticipated.

### D4 – Post-development Interference Impacts

Assumed metapopulation S13 is located over 1km from the proposed carriageway and any other permanent works and as such no post-development impacts are anticipated.

### D5 – Other impacts

A woodland planting mitigation area is proposed within the intermediate and distant zones of the ponds involving the planting of individual trees within the arable fields. All other habitat considered to be higher value to GCN will be retained.

### Scale of Impact

Although there is a permanent loss of 34.73ha of terrestrial habitat, this is primarily within arable habitat (considered to be low value to GCN) to facilitate woodland planting and therefore, the impact on GCN is therefore considered to have a **Negligible** impact. Furthermore, given the replacement of most of the arable will be with woodland, of higher value to GCN, there is potential for a positive effect. To ensure this is captured in the licence, this population has been included in the mitigation solution.

### Metapopulation N01

Ponds P193N P195N (Assumed medium population)

### D1 – Habitat Impact tables

#### D1.1 Breakdown of terrestrial impacts

| Permanent                       |                | Temporary                       |                   |
|---------------------------------|----------------|---------------------------------|-------------------|
| Habitat type                    | Area lost (ha) | Habitat type                    | Area damaged (ha) |
| Woodland                        | 0.02           | Scrub                           | 0.65              |
| Scrub                           | 0.03           | Semi-improved neutral grassland | 3.51              |
| Semi-improved neutral grassland | 11.46          | Improved grassland              | 0.26              |
| Improved grassland              | 0.04           | Tall herb and fern              | 0.02              |
| Poor semi-improved grassland    | 0.09           | Arable                          | 2.06              |
| Tall herb and fern              | 0.14           |                                 |                   |
| Arable                          | 37.69          |                                 |                   |
| Gardens / allotments            | 0.06           |                                 |                   |
| <b>Total Loss</b>               | <b>49.53</b>   | <b>Total Damage</b>             | <b>6.53</b>       |

**D1.2 Core, Intermediate and distant terrestrial impacts**

|                                  | Permanent      | Temporary         |
|----------------------------------|----------------|-------------------|
|                                  | Area lost (ha) | Area damaged (ha) |
| Core (<50m from pond)            | 0.48           | 0.29              |
| Intermediate (50-250m from pond) | 18.57          | 1.88              |
| Distant (>250m from pond)        | 30.48          | 4.36              |
| Total (ha)                       | 49.53          | 6.53              |

**D1.3 Impacts to linear features**

|                                  | Permanent  | Temporary  |
|----------------------------------|------------|------------|
|                                  | Length (m) | Length (m) |
| Core (<50m from pond)            | 0          | 0          |
| Intermediate (50-250m from pond) | 0.25       | 0          |
| Distant (>250m from pond)        | 0.04       | 0          |
| Total (m)                        | 0.29       | 0          |

**D1.4 Aquatic impacts**

|             | Permanent   |                             | Temporary      |                                |
|-------------|-------------|-----------------------------|----------------|--------------------------------|
|             | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
| GCN Ponds   | 0           | 0                           | 0              | 0                              |
| Other Ponds | 0           | 0                           | 0              | 0                              |
|             | 0           | 0                           | 0              | 0                              |

**D2 – Pre and mid Development Impacts**

**D2.2 Core, intermediate and distant terrestrial impacts**

|                                  | Permanent  | Temporary   |
|----------------------------------|--|---|
|                                  | Description  | Description   |
| Core (<50m from pond)            | Permanent loss of arable, scrub and SI grassland within core zone of both ponds.                         | No temporary habitat loss within core zone of all ponds.  |
| Intermediate (50-250m from pond) | Permanent loss of arable, gardens, SI grassland and tall ruderal within intermediate zone of both ponds. | Temporary loss of arable land, scrub, improved grassland, tall ruderal and hedgerow to facilitate construction access route within the intermediate |

|                           | Permanent<br>Description  | Temporary<br>Description  |
|---------------------------|---|---|
|                           |   | zone of P195N. Temporary loss of SI grassland to facilitate construction access route within the intermediate zone of P193N           |
| Distant (>250m from pond) | Permanent loss of arable, scrub, improved grassland, gardens, woodland and SI grassland within core zone of both ponds. | Temporary loss of arable, scrub, improved grassland and hedgerow to facilitate construction access route within distant zone of P193N |

### D3 – Long Term Impacts

The GCN ponds associated with metapopulation N01 are located over 1km from the proposed new carriageway and any other permanent works. As such, there would be no potential impact of fragmentation and therefore, no long-term impacts are anticipated.

### D4 – Post-development Interference Impacts

As metapopulation N01 is located over 1km from the proposed carriageway and any other permanent works, therefore, no post-development impacts are anticipated.

### D5 – Other impacts

GCN and reptile mitigation areas are proposed within part of the core zones of both ponds. In addition, the GCN and reptile areas would extend into the intermediate and distant zones of both ponds as well as water vole mitigation areas. The creation of ponds, hibernaculum, refugia and ditches would require vegetation clearance of semi-improved grassland and arable fields to facilitate earth works within the area.

### Scale of Impact

This is considered to have a **Minor** impact.

### Metapopulation N02

Ponds P001N P216N P222N P467N (Medium population)

### D1 – Habitat Impact tables

Where Mitigation Area HC27 extends beyond 500m of Metapopulations N01 and N02, the habitat loss calculations have been included within Metapopulation N02.

#### D1.1 Breakdown of terrestrial impacts

| Permanent                       |                | Temporary                       |                   |
|---------------------------------|----------------|---------------------------------|-------------------|
| Habitat type                    | Area lost (ha) | Habitat type                    | Area damaged (ha) |
| Woodland                        | 2.67           | Woodland                        | 1.17              |
| Scrub                           | 2.56           | Scrub                           | 1.39              |
| Unimproved acid grassland       | 0.56           | Semi-improved neutral grassland | 1.78              |
| Semi-improved neutral grassland | 0.51           | Improved grassland              | 0.22              |
| Improved grassland              | 4.40           | Marshy grassland                | 0.01              |
| Marshy grassland                | 0.09           | Poor semi-improved grassland    | 3.57              |



| Permanent                    |                | Temporary                 |                   |
|------------------------------|----------------|---------------------------|-------------------|
| Habitat type                 | Area lost (ha) | Habitat type              | Area damaged (ha) |
| Poor semi-improved grassland | 0.86           | Tall herb and fern        | 1.91              |
| Tall herb and fern           | 1.18           | Arable                    | 52.85             |
| Arable                       | 22.59          | Amenity grassland         | 0                 |
| Ephemeral/short perennial    | 6.22           | Ephemeral/short perennial | 1.41              |
|                              |                | Unimproved acid grassland | 0.06              |
|                              |                | Gardens / Allotments      | 0.02              |
|                              |                | Artificial spoil          | 0.25              |
| <b>Total Loss</b>            | <b>41.64</b>   | <b>Total Damage</b>       | <b>64.64</b>      |

### D1.2 Core, Intermediate and distant terrestrial impacts

|                                  | Permanent      | Temporary                |
|----------------------------------|----------------|--------------------------|
|                                  | Area lost (ha) | Area damaged (ha)        |
| Core (<50m from pond)            | 3.64           | 1.20                     |
| Intermediate (50-250m from pond) | 16.60          | 19.38                    |
| Distant (>250m from pond)        | 21.40          | 44.04                    |
| <b>Total (ha)</b>                | <b>41.64</b>   | <b>64.62<sup>1</sup></b> |

### D1.3 Impacts to linear features

|                                  | Permanent   | Temporary   |
|----------------------------------|-------------|-------------|
|                                  | Length (m)  | Length (m)  |
| Core (<50m from pond)            | 0           | 0           |
| Intermediate (50-250m from pond) | 0.47        | 0.14        |
| Distant (>250m from pond)        | 0.65        | 0.56        |
| <b>Total (ha)</b>                | <b>1.13</b> | <b>0.70</b> |

### D1.4 Aquatic impacts

|  | Permanent   |                             | Temporary      |                                |
|--|-------------|-----------------------------|----------------|--------------------------------|
|  | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
|  |             |                             |                |                                |

<sup>1</sup> Rounding error between N02 tables D1.1 and D1.2 causing 0.02ha difference in results between tables

|             |                                 |         |   |   |
|-------------|---------------------------------|---------|---|---|
| GCN Ponds   | 3 (P216N, P222N & P467N)        | 3805.35 | 0 | 0 |
| Other Ponds | 4 (P215N, P230N, P231N & P002N) | 1425.36 | 0 | 0 |
|             | 7                               | 5230.71 | 0 | 0 |

## D2 – Pre and mid Development Impacts

### D2.2 Core, intermediate and distant terrestrial impacts

|                                  | Permanent Description  | Temporary Description   |
|----------------------------------|--|---|
| Core (<50m from pond)            | Permanent loss of arable, woodland, scrub, unimproved acid grassland, SI grassland, plantation woodland, tall ruderal herbs, ephemeral/short perennial, marshy grassland and, hedgerows, to accommodate the road alignment within the core zone of all ponds.            | Temporary loss of arable, scrub, unimproved acid grassland, marshy grassland, woodland, SI grassland, hedgerow and tall ruderal to accommodate construction compounds and utility works within the core zone of all ponds |
| Intermediate (50-250m from pond) | Permanent loss of arable, woodland, scrub, unimproved acid grassland, improved grassland, SI grassland, plantation woodland, tall ruderal herbs, ephemeral/short perennial, and, hedgerows, to accommodate the road alignment within the intermediate zone of all ponds. | Temporary loss of arable, amenity grassland, and improved grassland to accommodate construction compounds and utility works within the intermediate zone of all ponds   |
| Distant (>250m from pond)        | Permanent loss of arable, woodland, scrub, improved grassland, SI grassland, plantation woodland, tall ruderal herbs, ephemeral/short perennial, and, hedgerows, to accommodate the road alignment within the distant zone of all ponds.                                 | Temporary loss of arable and improved grassland to accommodate construction compounds and utility works within the distant zone of all ponds  |

## D3 – Long Term Impacts

Three GCN ponds (P216N, P222N & P467N) and four other ponds which do not support GCN along with core terrestrial habitat consisting of improved and rough grassland, arable fields and improved pasture would be permanently lost as part of the proposed works.

The new carriageway would be located to the west of the remaining pond, P001N. The proposed route has potential to fragment and prevent movement to habitat located in the west of the route alignment. However, this habitat is mainly arable land, considered sub-optimal for GCN, whereas large areas of more suitable habitat (rough grassland, dense scrub and woodland) are present adjacent and to the east of this pond providing little motivation for GCN to utilise the arable fields to the west.

## D4 – Post-development Interference Impacts

P001N is located approximately 135m from the proposed new carriageway. As such, there would be potential risk of injury and mortality of GCN due to road collisions. However, large areas of suitable

habitat (rough grassland, dense scrub and woodland) are present adjacent and to the east of this pond providing little motivation for GCN to venture onto the proposed live road network.

### D5 – Other impacts

A GCN and reptile mitigation area is proposed within the distant zone of P001N. The management of the area would be changed to alleviate agricultural pressure and allow the area to rough up. The creation of ponds, hibernaculum and refugia would require vegetation clearance on arable fields to facilitate earth works within the area.

### Scale of Impact

This is considered to have a **Major** impact.

### Metapopulation N03

Pond P301N (Assumed medium population)

### D1 – Habitat Impact tables

#### D1.1 Breakdown of terrestrial impacts

| Permanent         |                | Temporary           |                   |
|-------------------|----------------|---------------------|-------------------|
| Habitat type      | Area lost (ha) | Habitat type        | Area damaged (ha) |
|                   |                | Improved grassland  | 0.28              |
|                   |                | Tall herb and fern  | 0.02              |
|                   |                | Arable              | 5.18              |
|                   |                | Amenity grassland   | 0.09              |
| <b>Total Loss</b> | <b>0</b>       | <b>Total Damage</b> | <b>5.57</b>       |

#### D1.2 Core, Intermediate and distant terrestrial impacts

|                                  | Permanent      | Temporary         |
|----------------------------------|----------------|-------------------|
|                                  | Area lost (ha) | Area damaged (ha) |
| Core (<50m from pond)            | 0              | 0                 |
| Intermediate (50-250m from pond) | 0              | 2.86              |
| Distant (>250m from pond)        | 0              | 2.71              |
| <b>Total (ha)</b>                | <b>0</b>       | <b>5.57</b>       |

#### D1.3 Impacts to Linear features

|                                  | Permanent  | Temporary  |
|----------------------------------|------------|------------|
|                                  | Length (m) | Length (m) |
| Core (<50m from pond)            | 0          | 0.07       |
| Intermediate (50-250m from pond) | 0          | 0.03       |

|                           | Permanent | Temporary |
|---------------------------|-----------|-----------|
| Distant (>250m from pond) | 0         | 0.08      |
| Total (m)                 | 0         | 0.18      |

#### D1.4 Aquatic impacts

|             | Permanent   |                             | Temporary      |                                |
|-------------|-------------|-----------------------------|----------------|--------------------------------|
|             | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
| GCN Ponds   | 0           | 0                           | 0              | 0                              |
| Other Ponds | 0           | 0                           | 0              | 0                              |
|             | 0           | 0                           | 0              | 0                              |

### D2 – Pre and mid Development Impacts

#### D2.2 Core, intermediate and distant terrestrial impacts

|                                  | Permanent  | Temporary  |
|----------------------------------|--|--|
|                                  | Description  | Description  |
| Core (<50m from pond)            | No permanent habitat loss within core zone of pond P301N.                | No temporary habitat loss within core zone of pond P301N.  |
| Intermediate (50-250m from pond) | No permanent loss of habitat within the intermediate zone of pond P301N. | Temporary vegetation clearance of arable field, amenity grassland, hedgerow and improved grassland for the provision of an access track within the intermediate zone of pond P301N                                   |
| Distant (>250m from pond)        | No permanent loss of habitat within the distant zone of pond P301N.      | Additional temporary vegetation clearance of arable, improved grassland, hedgerow and tall herb and fern hedgerow for the provision of an access track and utility pylon works within the distant zone of pond P301N |

#### D3 – Long Term Impacts

Metapopulation N03 is located over 1km from the proposed new carriageway and any other permanent works. As such there would be no potential impact of fragmentation and therefore no long-term impacts are anticipated.

#### D4 – Post-development Interference Impacts

Metapopulation N03 is over 1km from the proposed carriageway and any other permanent works and as such no post-development impacts are anticipated.

#### D5 – Other impacts

No other impacts are anticipated.

### Scale of Impact

This is considered to have a **Negligible** impact and therefore this metapopulation is not considered further in this licence.

### Metapopulation N04

Ponds P023N P051N P135N P307N P411N (Assumed medium population)

### D1 – Habitat Impact tables

#### D1.1 Breakdown of terrestrial impacts

| Permanent                    |                | Temporary                       |                   |
|------------------------------|----------------|---------------------------------|-------------------|
| Habitat type                 | Area lost (ha) | Habitat type                    | Area damaged (ha) |
| Woodland                     | 0.48           | Woodland                        | 0.36              |
| Scrub                        | 0.10           | Scrub                           | 0.02              |
| Improved grassland           | 3.21           | Neutral semi-improved grassland | 0.01              |
| Poor semi-improved grassland | 0.01           | Improved grassland              | 0.12              |
| Tall herb and fern           | 0.03           | Poor semi-improved grassland    | 0.13              |
| Arable                       | 12.11          | Tall herb and fern              | 0.01              |
| Amenity grassland            | 0.81           | Arable                          | 18.27             |
| Gardens/allotments           | 0.22           | Amenity grassland               | 0.60              |
|                              |                | Gardens/allotments              | 0.21              |
| <b>Total Loss</b>            | <b>16.97</b>   | <b>Total Damage</b>             | <b>19.73</b>      |

#### D1.2 Core, Intermediate and distant terrestrial impacts

|                                  | Permanent<br>Area lost (ha) | Temporary<br>Area damaged (ha) |
|----------------------------------|-----------------------------|--------------------------------|
| Core (<50m from pond)            | 0                           | 0.22                           |
| Intermediate (50-250m from pond) | 0.33                        | 9.10                           |
| Distant (>250m from pond)        | 16.64                       | 10.41                          |
| <b>Total (ha)</b>                | <b>16.97</b>                | <b>19.73</b>                   |

#### D1.3 Impacts on Linear Features

|                       | Permanent<br>Length (m) | Temporary<br>Length (m) |
|-----------------------|-------------------------|-------------------------|
| Core (<50m from pond) | 0                       | 0.11                    |

|                                  | Permanent  | Temporary  |
|----------------------------------|------------|------------|
|                                  | Length (m) | Length (m) |
| Intermediate (50-250m from pond) | 0.05       | 0.41       |
| Distant (>250m from pond)        | 0.65       | 0.56       |
| Total (m)                        | 0.70       | 1.08       |

#### D1.4 Aquatic impacts

|             | Permanent   |                             | Temporary      |                                |
|-------------|-------------|-----------------------------|----------------|--------------------------------|
|             | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
| GCN Ponds   | 0           | 0                           | 0              | 0                              |
| Other Ponds | 0           | 0                           | 0              | 0                              |
|             | 0           | 0                           | 0              | 0                              |

### D2 – Pre and mid Development Impacts

#### D2.2 Core, intermediate and distant terrestrial impacts

|                                  | Permanent  | Temporary  |
|----------------------------------|--|--|
|                                  | Description  | Description  |
| Core (<50m from pond)            | No permanent loss of habitat within the core zone of all ponds.  | Temporary loss of amenity grassland, arable, and tall ruderal within the core zone of P023.  |
| Intermediate (50-250m from pond) | Permanent loss of arable fields, woodland, amenity grassland, gardens and hedgerows to accommodate for new road construction within the intermediate zone for P135N.   | Temporary loss of arable fields, scrub, I SI and amenity grassland, gardens and hedgerows to facilitate construction compounds, utility works including the installation of a new HP gas line and road construction within the intermediate zone of all ponds.<br><br>Temporary fragmentation of P023N, P411N and P051N from P307N and P135N during installation of new HP gas line. |
| Distant (>250m from pond)        | Permanent loss of arable fields, I and SI grassland, woodland, scrub, tall herb and hedgerows to accommodate for new road construction within the distant zone for all ponds.<br><br>Permanent loss of all habitat (arable land) to the west of the new road alignment which lies within the distant zone of P135N | Temporary loss of arable fields, amenity grassland, woodland, scrub, SI and I grassland and hedgerow to facilitate construction compounds, utility works including the installation of a new HP gas line and road construction within the distant zone of all Ponds.<br><br>Temporary fragmentation of P023N, P411N and P051N from P307N and   |

|  |  |   |
|--|--|---|
|  |  | P135N during installation of new HP gas line. |
|--|--|---|

### D3 – Long Term Impacts

The five ponds lie to the north and east of the proposed route alignment; at the closest point the proposed carriageway is within 330m of a GCN pond. There would be no permanent loss of habitat within 250m of the ponds; habitat loss within 500m would mainly be of arable fields which are sub-optimal for GCN. No long-term impacts are anticipated.

### D4 – Post-development Interference Impacts

Ponds are located within 330m of the proposed new carriageway. As such, there would be the potential risk of injury and mortality of GCN due to road collisions. However, the habitat within the core and intermediate zones (hedgerows and semi-improved grassland) of the ponds is considered to be better quality habitat than the arable fields which would be lost therefore providing little motivation for GCN to venture onto the live road network.

### D5 – Other impacts

Two GCN receptor areas are proposed within the core zone of P023N and intermediate zones of all other ponds. No earth works or vegetation clearance are proposed within this area.

One mitigation area is proposed for bats within a block of woodland located within the distant zone of all ponds. This mitigation area would be for the provision of bat boxes only, with no vegetation clearance or earth works proposed within this area.

### Scale of Impact

This is considered to have a **Minor** impact.

### Metapopulation N05

Ponds P045N P116N (Small population)

### D1 – Habitat Impact tables

#### D1.1 Breakdown of terrestrial impacts

| Permanent          |                | Temporary           |                   |
|--------------------|----------------|---------------------|-------------------|
| Habitat type       | Area lost (ha) | Habitat type        | Area damaged (ha) |
| Woodland           | 0.37           | Woodland            | 0.58              |
| Tall herb and fern | 0.31           | Arable              | 38.28             |
| Arable             | 44.75          |                     |                   |
| Scrub              | 0.06           |                     |                   |
| <b>Total Loss</b>  | <b>45.49</b>   | <b>Total Damage</b> | <b>38.86</b>      |

#### D1.2 Core, Intermediate and distant terrestrial impacts

|                       | Permanent      | Temporary         |
|-----------------------|----------------|-------------------|
|                       | Area lost (ha) | Area damaged (ha) |
| Core (<50m from pond) | 0.39           | 0.98              |

|                                  | Permanent      | Temporary          |
|----------------------------------|----------------|--------------------|
|                                  | Area lost (ha) | Area damaged (ha)  |
| Intermediate (50-250m from pond) | 16.03          | 17.74              |
| Distant (>250m from pond)        | 29.07          | 20.16              |
| Total (ha)                       | 45.49          | 38.88 <sup>2</sup> |

### D1.3 Impacts on Linear Features

|                                  | Permanent  | Temporary  |
|----------------------------------|------------|------------|
|                                  | Length (m) | Length (m) |
| Core (<50m from pond)            | 0          | 0.01       |
| Intermediate (50-250m from pond) | 0.05       | 0.21       |
| Distant (>250m from pond)        | 0.26       | 0.19       |
| Total (m)                        | 0.31       | 0.41       |

### D1.4 Aquatic impacts

|             | Permanent   |                             | Temporary      |                                |
|-------------|-------------|-----------------------------|----------------|--------------------------------|
|             | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
| GCN Ponds   | 0           | 0                           | 0              | 0                              |
| Other Ponds | 0           | 0                           | 0              | 0                              |
|             | 0           | 0                           | 0              | 0                              |

## D2 – Pre and mid Development Impacts

### D2.2 Core, intermediate and distant terrestrial impacts

|                                  | Permanent   | Temporary  |
|----------------------------------|---|--|
|                                  | Description   | Description  |
| Core (<50m from pond)            | Permanent loss of arable habitat within the core zone of all the ponds. | Temporary loss of arable fields, woodland and hedgerow within the core zone of P045N for flood alleviation.                |
| Intermediate (50-250m from pond) | Permanent loss of arable field and hedgerow to accommodate new road     | Temporary loss of arable fields and woodland due to flood alleviation and to facilitate utility works to overhead electric |

<sup>2</sup> Rounding error between N05 tables D1.1 and D1.2 causing 0.02ha difference in results between tables



|                           | Permanent<br>Description  | Temporary<br>Description   |
|---------------------------|---|--|
|                           | construction within the intermediate zone of P045N  | cables within the intermediate zone of P045N & P116N   |
| Distant (>250m from pond) | <p>Additional permanent loss of arable field, scrub, woodland and hedgerows to accommodate new road construction within the distant zone of P045N and P116N.</p> <p>Permanent loss of all habitat (arable land, hedgerows, woodland, scrub and tall ruderals) to the east of the new road alignment which lies within distant zone of P045N</p> | <p>Temporary loss of arable fields, woodland and hedgerows due to flood alleviation and to facilitate utility works to overhead electric cables within the distant zone of P045N &amp; P116N</p> |

### D3 – Long Term Impacts

The new carriageway would be located 200m to the east of P045N. The proposed route has potential to fragment and prevent movement to habitat located in the west of the proposed route alignment. However, this habitat is mainly arable land, considered sub-optimal for GCN. No long-term fragmentation of the metapopulation is anticipated.

### D4 – Post-development Interference Impacts

The proposed new carriageway would be within 200m of P045N and therefore would pose a risk of injury or mortality of GCN due to road collisions. However, given the low numbers of GCN recorded within this pond (peak count = 1) and the large amount of proposed landscaping planting, which would be of high value to GCN (introduced shrub, neutral semi-improved grassland, and broadleaved plantation woodland) within close proximity to the pond, there is considered to be little motivation for GCN to venture onto the proposed live road network.

### D5 – Other impacts

GCN and reptile mitigation areas are proposed within the core, intermediate and distant zones of P116N. The management of the area would be changed to alleviate agricultural pressure: the area will be planted with grassland, scrub and trees and enhanced with pond and hibernacula creation. The creation of ponds and hibernaculum would require vegetation clearance of arable fields to facilitate earth works within the area.

A water vole receptor site is proposed to along the Mardyke within the intermediate zone of P116N and distant zones of P116N and P045N. No vegetation clearance is currently proposed at this site.

### Scale of Impact

This is considered to have a **Moderate** impact.

### Metapopulation N06

Ponds P257N P258N (Assumed medium population)

#### D1 – Habitat Impact tables

##### D1.1 Breakdown of terrestrial impacts

No permanent loss of terrestrial habitats is proposed within 500m of Assumed Metapopulation N06 as the woodland areas are for the provision of bat boxes and for access purposes only. A small amount of temporary loss is predicted due to gaining access to these bat boxes.

| Permanent         |                | Temporary           |                   |
|-------------------|----------------|---------------------|-------------------|
| Habitat type      | Area lost (ha) | Habitat type        | Area damaged (ha) |
|                   |                | Arable              | 0.02              |
|                   |                | Woodland            | 0.03              |
| <b>Total Loss</b> | <b>0</b>       | <b>Total Damage</b> | <b>0.05</b>       |

##### D1.2 Core, Intermediate and distant terrestrial impacts

|                                  | Permanent      | Temporary         |
|----------------------------------|----------------|-------------------|
|                                  | Area lost (ha) | Area damaged (ha) |
| Core (<50m from pond)            | 0              | 0.01              |
| Intermediate (50-250m from pond) | 0              | 0.03              |
| Distant (>250m from pond)        | 0              | 0.01              |
| <b>Total (ha)</b>                | <b>0</b>       | <b>0.05</b>       |

##### D1.3 Impacts on Linear Features

|                                  | Permanent  | Temporary   |
|----------------------------------|------------|-------------|
|                                  | Length (m) | Length (m)  |
| Core (<50m from pond)            | 0          | 0           |
| Intermediate (50-250m from pond) | 0          | 0.05        |
| Distant (>250m from pond)        | 0          | 0.18        |
| <b>Total (m)</b>                 | <b>0</b>   | <b>0.23</b> |

##### D1.4 Aquatic impacts

|           | Permanent   |                             | Temporary      |                                |
|-----------|-------------|-----------------------------|----------------|--------------------------------|
|           | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
| GCN Ponds | 0           | 0                           | 0              | 0                              |

|             | Permanent   |                             | Temporary      |                                |
|-------------|-------------|-----------------------------|----------------|--------------------------------|
|             | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
| Other Ponds | 0           | 0                           | 0              | 0                              |
|             | 0           | 0                           | 0              | 0                              |

## D2 – Pre and mid Development Impacts

### D2.2 Core, intermediate and distant terrestrial impacts

|                                  | Permanent   | Temporary  |
|----------------------------------|---|--|
|                                  | Description   | Description  |
| Core (<50m from pond)            | No permanent loss of habitat within the core zone of all ponds.         | Temporary loss of woodland within the core zone of all ponds.                              |
| Intermediate (50-250m from pond) | No permanent loss of habitat within the intermediate zone of all ponds. | Temporary loss of arable, woodland and hedgerow within the intermediate zone of all ponds. |
| Distant (>250m from pond)        | No permanent loss of habitat within the distant zone of all ponds.      | Temporary loss of arable, woodland and hedgerow within the distant zone of all ponds.      |

## D3 – Long Term Impacts

The GCN ponds associated with metapopulation N06 are located over 1km from the proposed new carriageway and any other permanent works. As such, there would be no potential impact of fragmentation and therefore, no long-term impacts are anticipated.

## D4 – Post-development Interference Impacts

As metapopulation N06 is located over 1km from the proposed carriageway and any other permanent works, therefore no post-development impacts are anticipated.

## D5 – Other impacts

The ponds are located within a proposed protected species enhancement area for bats. This area would be for the provision of bat boxes only, with no vegetation clearance or earth works proposed within this area.

## Scale of Impact

This is considered to have a **Negligible** impact and are therefore not considered further in this licence.

## Metapopulation N07

Ponds P075N P076N P077N P079N P095N P096N P197N (Assumed large population)

**D1 – Habitat Impact tables**

**D1.1 Breakdown of terrestrial impacts**

| Permanent                       |                | Temporary                       |                   |
|---------------------------------|----------------|---------------------------------|-------------------|
| Habitat type                    | Area lost (ha) | Habitat type                    | Area damaged (ha) |
| Woodland                        | 1.07           | Woodland                        | 0.66              |
| Scrub                           | 1.21           | Scrub                           | 0.07              |
| Semi-improved neutral grassland | 0.03           | Semi-improved neutral grassland | 2.30              |
| Tall herb and fern              | 0.05           | Poor semi-improved grassland    | 1.05              |
| Arable                          | 29.37          | Tall herb and fern              | 0.05              |
|                                 |                | Arable                          | 2.12              |
| <b>Total Loss</b>               | <b>31.73</b>   | <b>Total Damage</b>             | <b>6.25</b>       |

**D1.2 Core, Intermediate and distant terrestrial impacts**

|                                  | Permanent<br>Area lost (ha) | Temporary<br>Area damaged (ha) |
|----------------------------------|-----------------------------|--------------------------------|
| Core (<50m from pond)            | 0                           | 1.29                           |
| Intermediate (50-250m from pond) | 6.98                        | 2.31                           |
| Distant (>250m from pond)        | 24.75                       | 2.65                           |
| <b>Total (ha)</b>                | <b>31.73</b>                | <b>6.25</b>                    |

**D1.3 Impacts on Linear Features**

|                                  | Permanent<br>Length (m) | Temporary<br>Length (m) |
|----------------------------------|-------------------------|-------------------------|
| Core (<50m from pond)            | 0                       | 0                       |
| Intermediate (50-250m from pond) | 0                       | 0                       |
| Distant (>250m from pond)        | 0.72                    | 0                       |
| <b>Total (m)</b>                 | <b>0.72</b>             | <b>0</b>                |

**D1.4 Aquatic impacts**

|           | Permanent   |                             | Temporary      |                                |
|-----------|-------------|-----------------------------|----------------|--------------------------------|
|           | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
| GCN Ponds | 0           | 0                           | 0              | 0                              |

|             |   |   |   |   |
|-------------|---|---|---|---|
| Other Ponds | 0 | 0 | 0 | 0 |
|             | 0 | 0 | 0 | 0 |

## D2 – Pre and mid Development Impacts

### D2.2 Core, intermediate and distant terrestrial impacts

|                                  | Permanent   | Temporary  |
|----------------------------------|---|--|
|                                  | Description   | Description  |
| Core (<50m from pond)            | No permanent habitat loss within the core zone of all ponds.  | Temporary loss of scrub, SI grassland and woodland habitat within the core zone P075.                                  |
| Intermediate (50-250m from pond) | Permanent loss of arable fields, SI grassland, woodland and scrub to accommodate new road construction within the intermediate zone of P079N<br><br>Permanent loss of all habitat (arable land) to the east of the new road alignment which lies within the intermediate zone of P079N  | Temporary loss of arable, scrub, SI grassland and woodland habitat within the intermediate zone of all ponds.          |
| Distant (>250m from pond)        | Additional permanent loss of arable fields, hedgerow and small areas of scrub, tall herb and fern and plantation woodland to accommodate new road construction within the distant zone of Pond P079N.<br><br>Permanent loss of all habitat (arable land with hedgerows) to the east of the new road alignment which lies within the distant zone of P079N | Temporary loss of arable, scrub, SI grassland, tall ruderal and woodland habitat within the distant zone of all ponds. |

## D3 – Long Term Impacts

The ponds are located to the south of the proposed route alignment and there would be no metapopulation fragmentation. There would be permanent loss of arable fields and scrub within the intermediate and distant zone of P079N. However, no long-term impacts are anticipated.

## D4 – Post-development Interference Impacts

P079N is located approximately 215m from the proposed new carriageway. As such, there would be potential risk of injury and mortality of GCN due to road collisions. However, areas of suitable habitat (introduced shrub, neutral semi-improved grassland, and broadleaved plantation woodland) are present within the core and intermediate zone of the pond providing little motivation to venture onto the proposed live road network.

## D5 – Other impacts

P095N is located within a proposed protected species enhancement area for bats. This area is for the provision of bat boxes only, with no vegetation clearance or earth works proposed within this area.

A GCN receptor area is proposed within the intermediate and distant zones of P075N, P076N, P077N, and P079N. No earth works or vegetation clearance are proposed within this area.

**Scale of Impact**

This is considered to have a **Moderate** impact.

**Metapopulation N08**

Ponds P262N P263N P264N P265N (Assumed medium population)

**D1 – Habitat Impact tables**

**D1.1 Breakdown of terrestrial impacts**

| Permanent         |                | Temporary                    |                   |
|-------------------|----------------|------------------------------|-------------------|
| Habitat type      | Area lost (ha) | Habitat type                 | Area damaged (ha) |
|                   |                | Scrub                        | 0.09              |
|                   |                | Improved grassland           | 0.02              |
|                   |                | Poor semi-improved grassland | 0.02              |
|                   |                | Tall herb and fern           | 0.06              |
|                   |                | Arable                       | 1.50              |
|                   |                | Amenity grassland            | 0.02              |
|                   |                | Gardens/allotments           | 0.01              |
| <b>Total Loss</b> | <b>0</b>       | <b>Total Damage</b>          | <b>1.72</b>       |

**D1.2 Core, Intermediate and distant terrestrial impacts**

|                                  | Permanent      | Temporary         |
|----------------------------------|----------------|-------------------|
|                                  | Area lost (ha) | Area damaged (ha) |
| Core (<50m from pond)            | 0              | 0.01              |
| Intermediate (50-250m from pond) | 0              | 0.54              |
| Distant (>250m from pond)        | 0              | 1.17              |
| <b>Total (ha)</b>                | <b>0</b>       | <b>1.72</b>       |

**D1.3 Impacts on Linear Features**

|                                  | Permanent  | Temporary  |
|----------------------------------|------------|------------|
|                                  | Length (m) | Length (m) |
| Core (<50m from pond)            | 0          | 0.08       |
| Intermediate (50-250m from pond) | 0          | 0.47       |
| Distant                          | 0          | 0.27       |

|                   | Permanent  | Temporary  |
|-------------------|------------|------------|
|                   | Length (m) | Length (m) |
| (>250m from pond) |            |            |
| Total (m)         | 0          | 0.82       |

#### D1.4 Aquatic impacts

|             | Permanent   |                             | Temporary      |                                |
|-------------|-------------|-----------------------------|----------------|--------------------------------|
|             | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
| GCN Ponds   | 0           | 0                           | 0              | 0                              |
| Other Ponds | 0           | 0                           | 0              | 0                              |
|             | 0           | 0                           | 0              | 0                              |

### D2 – Pre and mid Development Impacts

#### D2.2 Core, intermediate and distant terrestrial impacts

|                                  | Permanent   | Temporary   |
|----------------------------------|---|---|
|                                  | Description   | Description   |
| Core (<50m from pond)            | No permanent loss of habitat within the core zone of all ponds.         | Temporary loss of a small area of arable and hedgerow within the core zone of P262.   |
| Intermediate (50-250m from pond) | No permanent loss of habitat within the intermediate zone of all ponds. | Temporary loss of intensively managed arable fields, amenity grassland, scrub, SI grassland, hedgerow and tall ruderal for the provision of an access track within the intermediate zone of P263N, P264N & P262N.   |
| Distant (>250m from pond)        | No permanent loss of habitat within the distant zone of all ponds.      | Additional temporary loss of intensively managed arable fields, scrub, gardens and tall ruderal for the provision of an access track within the distant zone of all ponds.<br><br>Temporary loss of arable fields and amenity grassland to facilitate utility works on overhead electric cables within the distant zone of P262N. |

### D3 – Long Term Impacts

Metapopulation N08 is located over 1km from the proposed new carriageway and any other permanent works. As such, there would be no potential impact of fragmentation, and therefore, no long-term impacts are anticipated.

#### D4 – Post-development Interference Impacts

Metapopulation N08 is over 1km from the proposed carriageway and any other permanent works and as such no post-development impacts are anticipated.

#### D5 – Other impacts

No other impacts are anticipated.

#### Scale of Impact

This is considered to have a **Negligible** impact and therefore this metapopulation is not considered further in this licence.

#### Metapopulation N09

Ponds P317N P319N P321N (Assumed medium population)

#### D1 – Habitat Impact tables

##### D1.1 Breakdown of terrestrial impacts

| Permanent                    |                | Temporary                    |                   |
|------------------------------|----------------|------------------------------|-------------------|
| Habitat type                 | Area lost (ha) | Habitat type                 | Area damaged (ha) |
| Amenity grassland            | 0.02           | Poor semi-improved grassland | 0.38              |
| Poor semi-improved grassland | 0.01           | Arable                       | 4.84              |
|                              |                | Amenity grassland            | 1.07              |
| <b>Total Loss</b>            | <b>0.03</b>    | <b>Total Damage</b>          | <b>6.29</b>       |

##### D1.2 Core, Intermediate and distant terrestrial impacts

|                                  | Permanent      | Temporary         |
|----------------------------------|----------------|-------------------|
|                                  | Area lost (ha) | Area damaged (ha) |
| Core (<50m from pond)            | 0              | 0                 |
| Intermediate (50-250m from pond) | 0.01           | 1.45              |
| Distant (>250m from pond)        | 0.02           | 4.84              |
| <b>Total (ha)</b>                | <b>0.03</b>    | <b>6.29</b>       |

##### D1.3 Impacts on Linear Features

|                                  | Permanent  | Temporary  |
|----------------------------------|------------|------------|
|                                  | Length (m) | Length (m) |
| Core (<50m from pond)            | 0          | 0          |
| Intermediate (50-250m from pond) | 0.01       | 0.05       |



|                           | Permanent  | Temporary  |
|---------------------------|------------|------------|
|                           | Length (m) | Length (m) |
| Distant (>250m from pond) | 0          | 0.12       |
| Total (m)                 | 0.01       | 0.17       |

#### D1.4 Aquatic impacts

|             | Permanent   |                             | Temporary      |                                |
|-------------|-------------|-----------------------------|----------------|--------------------------------|
|             | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
| GCN Ponds   | 0           | 0                           | 0              | 0                              |
| Other Ponds | 0           | 0                           | 0              | 0                              |
|             | 0           | 0                           | 0              | 0                              |

### D2 – Pre and mid Development Impacts

#### D2.2 Core, intermediate and distant terrestrial impacts

|                                  | Permanent   | Temporary  |
|----------------------------------|---|--|
|                                  | Description   | Description  |
| Core (<50m from pond)            | No permanent loss of habitats within the core zone of all Ponds                       | No temporary loss of habitats within the core zone of all Ponds  |
| Intermediate (50-250m from pond) | Permanent loss of a small area of SI grassland within the intermediate zone of P317N. | Temporary loss of arable fields, amenity grassland, SI grassland and hedgerows to facilitate utility works on overhead electric cables within the intermediate zone of P317N |
| Distant (>250m from pond)        | Permanent loss of a small area of amenity grassland within the distant zone of P317N. | Temporary loss of arable fields, amenity grassland, hedgerows and SI grassland to facilitate utility works on overhead electric cables within the distant zone of all ponds. |

#### D3 – Long Term Impacts

Metapopulation N09 is located over 500m from the proposed new carriageway and any other permanent works. As such, there would be no potential impact of fragmentation and therefore, no long-term impacts are anticipated.

#### D4 – Post-development Interference Impacts

Metapopulation N09 is over 500m from the proposed carriageway and any other permanent works. As such, there would be little risk of injury and mortality of GCN due to road collisions.

### D5 – Other impacts

A GCN receptor area is proposed within the intermediate zones of P317N, P319N and P321N. No earth works or vegetation clearance are proposed within this area.

#### Scale of Impact

This is considered to have a **Minor** impact.

### Metapopulation N10

Ponds P137N P206N (Large population)

The M25 is located to the east of Metapopulation N10 and forms a physical barrier between this population and any impacts associated with the project. As such, any impacts to the east of the M25 within 500m of these ponds have not been included below.

### D1 – Habitat Impact tables

#### D1.1 Breakdown of terrestrial impacts

| Permanent                       |                | Temporary                    |                   |
|---------------------------------|----------------|------------------------------|-------------------|
| Habitat type                    | Area lost (ha) | Habitat type                 | Area damaged (ha) |
| Woodland                        | 8.46           | Woodland                     | 0.09              |
| Scrub                           | 0.38           | Scrub                        | 0.01              |
| Semi-improved neutral grassland | 0.40           | Poor semi-improved grassland | 1.84              |
| Improved grassland              | 0.15           | Tall herb and fern           | 0.07              |
| Poor semi-improved grassland    | 2.26           | Amenity grassland            | 0.07              |
| Tall herb and fern              | 0.09           |                              |                   |
| Arable                          | 11.04          |                              |                   |
| Amenity grassland               | 0.02           |                              |                   |
| <b>Total Loss</b>               | <b>22.80</b>   | <b>Total Damage</b>          | <b>2.08</b>       |

#### D1.2 Core, Intermediate and distant terrestrial impacts

|                                  | Permanent      | Temporary         |
|----------------------------------|----------------|-------------------|
|                                  | Area lost (ha) | Area damaged (ha) |
| Core (<50m from pond)            | 0              | 0                 |
| Intermediate (50-250m from pond) | 7.58           | 2.03              |
| Distant (>250m from pond)        | 15.22          | 0.05              |
| <b>Total (ha)</b>                | <b>22.80</b>   | <b>2.08</b>       |

**D1.3 Impacts on linear features**

|                                  | Permanent   | Temporary   |
|----------------------------------|-------------|-------------|
|                                  | Length (m)  | Length (m)  |
| Core (<50m from pond)            | 0           | 0           |
| Intermediate (50-250m from pond) | 0.19        | 0.04        |
| Distant (>250m from pond)        | 0.04        | 0.03        |
| <b>Total (m)</b>                 | <b>0.23</b> | <b>0.07</b> |

**D1.4 Aquatic impacts**

|             | Permanent   |                             | Temporary      |                                |
|-------------|-------------|-----------------------------|----------------|--------------------------------|
|             | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
| GCN Ponds   | 0           | 0                           | 0              | 0                              |
| Other Ponds | 0           | 0                           | 0              | 0                              |
|             | <b>0</b>    | <b>0</b>                    | <b>0</b>       | <b>0</b>                       |

**D2 – Pre and mid Development Impacts**

**D2.2 Core, intermediate and distant terrestrial impacts**

|                                  | Permanent   | Temporary  |
|----------------------------------|---|--|
|                                  | Description   | Description  |
| Core (<50m from pond)            | No permanent loss of habitat within the core zone of P137N & P206N  | No temporary loss of habitat within the core zone of P137N & P206N   |
| Intermediate (50-250m from pond) | Permanent loss of amenity grassland, arable, plantation woodland, SI grassland, tall ruderal vegetation, hedgerow and scrub for the new road construction within the intermediate zone of P137N & P206N | Temporary loss of amenity grassland, plantation woodland, tall ruderal vegetation, hedgerow, SI grassland and scrub for the construction working zone, diversion of utilities and to facilitate construction access routes within the intermediate zone of P137N & P206N |
| Distant (>250m from pond)        | Permanent loss of arable, scrub, improved grassland, woodland, SI grassland, and hedgerow for the new road construction within the distant zone of P137N & P206N  | Additional temporary loss of plantation woodland, tall ruderal and hedgerow, for the construction working zone, diversion of utilities and to facilitate construction access routes within the distant zone of P137N & P206N   |

### D3 – Long Term Impacts

The M25 is located to the east of population N10 and is an existing physical barrier to movement. Therefore, the proposed widening of this road is not considered to cause any further fragmentation effects. As such, no long-term impacts are anticipated.

### D4 – Post-development Interference Impacts

The proposed new carriageway would pose a direct risk of injury and mortality of GCN due to road collisions. Metapopulation N10 is already located in close proximity to the existing M25 and, although the widening of the road would bring it slightly closer to the GCN ponds, this is considered marginal. Therefore, the risk of injury and mortality would be no higher than current conditions and therefore negligible.

### D5 – Other impacts

A GCN receptor area is proposed within the intermediate zone of P206N. The creation of hibernaculum and refugia would require vegetation clearance to facilitate earth works within the area.

A woodland planting mitigation area is proposed within the intermediate zone of P137N. The management of the area would be changed to alleviate agricultural pressure and the area would be planted with trees. The planting of trees would require earthworks within this area.

### Scale of Impact

This is considered to have a **Moderate** impact.

### Metapopulation N11/N12

Ponds P166N P227N P240N P241N P242N (Assumed medium population)

The M25 is located to the west of Assumed Metapopulation N11/N12 and forms a physical barrier between this population and any impacts associated with the project. As such, any impacts to the west of the M25 within 500m of these ponds have not been included below.

### D1 – Habitat Impact tables

#### D1.1 Breakdown of terrestrial impacts

| Permanent                       |                | Temporary                       |                   |
|---------------------------------|----------------|---------------------------------|-------------------|
| Habitat type                    | Area lost (ha) | Habitat type                    | Area damaged (ha) |
| Woodland                        | 0.83           | Woodland                        | 0.11              |
| Scrub                           | 0.23           | Scrub                           | 0.14              |
| Semi-improved neutral grassland | 0.75           | Improved grassland              | 5.36              |
| Improved grassland              | 5.38           | Poor semi-improved grassland    | 0.45              |
| Poor semi-improved grassland    | 0.21           | Arable                          | 1.08              |
| Tall herb and fern              | 0.78           | Amenity grassland               | 0.01              |
| Swamp                           | 0.23           | Caravan site                    | 0.46              |
| Caravan site                    | 0.03           | Semi-improved neutral grassland | 0.11              |
|                                 |                | Swamp                           | 0.01              |
|                                 |                | Tall herb and fern              | 0.01              |
| <b>Total Loss</b>               | <b>8.44</b>    | <b>Total Damage</b>             | <b>7.74</b>       |

**D1.2 Core, Intermediate and distant terrestrial impacts**

|                                  | Permanent      | Temporary         |
|----------------------------------|----------------|-------------------|
|                                  | Area lost (ha) | Area damaged (ha) |
| Core (<50m from pond)            | 0.03           | 0.47              |
| Intermediate (50-250m from pond) | 5.44           | 3.32              |
| Distant (>250m from pond)        | 2.97           | 3.95              |
| Total (ha)                       | 8.44           | 7.74              |

**D1.3 Impacts on linear features**

|                                  | Permanent  | Temporary  |
|----------------------------------|------------|------------|
|                                  | Length (m) | Length (m) |
| Core (<50m from pond)            | 0.01       | 0.09       |
| Intermediate (50-250m from pond) | 0.48       | 0.73       |
| Distant (>250m from pond)        | 0          | 0.08       |
| Total (m)                        | 0.49       | 0.90       |

**D1.4 Aquatic impacts**

|             | Permanent   |                             | Temporary      |                                |
|-------------|-------------|-----------------------------|----------------|--------------------------------|
|             | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
| GCN Ponds   | 0           | 0                           | 0              | 0                              |
| Other Ponds | 0           | 0                           | 0              | 0                              |
|             | 0           | 0                           | 0              | 0                              |

**D2 – Pre and mid Development Impacts**

**D2.2 Core, intermediate and distant terrestrial impacts**

|                       | Permanent  | Temporary  |
|-----------------------|--|--|
|                       | Description  | Description  |
| Core (<50m from pond) | Permanent loss of SI grassland within the soft estate within the core zone of P240N, P241N & P242N | Temporary loss of hedgerows, improved and SI grassland to accommodate new road construction, utility works and |

|  | Permanent<br>Description   | Temporary<br>Description  |
|--|--|---|
|  |  | construction access routes within the core zone of all P240N, P241N & P242N   |
| Intermediate<br>(50-250m<br>from pond) | Permanent loss of improved grassland, SI grassland, plantation woodland, hedgerow and tall ruderal herbs within the soft estate within the intermediate zone of P240N, P241N & P242N | Temporary loss of improved grassland for utility works and flood alleviation within the intermediate zone of P166N & P227N<br><br>Additional temporary loss of improved grassland, hedgerow, amenity grassland, scrub and plantation woodland habitat to accommodate new road construction, utility works, construction access routes and flood alleviation within the intermediate zone of P240N, P241N & P242N  |
| Distant<br>(>250m<br>from pond)        | Permanent loss of arable, scrub, swamp, improved grassland, SI grassland, plantation woodland and tall ruderal herbs within the distant zone of P240N, P241N & P242N                 | Additional temporary loss of arable, scrub, improved grassland, swamp, plantation woodland, tall ruderal herbs and hedgerow to accommodate new road construction, utility works, flood alleviation and construction access routes within the distant zone of P166N & P227N<br><br>Additional temporary loss of neutral SI grassland habitat to accommodate new road construction, utility works, construction access routes and flood alleviation within the distant zone of P240N, P241N & P242N |

### D3 – Long Term Impacts

The M25 is located to the west of population N11/N12 and is an existing physical barrier to movement. Therefore, the proposed widening of this road is not considered to cause any further fragmentation effects. Some permanent loss of heavily grazed semi improved fields, plantation woodland and tall ruderal herbs would occur; however, this habitat is considered sub-optimal for GCN. As such, no long-term impacts are anticipated.

### D4 – Post-development Interference Impacts

The proposed new carriageway poses a direct risk of injury and mortality of GCN due to road collisions. Population N11/N12 is already located in close proximity to the existing M25 and, although the widening of the road would bring it slightly closer to the GCN ponds, this is considered marginal. Therefore, the risk of injury and mortality would be no higher than current conditions and therefore negligible.

### D5 – Other impacts

A GCN mitigation area is proposed within the intermediate zone of both all ponds. This area would include the creation of hibernaculum and would require vegetation clearance to facilitate earth works within the area. Another GCN mitigation area is proposed to the west of the M25 which falls within the

intermediate zone of P240N, P241N & P242N. The M25 is a physical barrier between this population and the proposed mitigation area to the west.

### Scale of Impact

This is considered to have a **Moderate** impact.

### Metapopulation N13

Ponds P157N P158N P159N P299N P300N (Assumed large population)

The M25 is located to the east of Metapopulation N13 and forms a physical barrier between this population and any impacts associated with the project. As such, any impacts to the east of the M25 within 500m of these ponds have not been included below.

## D1 – Habitat Impact tables

### D1.1 Breakdown of terrestrial impacts

| Permanent                       |                | Temporary                       |                   |
|---------------------------------|----------------|---------------------------------|-------------------|
| Habitat type                    | Area lost (ha) | Habitat type                    | Area damaged (ha) |
| Woodland                        | 4.79           | Woodland                        | 0.18              |
| Scrub                           | 0.01           | Scrub                           | 0.02              |
| Semi-improved neutral grassland | 1.18           | Semi-improved neutral grassland | 0.01              |
| Improved grassland              | 4.67           | Improved grassland              | 0.40              |
| Poor semi-improved grassland    | 0.12           | Poor semi-improved grassland    | 0.04              |
| Arable                          | 0.84           | Arable                          | 6.08              |
| Amenity grassland               | 0.18           | Amenity grassland               | 0.08              |
| <b>Total Loss</b>               | <b>11.79</b>   | <b>Total Damage</b>             | <b>6.81</b>       |

### D1.2 Core, Intermediate and distant terrestrial impacts

|                                  | Permanent      | Temporary         |
|----------------------------------|----------------|-------------------|
|                                  | Area lost (ha) | Area damaged (ha) |
| Core (<50m from pond)            | 0.01           | 0.24              |
| Intermediate (50-250m from pond) | 6.14           | 2.61              |
| Distant (>250m from pond)        | 5.64           | 3.97              |
| <b>Total (ha)</b>                | <b>11.79</b>   | <b>6.81</b>       |

### D1.3 Impacts on linear features

|                       | Permanent  | Temporary  |
|-----------------------|------------|------------|
|                       | Length (m) | Length (m) |
| Core (<50m from pond) | 0          | 0          |

|                                  | Permanent  | Temporary  |
|----------------------------------|------------|------------|
|                                  | Length (m) | Length (m) |
| Intermediate (50-250m from pond) | 0.32       | 0.32       |
| Distant (>250m from pond)        | 0.03       | 0.04       |
| Total (m)                        | 0.35       | 0.36       |

#### D1.4 Aquatic impacts

|             | Permanent   |                             | Temporary      |                                |
|-------------|-------------|-----------------------------|----------------|--------------------------------|
|             | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
| GCN Ponds   | 0           | 0                           | 0              | 0                              |
| Other Ponds | 0           | 0                           | 0              | 0                              |
|             | 0           | 0                           | 0              | 0                              |

### D2 – Pre and mid Development Impacts

#### D2.2 Core, intermediate and distant terrestrial impacts

|                                  | Permanent  | Temporary   |
|----------------------------------|--|---|
|                                  | Description  | Description   |
| Core (<50m from pond)            | Permanent habitat loss of amenity grassland and woodland within the core zone of all ponds.  | Temporary loss of amenity grassland and arable within the core zone of all P157N and P158N.   |
| Intermediate (50-250m from pond) | Permanent loss of amenity grassland, scrub, improved grassland, SI grassland, plantation woodland, hedgerow and arable fields to accommodate widening of the M25 within the intermediate zone of Ponds P157N & P158N.        | Temporary loss of amenity grassland, plantation woodland, scrub, arable fields, hedgerow and improved grassland to facilitate widening of the M25 and utility works within the intermediate zone of Ponds P157N & P158N |
| Distant (>250m from pond)        | Additional permanent loss of amenity grassland, arable, improved grassland, plantation woodland, SI grassland and hedgerow to accommodate widening of M25 within the distant zone of Ponds P157N, P158N P159N P299N & P300N. | Additional temporary habitat loss of arable fields and hedgerow to facilitate widening of M25 and utility works within the distant zone of Ponds P157N, P158N P159N P299N & P300N                                       |

### D3 – Long Term Impacts

The M25 is located to the east of population N13 and is an existing physical barrier to movement. Therefore, the proposed widening of this road is not considered to cause any further fragmentation effects. There would be permanent loss of plantation woodland and arable fields within the intermediate and distant zones.



#### D4 – Post-development Interference Impacts

The proposed new carriageway would pose a direct risk of injury and mortality of GCN due to road collisions. Metapopulation N13 is already located in close proximity to the existing M25 and, although the widening of the road would bring it slightly closer to the GCN ponds, this is considered marginal. Therefore, the risk of injury and mortality would be no higher than current conditions and therefore negligible.

#### D5 – Other impacts

A GCN mitigation area is proposed within the intermediate zone of P158N and distant zone of P157N. Works within this area would include the creation of hibernaculum and would require vegetation clearance to facilitate earth works within the area.

#### Scale of Impact

This is considered to have a **Moderate** impact.

#### Metapopulation N14

Ponds P149N P150N P276N P440N P510N and P511N (Assumed medium population)

#### D1 – Habitat Impact tables

##### D1.1 Breakdown of terrestrial impacts

| Permanent                       |                | Temporary                       |                   |
|---------------------------------|----------------|---------------------------------|-------------------|
| Habitat type                    | Area lost (ha) | Habitat type                    | Area damaged (ha) |
| Arable                          | 12.72          | Woodland                        | 0.70              |
| Improved grassland              | 0.06           | Neutral semi-improved grassland | 0.04              |
| Woodland                        | 0.11           | Arable                          | 0.42              |
| Neutral semi-improved grassland | 1.31           |                                 |                   |
| <b>Total Loss</b>               | <b>14.20</b>   | <b>Total Damage</b>             | <b>1.16</b>       |

##### D1.2 Core, Intermediate and distant terrestrial impacts

|                                  | Permanent<br>Area lost (ha) | Temporary<br>Area damaged (ha) |
|----------------------------------|-----------------------------|--------------------------------|
| Core (<50m from pond)            | 0                           | 0                              |
| Intermediate (50-250m from pond) | 2.10                        | 0.26                           |
| Distant (>250m from pond)        | 12.10                       | 0.90                           |
| <b>Total (ha)</b>                | <b>14.20</b>                | <b>1.16</b>                    |

**D1.3 Impacts on linear features**

|                                  | Permanent  | Temporary  |
|----------------------------------|------------|------------|
|                                  | Length (m) | Length (m) |
| Core (<50m from pond)            | 0          | 0          |
| Intermediate (50-250m from pond) | 0          | 0          |
| Distant (>250m from pond)        | 0.01       | 0.05       |
| Total (m)                        | 0.01       | 0.05       |

**D1.4 Aquatic impacts**

|             | Permanent   |                             | Temporary      |                                |
|-------------|-------------|-----------------------------|----------------|--------------------------------|
|             | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
| GCN Ponds   | 0           | 0                           | 0              | 0                              |
| Other Ponds | 0           | 0                           | 0              | 0                              |
|             | 0           | 0                           | 0              | 0                              |

**D2 – Pre and mid Development Impacts**

**D2.2 Core, intermediate and distant terrestrial impacts**

|                                  | Permanent   | Temporary  |
|----------------------------------|---|--|
|                                  | Description   | Description  |
| Core (<50m from pond)            | No permanent habitat loss within the core zone of all ponds.  | No temporary habitat loss within the core zone of all ponds.   |
| Intermediate (50-250m from pond) | Permanent loss of arable and SI grassland within the intermediate zone of P149N and P510N.          | Small area of woodland due to utility works and to facilitate NMU routes within the intermediate zone of P149N & P150N   |
| Distant (>250m from pond)        | Permanent loss of arable, woodland, improved and SI grassland within the distant zone of all ponds. | Small area of temporary loss of arable land, SI grassland, hedgerows and woodland due to utility works and to facilitate NMU routes within the distant zone of P149N & P150N |

**D3 – Long Term Impacts**

The A127 is located to the south of population N14 and the M25 is located to the west of population N14, which are existing physical barriers to movement. Therefore, the proposed widening of these roads is not considered to cause any further fragmentation effects. As such, no long-term impacts are anticipated.

#### D4 – Post-development Interference Impacts

The proposed new carriageway would pose a direct risk of injury and mortality of GCN due to road collisions. Population N14 is already located in close proximity to the existing M25 and A217 and, although the widening of the road would bring it slightly closer to the GCN ponds, this is considered marginal. Therefore, the risk of injury and mortality would be no higher than current conditions and therefore negligible.

#### D5 – Other impacts

A woodland planting mitigation area is proposed within the distant zone of the ponds. The management of this area would be changed to alleviate agricultural pressure and area would be planted with trees. The planting of trees would require earthworks within this area.

#### Scale of Impact

This is considered to have a **Minor** impact.

#### Metapopulation N15

Pond P210N (Small population)

The M25 is located to the east of Metapopulation N15 and forms a physical barrier between this population and any impacts associated with the project. As such, any impacts to the east of the M25 within 500m of these ponds have not been included below.

#### D1 – Habitat Impact tables

##### D1.1 Breakdown of terrestrial impacts

| Permanent                       |                | Temporary                       |                   |
|---------------------------------|----------------|---------------------------------|-------------------|
| Habitat type                    | Area lost (ha) | Habitat type                    | Area damaged (ha) |
| Woodland                        | 0.70           | Woodland                        | 0.94              |
| Scrub                           | 0.11           | Semi-improved neutral grassland | 0.06              |
| Semi-improved neutral grassland | 0.21           | Poor semi-improved grassland    | 1.70              |
| Poor semi-improved grassland    | 0.51           |                                 |                   |
| <b>Total Loss</b>               | <b>1.53</b>    | <b>Total Damage</b>             | <b>2.70</b>       |

##### D1.2 Core, Intermediate and distant terrestrial impacts

|                                  | Permanent      | Temporary         |
|----------------------------------|----------------|-------------------|
|                                  | Area lost (ha) | Area damaged (ha) |
| Core (<50m from pond)            | 0.47           | 0.33              |
| Intermediate (50-250m from pond) | 0.75           | 2.06              |
| Distant (>250m from pond)        | 0.31           | 0.31              |
| <b>Total (ha)</b>                | <b>1.53</b>    | <b>2.70</b>       |

### D1.3 Impacts on linear features

|                                  | Permanent   | Temporary  |
|----------------------------------|-------------|------------|
|                                  | Length (m)  | Length (m) |
| Core (<50m from pond)            | 0.04        | 0          |
| Intermediate (50-250m from pond) | 0.01        | 0          |
| Distant (>250m from pond)        | 0           | 0          |
| <b>Total (m)</b>                 | <b>0.05</b> | <b>0</b>   |

### D1.4 Aquatic impacts

|             | Permanent   |                             | Temporary      |                                |
|-------------|-------------|-----------------------------|----------------|--------------------------------|
|             | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
| GCN Ponds   | 1 (P210N)   | 106.17                      | 0              | 0                              |
| Other Ponds | 0           | 0                           | 0              | 0                              |
|             | <b>1</b>    | <b>106.17</b>               | <b>0</b>       | <b>0</b>                       |

## D2 – Pre and mid Development Impacts

### D2.2 Core, intermediate and distant terrestrial impacts

|                                  | Permanent  | Temporary   |
|----------------------------------|--|---|
|                                  | Description  | Description   |
| Core (<50m from pond)            | Small permanent loss of plantation woodland, scrub, SI grassland and hedgerow to facilitate work to the existing M25 within the core zone of pond P210N.         | Temporary loss of woodland and SI grassland within the core zone of pond P210N.         |
| Intermediate (50-250m from pond) | Small permanent loss of plantation woodland, scrub, SI grassland and hedgerow to facilitate work to the existing M25 within the intermediate zone of pond P210N. | Temporary loss of woodland and SI grassland within the intermediate zone of pond P210N. |
| Distant (>250m from pond)        | Small permanent loss of plantation woodland and SI grassland to facilitate work to the existing M25 within the distant zone of pond P210N.                       | Temporary loss of woodland and SI grassland within the distant zone of pond P210N.      |

## D3 – Long Term Impacts

Pond P210N would be destroyed along with core terrestrial habitat which comprises broadleaved plantation woodland, improved grassland and poor semi-improved grassland. The proposed new

mitigation ponds would be located to the south of P210N approximately 125m from the M25. The M25 is located to the east of population N15 and is an existing physical barrier to movement of GCN. Therefore, the proposed widening of this road is not considered to cause any further fragmentation effects.

#### D4 – Post-development Interference Impacts

The current GCN pond is already located in close proximity to the existing M25 and the new mitigation ponds would be located further from any motorway works than the existing pond. Therefore, the risk of injury and mortality would be less than current conditions and therefore is considered negligible.

#### D5 – Other Impacts

A GCN mitigation area is proposed within the intermediate zone of P210N. This area would include the creation of new ponds, hibernaculum and refugia along with woodland planting. This would require vegetation clearance to facilitate earth works within the area.

#### Scale of Impact

This is considered to have a **Major** impact.

#### Metapopulation N16

Ponds P097N P098N P099N P313N (Assumed medium population)

The A13 is located to the north of Metapopulation N16 and forms a physical barrier between this population and any impacts associated with the project. As such, any impacts to the north of the A13 within 500m of these ponds have not been included below.

#### D1 – Habitat Impact tables

##### D1.1 Breakdown of terrestrial impacts

| Permanent                       |                | Temporary                       |                   |
|---------------------------------|----------------|---------------------------------|-------------------|
| Habitat type                    | Area lost (ha) | Habitat type                    | Area damaged (ha) |
| Woodland                        | 2.53           | Woodland                        | 0.29              |
| Scrub                           | 0.66           | Scrub                           | 0.67              |
| Semi-improved neutral grassland | 0.05           | Unimproved neutral grassland    | 0.18              |
| Poor semi-improved grassland    | 5.62           | Semi-improved neutral grassland | 0.54              |
| Arable                          | 9.44           | Poor semi-improved grassland    | 5.88              |
|                                 |                | Tall herb and fern              | 0.01              |
|                                 |                | Arable                          | 2.83              |
|                                 |                | Amenity grassland               | 0.03              |
|                                 |                | Gardens/allotments              | 0.01              |
| <b>Total Loss</b>               | <b>18.30</b>   | <b>Total Damage</b>             | <b>10.44</b>      |

##### D1.2 Core, Intermediate and distant terrestrial impacts

|                       | Permanent      | Temporary         |
|-----------------------|----------------|-------------------|
|                       | Area lost (ha) | Area damaged (ha) |
| Core (<50m from pond) | 0.08           | 0                 |

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|                                  | Permanent      | Temporary         |
|----------------------------------|----------------|-------------------|
|                                  | Area lost (ha) | Area damaged (ha) |
| Intermediate (50-250m from pond) | 6.37           | 5.63              |
| Distant (>250m from pond)        | 11.85          | 4.81              |
| Total (ha)                       | 18.30          | 10.44             |

**D1.3 Impacts on linear features**

|                                  | Permanent  | Temporary  |
|----------------------------------|------------|------------|
|                                  | Length (m) | Length (m) |
| Core (<50m from pond)            | 0          | 0          |
| Intermediate (50-250m from pond) | 0.16       | 0.02       |
| Distant (>250m from pond)        | 0.62       | 0.13       |
| Total (m)                        | 0.78       | 0.15       |

**D1.4 Aquatic impacts**

|             | Permanent   |                             | Temporary      |                                |
|-------------|-------------|-----------------------------|----------------|--------------------------------|
|             | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
| GCN Ponds   | 0           | 0                           | 0              | 0                              |
| Other Ponds | 0           | 0                           | 0              | 0                              |
|             | 0           | 0                           | 0              | 0                              |

## D2 – Pre and mid Development Impacts

### D2.2 Core, intermediate and distant terrestrial impacts

|                                     | Permanent<br>Description   | Temporary<br>Description   |
|-------------------------------------|--|--|
| Core<br>(<50m from pond)            | Permanent loss of arable to facilitate new road construction within the core zone of P313N   | No temporary habitat loss within the core zone of all ponds.   |
| Intermediate<br>(50-250m from pond) | Permanent loss of arable, scrub, SI grassland, hedgerows, and woodland to facilitate new road construction within the intermediate zone of P313N                 | Temporary loss of SI grassland, amenity grassland, arable, woodland, gardens, SI grassland, tall herb and ruderal, hedgerow, and scrub to accommodate utility works including overhead electric cables, gas pipeline and construction access routes within the intermediate zone of P313N, P097N & P098N |
| Distant<br>(>250m from pond)        | Additional permanent loss of SI grassland, scrub, hedgerows, and arable land to facilitate new road construction within the distant zone of P313N, P097N & P098N | Additional temporary loss of SI grassland, scrub, hedgerows, amenity grassland and arable land to accommodate utility works including overhead electric cables, gas pipeline and construction access routes within the distant zone of P313N, P097N & P098N  |

## D3 – Long Term Impacts

The A13 is located to the northeast of population N16 and is an existing physical barrier to movement. Therefore, the proposed junction at this road is not considered to cause any further fragmentation effects. There would be permanent loss of SI grassland, scrub, hedgerows and arable land within the intermediate and distant zones.

## D4 – Post-development Interference Impacts

P313N is located approximately 175m from the proposed new carriageway. As such, there would be potential risk of injury and mortality of GCN due to road collisions. However, large areas of suitable habitat (rough grassland, dense scrub) are present adjacent to this pond providing little motivation for GCN to venture onto the proposed live road network.

## D5 – Other Impacts

A GCN mitigation area is proposed within the core zone of P098N and the intermediate zone of both ponds. This area would include the creation of hibernaculum and would require vegetation clearance to facilitate earth works within the area.

## Scale of Impact

This is considered to have a **Moderate** impact.

## Assumed Metapopulation N17

Pond P402N (Assumed medium population)

**D1 – Habitat Impact tables**

**D1.1 Breakdown of terrestrial impacts**

| Permanent         |                | Temporary                       |                   |
|-------------------|----------------|---------------------------------|-------------------|
| Habitat type      | Area lost (ha) | Habitat type                    | Area damaged (ha) |
|                   |                | Woodland                        | 0.11              |
|                   |                | Scrub                           | 0.14              |
|                   |                | Semi-improved neutral grassland | 0.03              |
|                   |                | Poor semi-improved grassland    | 0.14              |
|                   |                | Tall herb and fern              | 0.03              |
| <b>Total Loss</b> | <b>0</b>       | <b>Total Damage</b>             | <b>0.45</b>       |

**D1.2 Core, Intermediate and distant terrestrial impacts**

|                                  | Permanent<br>Area lost (ha) | Temporary<br>Area damaged (ha) |
|----------------------------------|-----------------------------|--------------------------------|
| Core (<50m from pond)            | 0                           | 0                              |
| Intermediate (50-250m from pond) | 0                           | 0                              |
| Distant (>250m from pond)        | 0                           | 0.45                           |
| <b>Total (ha)</b>                | <b>0</b>                    | <b>0.45</b>                    |

**D1.3 Impacts on linear features**

|                                  | Permanent<br>Length (m) | Temporary<br>Length (m) |
|----------------------------------|-------------------------|-------------------------|
| Core (<50m from pond)            | 0                       | 0                       |
| Intermediate (50-250m from pond) | 0                       | 0                       |
| Distant (>250m from pond)        | 0                       | 0                       |
| <b>Total (m)</b>                 | <b>0</b>                | <b>0</b>                |

**D1.4 Aquatic impacts**

|             | Permanent   |                             | Temporary      |                                |
|-------------|-------------|-----------------------------|----------------|--------------------------------|
|             | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
| GCN Ponds   | 0           | 0                           | 0              | 0                              |
| Other Ponds | 0           | 0                           | 0              | 0                              |



|  |   |   |   |   |
|--|---|---|---|---|
|  | 0 | 0 | 0 | 0 |
|--|---|---|---|---|

## D2 – Pre and mid Development Impacts

### D2.2 Core, intermediate and distant terrestrial impacts

|                                  | Permanent   | Temporary   |
|----------------------------------|---|---|
|                                  | Description   | Description   |
| Core (<50m from pond)            | No permanent habitat loss within the core zone of the pond P402N.         | No temporary habitat loss within the core zone of the pond P402N.   |
| Intermediate (50-250m from pond) | No permanent habitat loss within the intermediate zone of the pond P402N. | No temporary habitat loss within the intermediate zone of the pond P402N.                                   |
| Distant (>250m from pond)        | No permanent habitat loss within the distant zone of the pond P402N.      | Temporary loss of scrub, SI grassland, woodland and tall ruderal within the distant zone of the pond P402N. |

## D3 – Long Term Impacts

Assumed metapopulation N17 is located over 2km from the proposed new carriageway and any other permanent works. As such, there would be no potential impact of fragmentation and therefore, no long-term impacts are anticipated.

## D4 – Post-development Interference Impacts

Assumed metapopulation N17 is located over 2km from the proposed carriageway and any other permanent works and as such no post-development impacts are anticipated.

## D5 – Other impacts

No other impacts are anticipated.

## Scale of Impact

This is considered to have a **Negligible** impact and this metapopulation is therefore not considered further in this licence.

## Assumed Metapopulation N18

Ponds P252N P253N P303N (Assumed medium population)

## D1 – Habitat Impact tables

### D1.1 Breakdown of terrestrial impacts

| Permanent                       |                | Temporary          |                   |
|---------------------------------|----------------|--------------------|-------------------|
| Habitat type                    | Area lost (ha) | Habitat type       | Area damaged (ha) |
| Woodland                        | 0.01           | Arable             | 0.10              |
| Scrub                           | 0.07           | Improved grassland | 0.05              |
| Semi-improved neutral grassland | 15.02          | Woodland           | 0.12              |

|                              |              |                                 |             |
|------------------------------|--------------|---------------------------------|-------------|
| Improved grassland           | 0.84         | Semi-improved neutral grassland | 0.73        |
| Poor semi-improved grassland | 0.39         | Tall ruderal                    | 0.01        |
| Tall herb and fern           | 0.02         |                                 |             |
| Arable                       | 11.70        |                                 |             |
| <b>Total Loss</b>            | <b>28.05</b> | <b>Total Damage</b>             | <b>1.01</b> |

### D1.2 Core, Intermediate and distant terrestrial impacts

|                                  | Permanent      | Temporary         |
|----------------------------------|----------------|-------------------|
|                                  | Area lost (ha) | Area damaged (ha) |
| Core (<50m from pond)            | 0.08           | 0                 |
| Intermediate (50-250m from pond) | 9.85           | 0.34              |
| Distant (>250m from pond)        | 18.12          | 0.67              |
| <b>Total (ha)</b>                | <b>28.05</b>   | <b>1.01</b>       |

### D1.3 Impacts on linear features

|                                  | Permanent   | Temporary   |
|----------------------------------|-------------|-------------|
|                                  | Length (m)  | Length (m)  |
| Core (<50m from pond)            | 0           | 0           |
| Intermediate (50-250m from pond) | 0.04        | 0           |
| Distant (>250m from pond)        | 0.48        | 0.59        |
| <b>Total (m)</b>                 | <b>0.52</b> | <b>0.59</b> |

### D1.4 Aquatic impacts

|             | Permanent   |                             | Temporary      |                                |
|-------------|-------------|-----------------------------|----------------|--------------------------------|
|             | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
| GCN Ponds   | 0           | 0                           | 0              | 0                              |
| Other Ponds | 0           | 0                           | 0              | 0                              |
|             | <b>0</b>    | <b>0</b>                    | <b>0</b>       | <b>0</b>                       |

## D2 – Pre and mid Development Impacts

### D2.2 Core, intermediate and distant terrestrial impacts

|                                  | Permanent<br>Description  | Temporary<br>Description  |
|----------------------------------|---|---|
| Core (<50m from pond)            | Permanent loss of a small area of SI grassland and tall ruderal in the core zone of P303N.  | No temporary habitat loss within the core zone of the pond P303N.   |
| Intermediate (50-250m from pond) | Permanent loss of SI grassland, hedgerow and arable and tall ruderal in the intermediate zone of all ponds.   | Temporary loss of arable and SI grassland and tall ruderal in the intermediate zone of all ponds.                                 |
| Distant (>250m from pond)        | Permanent loss of arable, scrub, improved grassland, hedgerow, tall ruderal, SI grassland and arable and tall ruderal in the distant zone of all ponds. | Temporary loss of arable, improved grassland, hedgerow, woodland, SI grassland and tall ruderal in the distant zone of all ponds. |

### D3 – Long Term Impacts

Assumed metapopulation N18 is located over 1km from the proposed new carriageway and any other permanent works. As such, there would be no potential impact of fragmentation and therefore, no long-term impacts are anticipated.

### D4 – Post-development Interference Impacts

Assumed metapopulation N18 is located over 1km from the proposed carriageway and any other permanent works and as such no post-development impacts are anticipated.

### D5 – Other impacts

GCN and reptile mitigation areas are proposed within part of the core zone of P303N and the intermediate zones of P252N and P253N as well as water vole mitigation areas. The creation of ponds, hibernaculum, refugia and ditches would require vegetation clearance of semi-improved grassland and arable fields to facilitate earth works within the area.

### Scale of Impact

The loss within 500m of the ponds is for mitigation purposes only and as such, the impact of GCN is considered to be **Negligible**. To ensure this is captured in the licence, this population has been included in the mitigation solution.

### Assumed Metapopulation N19

Ponds P403N P404N (Assumed medium population)

### D1 – Habitat Impact tables

#### D1.1 Breakdown of terrestrial impacts

| Permanent    |                | Temporary          |                   |
|--------------|----------------|--------------------|-------------------|
| Habitat type | Area lost (ha) | Habitat type       | Area damaged (ha) |
|              |                | Tall herb and fern | 0.03              |
|              |                | Amenity grassland  | 0.02              |

|            |   |              |      |
|------------|---|--------------|------|
| Total Loss | 0 | Total Damage | 0.05 |
|------------|---|--------------|------|

**D1.2 Core, Intermediate and distant terrestrial impacts**

|                                  | Permanent      | Temporary         |
|----------------------------------|----------------|-------------------|
|                                  | Area lost (ha) | Area damaged (ha) |
| Core (<50m from pond)            | 0              | 0                 |
| Intermediate (50-250m from pond) | 0              | 0.05              |
| Distant (>250m from pond)        | 0              | 0                 |
| Total (ha)                       | 0              | 0.05              |

**D1.3 Impacts on linear features**

|                                  | Permanent  | Temporary  |
|----------------------------------|------------|------------|
|                                  | Length (m) | Length (m) |
| Core (<50m from pond)            | 0          | 0          |
| Intermediate (50-250m from pond) | 0          | 0          |
| Distant (>250m from pond)        | 0          | 0          |
| Total (m)                        | 0          | 0          |

**D1.4 Aquatic impacts**

|             | Permanent   |                             | Temporary      |                                |
|-------------|-------------|-----------------------------|----------------|--------------------------------|
|             | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
| GCN Ponds   | 0           | 0                           | 0              | 0                              |
| Other Ponds | 0           | 0                           | 0              | 0                              |
|             | 0           | 0                           | 0              | 0                              |

**D2 – Pre and mid Development Impacts**

**D2.2 Core, intermediate and distant terrestrial impacts**

|                       | Permanent  | Temporary  |
|-----------------------|--|--|
|                       | Description  | Description  |
| Core (<50m from pond) | No permanent habitat loss within the core zone of all ponds. | No temporary habitat loss within the core zone of all ponds. |

|                                  | Permanent  | Temporary  |
|----------------------------------|--|--|
|                                  | Description  | Description  |
| Intermediate (50-250m from pond) | No permanent habitat loss within the intermediate zone of all ponds. | Temporary loss of tall ruderal and amenity grassland within the intermediate zone of both ponds. |
| Distant (>250m from pond)        | No permanent habitat loss within the distant zone of all ponds.      | No temporary habitat loss within the distant zone of all ponds.                                  |

### D3 – Long Term Impacts

Assumed metapopulation N19 is located over 2km from the proposed new carriageway and any other permanent works. As such, there would be no potential impact of fragmentation and therefore, no long-term impacts are anticipated.

### D4 – Post-development Interference Impacts

Assumed metapopulation N19 is located over 2km from the proposed carriageway and any other permanent works and as such no post-development impacts are anticipated.

### D5 – Other impacts

No other impacts are anticipated.

### Scale of Impact

Given the small-scale nature of the utility works, GCN, if present, are not considered likely to be impacted. As such, this is considered to have a **Negligible** impact and this metapopulation is therefore not considered further in this licence.

### Assumed Metapopulation N20

Pond P338N (Assumed medium population)

The M25 is located to the east of Assumed Metapopulation N20 and forms a physical barrier between this population and any impacts associated with the project. As such, any impacts to the east of the M25 within 500m of these ponds have not been included below.

### D1 – Habitat Impact tables

All temporary or permanent loss of terrestrial habitat within 500m of Assumed Metapopulation N20 is to the east of the M25 and therefore not considered to impact this population. The site boundary along the M25 is for access purposes only.

#### D1.1 Breakdown of terrestrial impacts

| Permanent         |                | Temporary                       |                   |
|-------------------|----------------|---------------------------------|-------------------|
| Habitat type      | Area lost (ha) | Habitat type                    | Area damaged (ha) |
|                   |                | Improved grassland              | 0.08              |
|                   |                | Neutral semi-improved grassland | 0.02              |
|                   |                | Tall ruderal and fern           | 0.02              |
| <b>Total Loss</b> | <b>0</b>       | <b>Total Damage</b>             | <b>0.12</b>       |

**D1.2 Core, Intermediate and distant terrestrial impacts**

|                                  | Permanent      | Temporary         |
|----------------------------------|----------------|-------------------|
|                                  | Area lost (ha) | Area damaged (ha) |
| Core (<50m from pond)            | 0              | 0.02              |
| Intermediate (50-250m from pond) | 0              | 0.09              |
| Distant (>250m from pond)        | 0              | 0.01              |
| Total (ha)                       | 0              | 0.12              |

**D1.3 Impacts on linear features**

|                                  | Permanent  | Temporary  |
|----------------------------------|------------|------------|
|                                  | Length (m) | Length (m) |
| Core (<50m from pond)            | 0          | 0          |
| Intermediate (50-250m from pond) | 0          | 0          |
| Distant (>250m from pond)        | 0          | 0          |
| Total (m)                        | 0          | 0          |

**D1.4 Aquatic impacts**

|             | Permanent   |                             | Temporary      |                                |
|-------------|-------------|-----------------------------|----------------|--------------------------------|
|             | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
| GCN Ponds   | 0           | 0                           | 0              | 0                              |
| Other Ponds | 0           | 0                           | 0              | 0                              |
|             | 0           | 0                           | 0              | 0                              |

**D2 – Pre and mid Development Impacts**

**D2.2 Core, intermediate and distant terrestrial impacts**

|                       | Permanent  | Temporary  |
|-----------------------|--|--|
|                       | Description  | Description  |
| Core (<50m from pond) | No permanent habitat loss within the distant zone of pond P338N. | Temporary loss of tall ruderal within the core zone of pond P338N. |

|  | Permanent<br>Description   | Temporary<br>Description  |
|--|--|---|
| Intermediate<br>(50-250m<br>from pond) | No permanent habitat loss within the distant zone of pond P338N. | Temporary loss of improved grassland and SI grassland within the intermediate zone of pond P338N. |
| Distant<br>(>250m<br>from pond)        | No permanent habitat loss within the distant zone of pond P338N. | Temporary loss of SI grassland within the distant zone of pond P338N.                             |

### D3 – Long Term Impacts

The M25 is located to the east of assumed metapopulation N20 and is an existing physical barrier to movement. On the west side of the M25 assumed metapopulation N20 is located over 1km from the proposed new carriageway and any other permanent works. As such, there would be no potential impact of fragmentation and therefore, no long-term impacts are anticipated.

### D4 – Post-development Interference Impacts

Assumed metapopulation N20 is located over 1km from the proposed carriageway and any other permanent works and as such no post-development impacts are anticipated.

### D5 – Other impacts

No other impacts are anticipated.

### Scale of Impact

As no habitat loss or other impacts are anticipated within 500m of this population, there is considered to be a **Negligible** impact. This metapopulation is therefore not considered further in this licence.

### Assumed Metapopulation N21

Ponds P168N P169N P267N (Assumed medium population)

The M25 is located to the west of Assumed Metapopulation N21 and forms a physical barrier between this population and any impacts associated with the project. As such, any impacts to the west of the M25 within 500m of these ponds have not been included below

### D1 – Habitat Impact tables

#### D1.1 Breakdown of terrestrial impacts

| Permanent                       |                | Temporary                         |                   |
|---------------------------------|----------------|-----------------------------------|-------------------|
| Habitat type                    | Area lost (ha) | Habitat type                      | Area damaged (ha) |
| Woodland                        | 0.59           | Woodland                          | 0.06              |
| Scrub                           | 0.19           | Scrub                             | 0.10              |
| Semi-improved neutral grassland | 0.43           | Improved grassland                | 0.06              |
| Tall herb and fern              | 0.39           | Poor semi-improved grassland      | 0.22              |
|                                 |                | Tall herb and fern                | 0.01              |
|                                 |                | Arable                            | 2.75              |
|                                 |                | Gardens/allotments                | 0.05              |
|                                 |                | Neutral semi – improved grassland | 0.09              |

|            |      |              |      |
|------------|------|--------------|------|
| Total Loss | 1.60 | Total Damage | 3.34 |
|------------|------|--------------|------|

**D1.2 Core, Intermediate and distant terrestrial impacts**

|                                  | Permanent      | Temporary         |
|----------------------------------|----------------|-------------------|
|                                  | Area lost (ha) | Area damaged (ha) |
| Core (<50m from pond)            | 0              | 0                 |
| Intermediate (50-250m from pond) | 0              | 1.09              |
| Distant (>250m from pond)        | 1.60           | 2.25              |
| Total (ha)                       | 1.60           | 3.34              |

**D1.3 Impacts on linear features**

|                                  | Permanent  | Temporary  |
|----------------------------------|------------|------------|
|                                  | Length (m) | Length (m) |
| Core (<50m from pond)            | 0          | 0.02       |
| Intermediate (50-250m from pond) | 0          | 0.06       |
| Distant (>250m from pond)        | 0.03       | 0.04       |
| Total (m)                        | 0.03       | 0.11       |

**D1.4 Aquatic impacts**

|             | Permanent   |                             | Temporary      |                                |
|-------------|-------------|-----------------------------|----------------|--------------------------------|
|             | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
| GCN Ponds   | 0           | 0                           | 0              | 0                              |
| Other Ponds | 0           | 0                           | 0              | 0                              |
|             | 0           | 0                           | 0              | 0                              |

**D2 – Pre and mid Development Impacts**

**D2.2 Core, intermediate and distant terrestrial impacts**

|                       | Permanent  | Temporary  |
|-----------------------|--|--|
|                       | Description  | Description  |
| Core (<50m from pond) | No permanent habitat loss within the core zone of all ponds. | No temporary habitat loss within the core zone of all ponds. |



|  |   |   |
|--|---|---|
| Intermediate<br>(50-250m<br>from pond) | No permanent habitat loss within the intermediate zone of all ponds.  | Temporary loss of SI grassland, woodland, hedgerows, improved grassland and arable land due to utility works within the intermediate zone of P168N & P169N  |
| Distant<br>(>250m<br>from pond)        | Permanent loss of plantation woodland, scrub, SI grassland and tall herb and fern to accommodate new road construction within the distant zone of P168N & P169N | Temporary loss of gardens, SI grassland, woodland, hedgerows, improved grassland, tall herb and fern and arable land, plantation woodland and scrub due to utility works and flood alleviation within the distant zone of P168N & P169N |

### D3 – Long Term Impacts

The M25 is located to the west of assumed metapopulation N21 and is an existing physical barrier to movement. Therefore, the proposed widening of this road is not considered to cause any further fragmentation effects. There would be permanent loss of plantation woodland, hedgerows and arable fields within the distant zone of P168N and P169N.

### D4 – Post-development Interference Impacts

Assumed metapopulation N21 is already located in close proximity to the existing M25 and, although the widening of the road would bring it slightly closer to the GCN ponds, this is considered marginal. Therefore, the risk of injury and mortality would be no higher than current conditions and therefore negligible.

### D5 – Other impacts

No other impacts are anticipated.

### Scale of Impact

This is considered to have a **Minor** impact.

### Assumed Metapopulation N22

Pond P279N (Assumed medium population)

The M25 is located to the west of Assumed Metapopulation N22 and forms a physical barrier between this population and any impacts associated with the project. As such, any impacts to the west of the M25 within 500m of these ponds have not been included below.

### D1 – Habitat Impact tables

#### D1.1 Breakdown of terrestrial impacts

| Permanent         |                | Temporary                    |                   |
|-------------------|----------------|------------------------------|-------------------|
| Habitat type      | Area lost (ha) | Habitat type                 | Area damaged (ha) |
|                   |                | Woodland                     | 0.16              |
|                   |                | Poor semi-improved grassland | 0.10              |
| <b>Total Loss</b> | <b>0</b>       | <b>Total Damage</b>          | <b>0.26</b>       |

**D1.2 Core, Intermediate and distant terrestrial impacts**

|                                  | Permanent      | Temporary         |
|----------------------------------|----------------|-------------------|
|                                  | Area lost (ha) | Area damaged (ha) |
| Core (<50m from pond)            | 0              | 0                 |
| Intermediate (50-250m from pond) | 0              | 0.09              |
| Distant (>250m from pond)        | 0              | 0.17              |
| Total (ha)                       | 0              | 0.26              |

**D1.3 Impacts on linear features**

|                                  | Permanent  | Temporary  |
|----------------------------------|------------|------------|
|                                  | Length (m) | Length (m) |
| Core (<50m from pond)            | 0          | 0          |
| Intermediate (50-250m from pond) | 0          | 0          |
| Distant (>250m from pond)        | 0          | 0          |
| Total (m)                        | 0          | 0          |

**D1.4 Aquatic impacts**

|             | Permanent   |                             | Temporary      |                                |
|-------------|-------------|-----------------------------|----------------|--------------------------------|
|             | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
| GCN Ponds   | 0           | 0                           | 0              | 0                              |
| Other Ponds | 0           | 0                           | 0              | 0                              |
|             | 0           | 0                           | 0              | 0                              |

**D2 – Pre and mid Development Impacts**

**D2.2 Core, intermediate and distant terrestrial impacts**

|                       | Permanent  | Temporary   |
|-----------------------|--|---|
|                       | Description  | Description   |
| Core (<50m from pond) | No permanent habitat loss within the distant zone of pond P279N. | No temporary habitat loss within the core zone of pond P279N. |

|  |  |  |
|--|--|--|
| Intermediate<br>(50-250m<br>from pond) | No permanent habitat loss within the distant zone of pond P279N. | Temporary loss of plantation woodland and SI grassland within the intermediate zone of pond P279N. |
| Distant<br>(>250m<br>from pond)        | No permanent habitat loss within the distant zone of pond P279N. | Temporary loss of plantation woodland and SI grassland within the distant zone of pond P279N.      |

### D3 – Long Term Impacts

As, Assumed Metapopulation N22 is over 1km from any new road construction, there would be no potential impact of fragmentation and therefore, no long-term impacts are anticipated.

### D4 – Post-development Interference Impacts

Assumed metapopulation N22 is located over 1km from the proposed carriageway and as such no post-development impacts are anticipated.

### D5 – Other impacts

No other impacts are anticipated.

### Scale of Impact

Given the small-scale loss anticipated within 500m of Assumed Metapopulation N22, the impact is considered to be **Negligible**. This metapopulation is therefore not considered further in this licence.

### Assumed Metapopulation N23

Pond P325N (Assumed medium population)

The M25 is located to the west of Assumed Metapopulation N23 and forms a physical barrier between this population and any impacts associated with the project. As such, any impacts to the west of the M25 within 500m of these ponds have not been included below.

### D1 – Habitat Impact tables

#### D1.1 Breakdown of terrestrial impacts

| Permanent         |                | Temporary                    |                   |
|-------------------|----------------|------------------------------|-------------------|
| Habitat type      | Area lost (ha) | Habitat type                 | Area damaged (ha) |
|                   |                | Scrub                        | 0.37              |
|                   |                | Poor semi-improved grassland | 0.05              |
|                   |                | Tall herb and fern           | 0.05              |
| <b>Total Loss</b> | <b>0</b>       | <b>Total Damage</b>          | <b>0.47</b>       |

#### D1.2 Core, Intermediate and distant terrestrial impacts

|                             | Permanent      | Temporary         |
|-----------------------------|----------------|-------------------|
|                             | Area lost (ha) | Area damaged (ha) |
| Core<br>(<50m from<br>pond) | 0              | 0                 |

|                                  |   |      |
|----------------------------------|---|------|
| Intermediate (50-250m from pond) | 0 | 0.29 |
| Distant (>250m from pond)        | 0 | 0.18 |
| Total (ha)                       | 0 | 0.47 |

### D1.3 Impacts on linear features

|                                  | Permanent  | Temporary  |
|----------------------------------|------------|------------|
|                                  | Length (m) | Length (m) |
| Core (<50m from pond)            | 0          | 0          |
| Intermediate (50-250m from pond) | 0          | 0          |
| Distant (>250m from pond)        | 0          | 0          |
| Total (m)                        | 0          | 0          |

### D1.4 Aquatic impacts

|             | Permanent   |                             | Temporary      |                                |
|-------------|-------------|-----------------------------|----------------|--------------------------------|
|             | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
| GCN Ponds   | 0           | 0                           | 0              | 0                              |
| Other Ponds | 0           | 0                           | 0              | 0                              |
|             | 0           | 0                           | 0              | 0                              |

## D2 – Pre and mid Development Impacts

### D2.2 Core, intermediate and distant terrestrial impacts

|                                  | Permanent  | Temporary  |
|----------------------------------|--|--|
|                                  | Description  | Description  |
| Core (<50m from pond)            | No permanent habitat loss within the core zone of pond P325N         | No temporary habitat loss within the core zone of pond P325N   |
| Intermediate (50-250m from pond) | No permanent habitat loss within the intermediate zone of pond P325N | Temporary loss of continuous scrub and SI grassland to facilitate proposed new gantry within the intermediate zone of pond P325N |

|                           | Permanent   | Temporary   |
|---------------------------|---|---|
|                           | Description   | Description   |
| Distant (>250m from pond) | No permanent habitat loss within the distant zone of pond P325N | Temporary loss of continuous scrub, SI grassland and tall herb and fern to facilitate proposed new gantry within the distant zone of pond P325N |

### D3 – Long Term Impacts

As, Assumed Metapopulation N23 is over 1km from any new road construction, there would be no potential impact of fragmentation and therefore, no long-term impacts are anticipated.

### D4 – Post-development Interference Impacts

Assumed metapopulation N23 is located over 1km from the proposed carriageway and as such no post-development impacts are anticipated.

### D5 – Other impacts

No other impacts are anticipated.

### Scale of Impact

Given the small-scale loss anticipated within 500m of Assumed Metapopulation N22, the impact is considered to be **Negligible**. This metapopulation is therefore not considered further in this licence.

### Assumed Metapopulation N24

Ponds P458N P459N (Assumed medium population)

The M25 is located to the east of Assumed Metapopulation N24 and forms a physical barrier between this population and any impacts associated with the project. As such, any impacts to the east of the M25 within 500m of these ponds have not been included below.

### D1 – Habitat Impact tables

All temporary or permanent loss of terrestrial habitat within 500m of Assumed Metapopulation N24 is to the east of the M25 and therefore not considered to impact this population. The site boundary along the M25 is for access purposes only.

#### D1.1 Breakdown of terrestrial impacts

| Permanent         |                | Temporary             |                   |
|-------------------|----------------|-----------------------|-------------------|
| Habitat type      | Area lost (ha) | Habitat type          | Area damaged (ha) |
|                   |                | Woodland              | 0.01              |
|                   |                | Tall ruderal and fern | 0.02              |
| <b>Total Loss</b> | <b>0</b>       | <b>Total Damage</b>   | <b>0.03</b>       |

#### D1.2 Core, Intermediate and distant terrestrial impacts

|                       | Permanent      | Temporary         |
|-----------------------|----------------|-------------------|
|                       | Area lost (ha) | Area damaged (ha) |
| Core (<50m from pond) | 0              | 0                 |

|                                  | Permanent      | Temporary         |
|----------------------------------|----------------|-------------------|
|                                  | Area lost (ha) | Area damaged (ha) |
| Intermediate (50-250m from pond) | 0              | 0.01              |
| Distant (>250m from pond)        | 0              | 0.02              |
| Total (ha)                       | 0              | 0.03              |

### D1.3 Impacts to linear features

|                                  | Permanent  | Temporary  |
|----------------------------------|------------|------------|
|                                  | Length (m) | Length (m) |
| Core (<50m from pond)            | 0          | 0          |
| Intermediate (50-250m from pond) | 0          | 0          |
| Distant (>250m from pond)        | 0          | 0          |
| Total (ha)                       | 0          | 0          |

### D1.4 Aquatic impacts

|             | Permanent   |                             | Temporary      |                                |
|-------------|-------------|-----------------------------|----------------|--------------------------------|
|             | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
| GCN Ponds   | 0           | 0                           | 0              | 0                              |
| Other Ponds | 0           | 0                           | 0              | 0                              |
|             | 0           | 0                           | 0              | 0                              |

## D2 – Pre and mid Development Impacts

### D1.2 Core, intermediate and distant terrestrial impacts

|                                  | Permanent  | Temporary  |
|----------------------------------|--|--|
|                                  | Description  | Description  |
| Core (<50m from pond)            | No permanent habitat loss within the core zone of all ponds.         | No temporary habitat loss within the distant zone of all ponds.                  |
| Intermediate (50-250m from pond) | No permanent habitat loss within the intermediate zone of all ponds. | Temporary loss of plantation woodland within the intermediate zone of all ponds. |

|                           | Permanent   | Temporary  |
|---------------------------|---|--|
|                           | Description   | Description  |
| Distant (>250m from pond) | No permanent habitat loss within the distant zone of all ponds. | Temporary loss of tall ruderal within the distant zone of all ponds. |

### D3 – Long Term Impacts

The M25 is located to the west of assumed metapopulation N24 and is an existing physical barrier to movement. Assumed metapopulation is over 1km away from any new road construction or any other permanent works. As such, there would be no potential impact of fragmentation and therefore, no long-term impacts are anticipated.

### D4 – Post-development Interference Impacts

Assumed metapopulation N24 is located over 1km from the proposed carriageway and any other permanent works and as such no post-development impacts are anticipated.

### D5 – Other impacts

No other impacts are anticipated.

### Scale of Impact

This is considered to have a **Negligible** impact. This metapopulation is therefore not considered further in this licence.

### Assumed Metapopulation N25

Pond P506N P507N and P508N (Assumed medium population)

### D1 – Habitat Impact tables

#### D1.1 Breakdown of terrestrial impacts

| Permanent                       |                | Temporary                       |                   |
|---------------------------------|----------------|---------------------------------|-------------------|
| Habitat type                    | Area lost (ha) | Habitat type                    | Area damaged (ha) |
| Arable                          | 14.00          | Scrub                           | 0.01              |
| Neutral semi-improved grassland | 2.10           | Neutral semi-improved grassland | 0.24              |
|                                 |                | Woodland                        | 0.01              |
| <b>Total Loss</b>               | <b>16.10</b>   | <b>Total Damage</b>             | <b>0.26</b>       |

#### D1.2 Core, Intermediate and distant terrestrial impacts

|                                  | Permanent      | Temporary         |
|----------------------------------|----------------|-------------------|
|                                  | Area lost (ha) | Area damaged (ha) |
| Core (<50m from pond)            | 0              | 0                 |
| Intermediate (50-250m from pond) | 4.20           | 0.04              |

|                           | Permanent      | Temporary         |
|---------------------------|----------------|-------------------|
|                           | Area lost (ha) | Area damaged (ha) |
| Distant (>250m from pond) | 11.90          | 0.22              |
| Total (ha)                | 16.10          | 0.26              |

### D1.3 Impacts to linear features

|                                  | Permanent  | Temporary  |
|----------------------------------|------------|------------|
|                                  | Length (m) | Length (m) |
| Core (<50m from pond)            | 0          | 0          |
| Intermediate (50-250m from pond) | 0          | 0          |
| Distant (>250m from pond)        | 0          | 0.03       |
| Total (m)                        | 0          | 0.03       |

### D1.4 Aquatic impacts

|             | Permanent   |                             | Temporary      |                                |
|-------------|-------------|-----------------------------|----------------|--------------------------------|
|             | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
| GCN Ponds   | 0           | 0                           | 0              | 0                              |
| Other Ponds | 0           | 0                           | 0              | 0                              |
|             | 0           | 0                           | 0              | 0                              |

## D2 – Pre and mid Development Impacts

### D2.2 Core, intermediate and distant terrestrial impacts

|                                  | Permanent  | Temporary  |
|----------------------------------|--|--|
|                                  | Description  | Description  |
| Core (<50m from pond)            | No permanent habitat loss within the core zone of all ponds.                         | No temporary habitat loss within the core zone of all ponds.                       |
| Intermediate (50-250m from pond) | Permanent loss of arable and SI grassland within the intermediate zone of all ponds. | Temporary loss of SI grassland and woodland within the intermediate zone of P508N. |
| Distant (>250m from pond)        | Permanent loss of arable and SI grassland within the distant zone of all ponds.      | Temporary loss of SI grassland and scrub within the distant zone of P508N.         |



### D3 – Long Term Impacts

Assumed metapopulation N25 is located over 1km from the proposed new carriageway and any other permanent works. As such, there would be no potential impact of fragmentation and therefore, no long-term impacts are anticipated.

### D4 – Post-development Interference Impacts

Assumed metapopulation N25 is located over 1km from the proposed carriageway and any other permanent works and as such no post-development impacts are anticipated.

### D5 – Other impacts

A woodland planting mitigation area is proposed within the intermediate and distant zones of the ponds involving the planting of individual trees within the arable fields. All other habitat considered to be higher value to GCN will be retained.

### Scale of Impact

Although there is a permanent loss of 16.1ha of terrestrial habitat, this is primarily within arable habitat (considered to be low value to GCN) to facilitate woodland planting and therefore, the impact on GCN is therefore considered to have a **Negligible** impact. Furthermore, given the replacement of most of the arable will be with woodland, of higher value to GCN, there is potential for a positive effect. To ensure this is captured in the licence, this population has been included in the mitigation solution.

### Assumed Metapopulation N26

Pond P509N (Assumed medium population)

### D1 – Habitat Impact tables

#### D1.1 Breakdown of terrestrial impacts

| Permanent                       |                | Temporary           |                   |
|---------------------------------|----------------|---------------------|-------------------|
| Habitat type                    | Area lost (ha) | Habitat type        | Area damaged (ha) |
| Arable                          | 15.18          |                     |                   |
| Neutral semi-improved grassland | 0.76           |                     |                   |
| <b>Total Loss</b>               | <b>15.94</b>   | <b>Total Damage</b> | <b>0</b>          |

#### D1.2 Core, Intermediate and distant terrestrial impacts

|                                  | Permanent      | Temporary         |
|----------------------------------|----------------|-------------------|
|                                  | Area lost (ha) | Area damaged (ha) |
| Core (<50m from pond)            | 0              | 0                 |
| Intermediate (50-250m from pond) | 3.11           | 0                 |
| Distant (>250m from pond)        | 12.83          | 0                 |
| <b>Total (ha)</b>                | <b>15.94</b>   | <b>0</b>          |

### D1.3 Impacts to linear features

|                                  | Permanent  | Temporary  |
|----------------------------------|------------|------------|
|                                  | Length (m) | Length (m) |
| Core (<50m from pond)            | 0          | 0          |
| Intermediate (50-250m from pond) | 0          | 0          |
| Distant (>250m from pond)        | 0          | 0          |
| Total (m)                        | 0          | 0          |

### D1.4 Aquatic impacts

|             | Permanent   |                             | Temporary      |                                |
|-------------|-------------|-----------------------------|----------------|--------------------------------|
|             | Number lost | Area lost (m <sup>2</sup> ) | Number damaged | Area damaged (m <sup>2</sup> ) |
| GCN Ponds   | 0           | 0                           | 0              | 0                              |
| Other Ponds | 0           | 0                           | 0              | 0                              |
|             | 0           | 0                           | 0              | 0                              |

## D2 – Pre and mid Development Impacts

### D2.2 Core, intermediate and distant terrestrial impacts

|                                  | Permanent  | Temporary  |
|----------------------------------|--|--|
|                                  | Description  | Description  |
| Core (<50m from pond)            | No permanent habitat loss within the core zone of P509N.                         | No temporary habitat loss within the core zone of P509N. |
| Intermediate (50-250m from pond) | Permanent loss of arable and SI grassland within the intermediate zone of P509N. | No temporary habitat loss within the core zone of P509N. |
| Distant (>250m from pond)        | Permanent loss of arable and SI grassland within the distant zone of P509N.      | No temporary habitat loss within the core zone of P509N. |

## D3 – Long Term Impacts

Assumed metapopulation N26 is located over 1km from the proposed new carriageway and any other permanent works. As such, there would be no potential impact of fragmentation and therefore, no long-term impacts are anticipated.

## D4 – Post-development Interference Impacts

Assumed metapopulation N26 is located over 1km from the proposed carriageway and any other permanent works and as such no post-development impacts are anticipated.

### **D5 – Other impacts**

A woodland planting mitigation area is proposed within the intermediate and distant zones of the ponds involving the planting of individual trees within the arable fields. All other habitat considered to be higher value to GCN will be retained.

#### **Scale of Impact**

Although there is a permanent loss of 15.94ha of terrestrial habitat, this is primarily within arable habitat (considered to be low value to GCN) to facilitate woodland planting and therefore, the impact on GCN is therefore considered to have a **Negligible** impact. Furthermore, given the replacement of most of the arable will be with woodland, of higher value to GCN, there is potential for a positive effect. To ensure this is captured in the licence, this population has been included in the mitigation solution.

## **Additional Sheet E - Mitigation and Compensation**

To mitigate for the risk of death or injury to GCN during the construction period, a combination of exclusion using Temporary Amphibian Fencing (TAF), drift fencing, capture and translocation of GCN, and habitat manipulation ('toolbox talks', vegetation removal, and hand and destructive searches) will be undertaken.

### **Habitat Manipulation**

Habitat Manipulation is proposed for areas where: (a) the perceived value of terrestrial habitats for GCN is low and/or such small numbers of GCN are anticipated to be present that necessary cost/effort associated with conventional trapping methods is considered unproportionate; and (b) sections of boundary features (predominately hedgerow) are situated adjacent to active roads and could not be trapped out for health and safety reasons.

The measures are intended to render habitats unsuitable for GCN by removing potential resting places. They are proposed for all habitats within 250m of a GCN pond across all Metapopulations unless more intensive capture and exclusion methods have been proposed.

### **Toolbox Talk**

Before any works commence, all those persons involved with the licensable works will be briefed by way of a toolbox talk. The toolbox talk will include guidance upon: GCN identification; what to do should GCN be found; good working practices; mitigation methods and measures for that area; and what is and is not permitted under the licence (including legal consequences of not adhering to the licence).

### **Vegetation Removal**

Vegetation will be removed in two phases:

1. Vegetation would be cut to 150mm above ground level and removed from the works footprint, in conjunction with a hand search (see below for details). The area would then be left undisturbed for at least 24 hours. Clearance would be undertaken by hand tools or flail mounted attachments that do not require heavy machinery to be tracked over vegetation. Low-pressure vehicles may be used dependent on the ground conditions and at the discretion of a supervising Ecological Clerk of Works (ECoW).
2. Where vegetation remains dense, this would be cleared to ground level, with arisings removed. The area would again be left undisturbed for at least 24 hours.

Following at least 24 hours from the second phase of vegetation removal, soil stripping of the area would commence with arisings removed from the works footprint. Where necessary, this would be undertaken in conjunction with a secondary hand search and destructive search (see below for details).

The working area would be maintained free of vegetation for the duration of the works.

### **Hand and Destructive Searches**

Such activities would only be carried out by an ECoW under the mitigation licence. Hand searches comprise the dismantling and removal of potential refuges by hand. This would be undertaken during the first phase of vegetation removal and again prior to soil stripping to ensure any potential refugia obscured by vegetation is identified and removed.

Destructive searches comprise the careful stripping of potential refuge areas or habitat piles that could not be easily dismantled by hand (i.e. larger/heavier/partially buried/labour intensive refugia). Where possible, stripping of these areas would first be undertaken with use of non-mechanical hand tools, followed by machinery for any remaining areas.

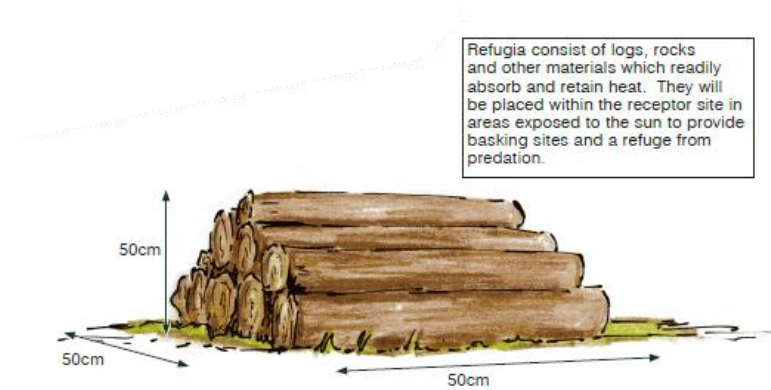
### **Hibernacula and Refugia**

Hibernacula and Refugia creation would be supervised by an ECoW. Refugia would comprise log and/or rubble piles of at least 1m<sup>3</sup>, as illustrated in Insert 1, below; Hibernacula would be installed as per the

design within Design Manual for Roads and Bridges (Volume 10, Section 4, Part 7; LD 118; provided in Insert 2, below); however, they would be much larger in area.

Refugia would be created during the first phase vegetation removal and hibernacula construction would be finalised with soil arising from new pond construction. Where possible arisings from habitat manipulation would be utilised for construction of these habitats.

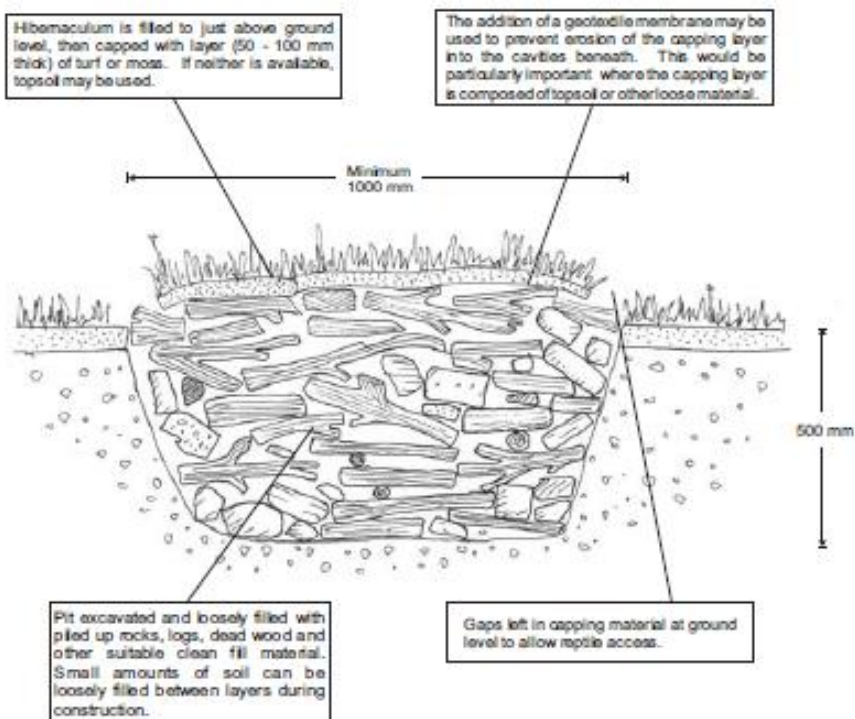
Insert 1: Indicative refugia design



Insert 2: Hibernacula design as per Design Manual for Roads and Bridges (HA 116/05)

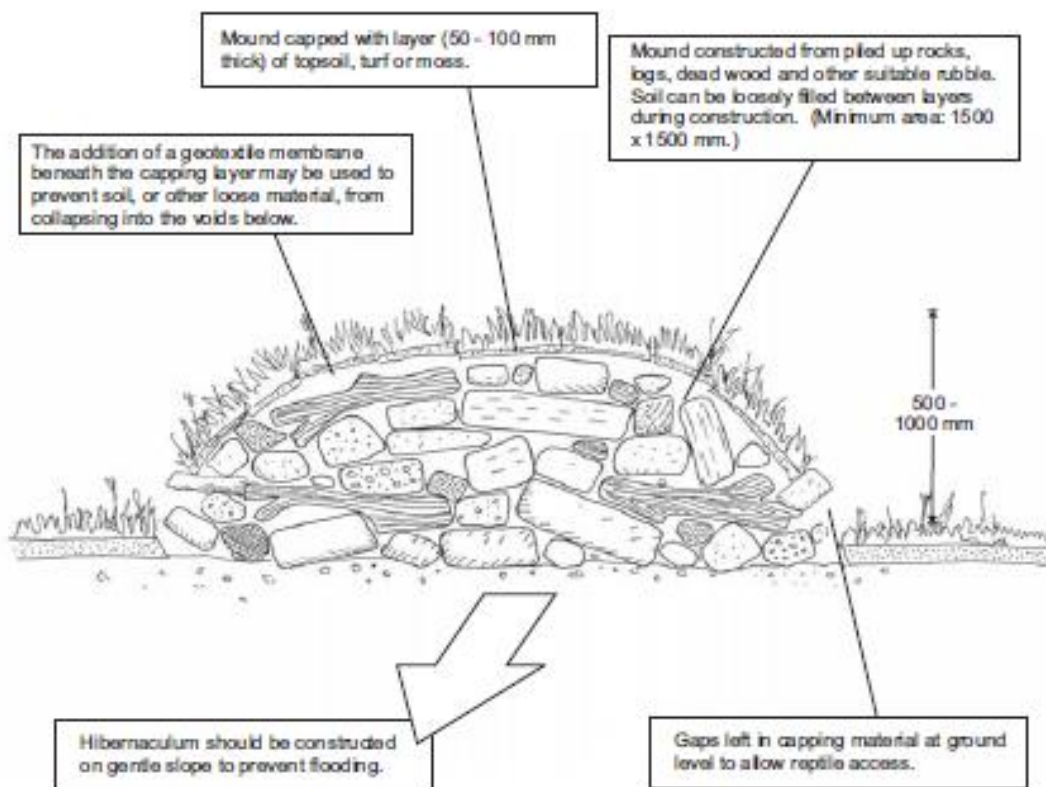
***Hibernaculum on free-draining ground***

Where ground conditions allow, the hibernaculum should be incorporated into a shallow pit. This design is more likely to remain frost-free, and will be less obtrusive and thus unlikely to be subject to interference.



### *Hibernaculum on impermeable ground*

Where ground conditions are impermeable, then an 'above-ground' or mounded design should be utilised in order to prevent the hibernaculum from flooding. This design should also be used if it is not possible to excavate a pit for any other reason.



### **Landscaping**

Upon completion of the construction works an extensive landscaping programme would commence. Habitat creation as part of the Lower Thames Crossing (including woodlands, hedgerows, grasslands, scrub, ditches and wetlands along the soft estate and within mitigation areas), would provide an extensive corridor that is considered to be of greater value for GCN than the habitats lost as part of the Project.

Habitat lost as part of the temporary impacts will be reinstated to the condition it was prior to the commencement of the works. This is secured in Article 35 of the draft DCO whereby – before giving up possession of land of which temporary possession has been taken under this article, the undertaker must remove all temporary works and restore the land to the reasonable satisfaction of the owners of the land. In addition, this is secured as a REAC commitment – land temporarily required would be reinstated to its former condition and composition upon completion, as far as reasonably practical, unless otherwise specified in the Environmental Masterplan, under terms of Article 35 of the draft DCO (as stated above) which sets out temporary possession powers. In practical terms, this will involve replanting a number of areas to aid the natural reestablishment of the habitat that was present before the temporary construction impacts.

Measures for each of the impacted metapopulations are described below. All receptor and mitigation areas are shown on Figure E2 and the locations of fencing and habitat manipulation are shown on Figure E4a.

All habitat creation and reinstatement measures are shown on Figure E3.1. Habitat creation measure locations within mitigation areas shown on Figure E3.1 are indicative only and will be refined during

detailed design to show specific locations and extents of grassland seeding, woodland and scrub planting, and pond and hibernacula/refuges. Although, specific locations are subject to change, the minimum number of ponds, hibernacula and refugia have been provided.

For the purposes of this licence, all grasslands types shown on Figure E3.1 are considered under grassland re-seeding within Table E3.2. Likewise, all types of woodland, scrub and hedgerow creation are considered under woodland, scrub, and hedgerow planting, respectively. Other types of habitat creation such as arable and tall herb and fern have been included separately within Table E3.2. Where the details of impacts are yet to be confirmed, mainly in relation to exact locations for utility works, a worst-case scenario has been assumed. As such, the extent of habitat creation and re-instatement shown on Figure E3.2 and calculated within Tables E3 and E3.2 will be less than currently shown as the working areas for the utility area, once designed, will be smaller. Further details of utility works will be provided within the final licence submission.

### Metapopulation S01

Ponds P003S, P004S, P064S, P178S, P179S, P182S, P203S and P221S (Medium population)

#### E1 The Mitigation Solution

Mitigation in the vicinity of Metapopulation S01 would comprise habitat manipulation. All captured animals would be released into Receptor Site PS20 (within the 250m buffer zone). Exclusion fencing will also be installed to ensure animals do not re-enter construction works. Mitigation will include refugia creation in adjacent landscaping.

#### E2 Receptor Site Selection

##### E2.1 Existing GCN status at receptor site(s)

Great crested newt present; medium population size class

##### E2.2 Survey information for receptor site if different from the survey for the application proposal.

Same as application proposal

##### E2.3 Receptor site locations

| Site name | OS grid ref<br>eg AB12345678 | Administration area - if<br>different from development<br>site | Distance<br>from<br>development<br>site (m). |
|-----------|------------------------------|--|--|
| PS20      | TQ 67314 69685               | Kent   | Adjacent                                     |

##### E2.4 Receptor site(s): ownership and land status.

| Site name | Site Ownership        | Conservation<br>Designation? |
|-----------|-----------------------|------------------------------|
| PS20      | Returned to landowner | Yes – SSSI, LWS              |

##### E2.5 Receptor site: habitat description, size (ha) & adjacent land use.

| Site name | Habitat description | Size (ha) | Adjacent<br>Land Use |
|-----------|---------------------|-----------|----------------------|
|-----------|---------------------|-----------|----------------------|

|      |          |      |                        |
|------|----------|------|------------------------|
| PS20 | Woodland | 2.63 | Woodland and grassland |
|------|----------|------|------------------------|

**E3 Habitat Creation, Restoration and/or Enhancement**

| Aquatic habitat | Impacts |        |                              | Compensation                     |        |                              |
|-----------------|---------|--------|------------------------------|----------------------------------|--------|------------------------------|
|                 | Effect  | Number | Total Area (m <sup>2</sup> ) | Measure                          | Number | Total Area (m <sup>2</sup> ) |
| GCN ponds       | Lost    | 0      | 0                            | Created                          | 0      | 0                            |
|                 | Damaged | 0      | 0                            | Restored / reinstated / enhanced | 0      | 0                            |

| Terrestrial habitat | Impacts        |             | Compensation   |                                  |
|---------------------|----------------|-------------|--|----------------------------------|
|                     | Area lost (ha) |             | Area gained (ha)   |                                  |
|                     | Permanent      | Temporary   | Suitable GCN habitat created within the wider landscaping design | Restored / reinstated / enhanced |
| Core                | 0              | 0           | 0  | 0                                |
| Intermediate        | 1.51           | 0.52        | 0.98   | 0.52                             |
| Distant             | 4.33           | 0.62        | 2.50   | 0.62                             |
| <b>Totals</b>       | <b>5.84</b>    | <b>1.14</b> | <b>3.48</b>  | <b>1.14</b>                      |

**E3.1 Creation, restoration and/or enhancement of aquatic habitats**

No aquatic habitat creation is proposed for Metapopulation S01.

**E3.2 Terrestrial Habitat Measures**

|                                     | Number/area (ha)/length** |                                  |
|-------------------------------------|---------------------------|----------------------------------|
|                                     | Created                   | Reinstated / Restored / Enhanced |
| Hedgerow planting                   | 313.77m                   | 40.30m                           |
| Grassland re-seeding                | 2.02                      | 0.40                             |
| Grassland management (just for GCN) | 0                         | 0                                |
| Scrub planting                      | 0.79                      | 0                                |
| Woodland planting                   | 0.68                      | 0.73                             |
| Hibernacula creation*               | 0                         | 0                                |
| Refuge creation                     | 2                         | 0                                |



The Project will result in the overall permanent loss of 5.84ha of predominately woodland habitat due to new road alignment the majority of which is located in distant zone. An additional 313.77m of hedgerow would also be planted within the vicinity of the ponds. Due to the location of this metapopulation within an area of SSSI/ancient woodland, and adjacent to registered parkland, providing bespoke GCN mitigation is not possible, however 2 refugia will be created within retained habitat. Given the extent of high quality within the close proximity to the GCN ponds, this loss is considered to be small scale.

### E3.3 Integration of roads and other hard landscapes

No impact is anticipated due to the widening of the road and as such, no further mitigation is proposed.

### E4 Capture, Exclusion & Translocation

|  | Use method?<br><i>Yes/no</i> | Minimum capture effort ( <i>days</i> ) |
|--|------------------------------|--|
| At pond: bottle-trap, net, hand search &/or drain down | No                           |  |
| At pond: ring-fence, pitfall trap (+ fence & refuges)  | No                           |  |
| Away from pond: hand search                            | Yes                          | 3 days                                 |
| Away from pond: destructive search                     | Yes                          | 3 days                                 |
| Away from pond: fence, pitfall trap (& refuges)        | No                           |  |
| Away from pond: night search                           | No                           |  |
| Away from pond: exclusion fence only                   | Yes                          |  |

Habitat manipulation is proposed between the HS1 line and the A2 and around Brewers Road roundabout within 250m of the GCN ponds. Trapping has not been recommended within this location due to safety implications of working along the hard shoulder and trapping is considered more time consuming therefore putting surveyor at risk for longer durations. Furthermore, this area is perceived to be of lower value for GCN given the larger extent of high-quality habitat adjacent to the ponds. Exclusion fencing will be installed to the south of the works area between the HS1 line and the A2 to prevent any animals re-entering. This will be removed once construction works are completed.

As the works proposed for the cycle path largely involved the upgrading of an existing path, the working footprint here is minimal. Habitat manipulation would be undertaken if any suitable habitat for GCN was to be removed.

All captured animals would be released back into Ashenbank Wood within Receptor Site PS20.

### E5 Post-development Site Safeguard

#### E5.1 Habitat management & maintenance

Most of the lost habitats will be reinstated and returned to landowner. The areas of landscape planting adjacent to the road will be managed however, not specifically for GCN.

| <b>Habitat management operations</b>                         |     |
|--|-----|
| Aquatic vegetation management in water bodies                | No  |
| Clearance of shading tree or scrub cover around pond margins | No  |
| Mowing, cutting or grazing of grassland                      | No  |
| Desilting and clearance of leaf-fall                         | No  |
| Woodland and scrub management                                | No  |
| Other (state below)  | Yes |
| Management of refugia and hibernacula                        |     |

| <b>Site management operations</b>  |          |
|--|----------|
| Checking for fish presence, and removal through appropriate methods              | No       |
| Checking pond condition and remedial action as required                          | No       |
| Checking for and removal of dumped rubbish                                       | No       |
| Reinstatement following fire, acute pollution or other major damage              | No       |
| Repair or replace fences   | No       |
| Maintain tunnel, underpass, guide fencing in good condition                      | No       |
| Repair or replace interpretation boards  | No       |
| Other (state below)  | Yes      |
| <b>Management of refugia and hibernacula</b>                                     |          |
| State the period for which habitat management and maintenance plan will continue | 30 years |

### E5.2 Post-development Population Monitoring

No post-development population monitoring is proposed for Metapopulation S01.

### Metapopulation S02

Ponds P021S, P039S, P040S, P183S, P184S, P185S, P186S, P204S, P219S, P220S and P249S  
(Large population)

#### E1 The Mitigation Solution

Mitigation in the vicinity of Metapopulation S02 would comprise conventional capture and relocation of GCN as well as habitat manipulation, where appropriate. All captured animals would be released either back into Shorne Woods within Receptor Area PS25 or PS17 or within Mitigation Area HC31, if established (within the core zone of this metapopulation). Habitat creation is proposed within Mitigation Area HC31 and would include new GCN ponds, non-GCN ponds, hibernacula and refugia.

#### E2 Receptor Site Selection

##### E2.1 Existing GCN status at receptor site(s)

HC31 - Great crested newts present; small population size class  
PS17 - Great crested newts present; large population size class  
PS25 - Great crested newts present; large population size class

##### E2.2 Survey information for receptor site if different from the survey for the application proposal.

Same as application proposal

##### E2.3 Receptor site locations

| Site name | OS grid ref<br>eg AB12345678 | Administration area - if<br>different from development<br>site | Distance<br>from<br>development<br>site (m) |
|-----------|------------------------------|--|---|
| HC31      | TQ 67418 70721               | Kent   | Adjacent                                    |
| PS17      | TQ 67685 69976               | Kent   | Adjacent                                    |
| PS25      | TQ 68071 69746               | Kent   | Adjacent                                    |

##### E2.4 Receptor site(s): ownership and land status.

Additional Sheet E - Mitigation and Compensation

| Site name | Site Ownership        | Conservation Designation? |
|-----------|-----------------------|---------------------------|
| HC31      | National Highways     | No                        |
| PS17      | Returned to landowner | SSSI, AW                  |
| PS25      | Returned to landowner | SSSI, LWS                 |

**E2.5** Receptor site: habitat description, size (ha) & adjacent land use.

| Site name | Habitat description   | Size (ha) | Adjacent Land Use   |
|-----------|---|-----------|---------------------|
| HC31      | Currently arable land use. An open mosaic of grassland, woodland, scrub, banks, ditches and refuse piles will be created. | 12.87     | Arable and woodland |
| PS17      | Woodland  | 2.76      | Woodland and lakes  |
| PS25      | Woodland  | 1.25      | Woodland            |

**E3** Habitat Creation, Restoration and/or Enhancement

| Aquatic habitat | Impacts |           |                              | Compensation                     |        |                              |
|-----------------|---------|-----------|------------------------------|----------------------------------|--------|------------------------------|
|                 | Effect  | Number    | Total Area (m <sup>2</sup> ) | Measure                          | Number | Total Area (m <sup>2</sup> ) |
| GCN ponds       | Lost    | 1 (P249S) | 420.71                       | Created                          | 2      | 1,100                        |
|                 | Damaged | 0         | 0                            | Restored / reinstated / enhanced | 0      | 0                            |

| Terrestrial habitat | Impacts        |           | Compensation   |                                    |                                  |
|---------------------|----------------|-----------|--|------------------------------------|----------------------------------|
|                     | Area lost (ha) |           | Area gained (ha)   |                                    |                                  |
|                     | Permanent      | Temporary | Suitable GCN habitat created within the wider landscaping design | Created for bespoke GCN Mitigation | Restored / reinstated / enhanced |
| Core                | 1.14           | 0.02      | 0.17   | 1.02                               | 0.02                             |
| Intermediate        | 8.09           | 1.16      | 1.32   | 7.13                               | 1.16                             |
| Distant             | 17.62          | 5.36      | 12.64  | 4.46                               | 5.24                             |
| <b>Totals</b>       | 26.84          | 6.54      | 14.12  | 12.61                              | 6.43                             |

**E3.1 Creation, restoration and/or enhancement of aquatic habitats**

**GCN Mitigation Ponds**

| Pond reference | Surface Area (m <sup>2</sup> ) | Max. Depth (m) | Design / enhancement measures and location   |
|----------------|--------------------------------|----------------|--|
| HC31_P1        | 500                            | 1.5            | New Pond in Mitigation Area HC31. Design to follow <i>Creating ponds for amphibians and reptiles</i> (Freshwater Habitat Trust). |
| HC31_P2        | 600                            | 1.5            | New Pond in Mitigation Area HC31. Design to follow <i>Creating ponds for amphibians and reptiles</i> (Freshwater Habitat Trust). |

**Non-GCN Ponds**

| Pond reference | Surface Area (m <sup>2</sup> ) | Max. Depth (m) | Design / enhancement measures and location |
|----------------|--------------------------------|----------------|--|
| HC31_P3        | 300                            | 1.5            | New Pond in Mitigation Area HC31           |
| HC31_P4        | 200                            | 1.5            | New Pond in Mitigation Area HC31           |

**E3.2 Terrestrial Habitat Measures**

|                                      | Number/area (ha)/length** |                                  |
|--------------------------------------|---------------------------|----------------------------------|
|                                      | Created                   | Reinstated / Restored / Enhanced |
| Hedgerow planting                    | 346.72m                   | 258.76m                          |
| Grassland re-seeding                 | 6.99                      | 5.18                             |
| Grassland management (just for GCN)  | 0                         | 0                                |
| Scrub planting                       | 0.61                      | 0.02                             |
| Woodland planting                    | 6.53                      | 0.28                             |
| Tall ruderal and fern                | 0                         | 0                                |
| Arable                               | 0                         | 0.76                             |
| Gardens/allotments                   | 0                         | 0.20                             |
| Open mosaic (bespoke GCN mitigation) | 12.61                     | 0                                |
| Hibernacula creation*                | 8                         | 0                                |
| Refuge creation                      | 8                         | 0                                |

The same amount of semi natural habitat that is being lost due to the new road alignment will be newly created (excluding 0.11ha of road construction) and is considered to be of higher quality to GCN (woodland, scrub, grassland) than the habitat that is permanently lost (mainly arable and improved grassland). This includes 12.61 of bespoke GCN mitigation.

**E3.3 Integration of roads and other hard landscapes**

No impact is anticipated due to the widening of the road and as such, no further mitigation is proposed.

#### E4 Capture, Exclusion & Translocation

|  | Use method?<br>Yes/no | Minimum capture effort (days) |
|--|-----------------------|-------------------------------|
| At pond: bottle-trap, net, hand search &/or drain down | Yes                   | 60                            |
| At pond: ring-fence, pitfall trap (+ fence & refuges)  | Yes                   | 60                            |
| Away from pond: hand search                            | Yes                   | 20 days                       |
| Away from pond: destructive search                     | Yes                   | 20 days                       |
| Away from pond: fence, pitfall trap (& refuges)        | Yes                   | 90                            |
| Away from pond: night search                           | Yes                   | 90                            |
| Away from pond: exclusion fence only                   | Yes                   |                               |

TAF, drift, and one-way fencing would be installed to enclose all areas of temporary/permanent habitat loss within the Site Boundary that fall within 500m of all the ponds within this metapopulation, with the exception of:

- a) Any habitat to the south of the A2/M2. The A2/M2 is a major barrier to dispersal and as such GCN from this population will not be present within habitats to the south of this road.
- b) Any habitat along the soft estate of the A2/M2. Fencing will be installed as close to the highway as safe to do so. However, the soft estate is dangerous and the installation and checking of fencing and pitfall traps would involve a high number of people working close to the live carriage way which has health implications. As such, habitat manipulation would be undertaken here.
- c) The fields adjacent to P021S, which would be set aside for GCN mitigation (Receptor Area HC31). Vegetation clearance in this area would comprise discrete areas for the provision of new ponds, hibernacula and refugia. Habitat manipulation would be undertaken here.
- d) The habitats to the west of Thong Lane that are closer to P021S (peak count = 7) and P040S (peak count = 11), as opposed to the source population that is within the ponds located within the eastern section of Shorne Woods, and therefore deemed to be of lower value to GCN within Metapopulation S02. As such, habitat manipulation would be undertaken here.

A large population size class has been recorded for Metapopulation S02 and accordingly, 90 days trapping is proposed with pitfall traps installed at a density of 100 per hectare. Trapping effort would be reduced to 60 days in habitats over 250m from the ponds, although trap density would remain at 100 per hectare. One-way fencing would be installed where fencing is adjacent to the retained habitat. Drift fencing would only remain in place until construction activities require its removal (i.e. it would be removed when development commences in that area). TAF and one-way fencing would be used to create a barrier during construction, remaining in place for the duration of development.

Pond P249S, which is proposed to be lost, would be subject to nightly funnel trapping and dip netting for a minimum of 60 days before being drained down (as per EN, 2001). Where possible, ring fencing and trapping of the ponds would be undertaken at a least impacting time of year (i.e. ring fence before the breeding season and drain down late in the year).

Habitat manipulation (i.e. using Licensing Policy 1), as opposed to conventional capture and relocation methods, would be undertaken within any habitat loss within 500m of the ponds within the soft estate of the A2/M2, due to health and safety implications, as well as the habitats to the west of Thong lane and within Mitigation Area HC31, as these habitats are deemed of less value and/or vegetation works would be small-scale. Thus, the cost/effort required to implement a conventional capture and relocation approach is considered disproportionate to the number of animals anticipated to be present and the impact that the loss of these habitats will have on this population.

To mitigate for the loss of terrestrial habitats during construction eight hibernacula (three large and five small) and eight refugia would be created within Mitigation Area HC31. Given the small size of

this population, it is anticipated that the creation of these habitat piles alone, in proximity of the GCN pond, would be sufficient to maintain/increase the terrestrial habitat requirements as well as extend the range of this population.

As per the requirements of Licensing Policy 1, greater benefit to the local population would be achieved through the creation of Mitigation Area HC31 (comprising 12.87 ha). The grassland would be seeded and left to rough up to create a mosaic habitat with areas of scrub and bare ground. Two new GCN ponds (HC31\_P1 and HC31\_P2) would be excavated along with two new non-GCN ponds (HC31\_P3 and HC31\_P4) to offset non-GCN ponds, which could then be utilised by foraging/breeding GCN.

Any animals captured would be released back into Shorne Woods into Receptor Site PS17 or Receptor Site PS25 or within Mitigation Area HC31 if habitat has established. Selection of receptor site will be undertaken closer to construction and will depend on work schedules, so animals are moved away from works as appropriate at the time. All receptor areas are indicated on Figure E5.1.

## E5 Post-development Site Safeguard

### E5.1 Habitat management & maintenance

The below table relates to habitat management and maintenance for Mitigation Area HC31. More detail is provided in section 5.9 of the outline Landscape and Ecology Management Plan (oLEMP) (Application Document 6.7). The areas of landscape planting adjacent to the road will be managed, although, not specifically for GCN.

| <b>Habitat management operations</b>   |          |
|--|----------|
| Aquatic vegetation management in water bodies                                    | Yes      |
| Clearance of shading tree or scrub cover around pond margins                     | Yes      |
| Mowing, cutting or grazing of grassland  | Yes      |
| Desilting and clearance of leaf-fall   | Yes      |
| Woodland and scrub management  | Yes      |
| Other (state below)  | Yes      |
| Management of refugia and hibernacula  |          |
| <b>Site management operations:</b>   |          |
| Checking for fish presence, and removal through appropriate methods              | Yes      |
| Checking pond condition and remedial action as required                          | Yes      |
| Checking for and removal of dumped rubbish                                       | Yes      |
| Reinstatement following fire, acute pollution or other major damage              | Yes      |
| Repair or replace fences   | No       |
| Maintain tunnel, underpass, guide fencing in good condition                      | No       |
| Repair or replace interpretation boards  | No       |
| Other (state below)  | Yes      |
| Management of refugia and hibernacula  |          |
| State the period for which habitat management and maintenance plan will continue | 30 years |

### E5.2 Post-development Population Monitoring

Post-development population monitoring is proposed at P021S, P039S, P040S, P183S, P184S, P185S, P186S, P204S, P219S, P220S, HC31\_P1, HC31\_P2, HC31\_P3 and HC31\_P4 comprising population size class assessments for ten years.

### Metapopulation S04

Ponds P027S P028S P029S P044S P121S P125S P126S P127S P128S P129S P130S P131S P196S and P456S (Assumed large population)

#### E1 The Mitigation Solution

Mitigation in the vicinity of Metapopulation S04 would comprise habitat manipulation. Exclusion fencing will be installed to prevent animals re-entering the works zone. Any animals captured would be released “over the fence” into Receptor Site PS18 (within the intermediate zone of this metapopulation). Although the abundance of the GCN population within the receptor area is unknown, it is located at the edge of the intermediate/distant zone, and is therefore unlikely to contain a large abundance of GCN, thus making it suitable as a receptor site.

#### E2 Receptor Site Selection

##### E2.1 Existing GCN status at receptor site(s)

Great crested newts present; abundance unknown

##### E2.2 Survey information for receptor site if different from the survey for the application proposal.

Same as application proposal

##### E2.3 Receptor site locations

| Site name | OS grid ref<br>eg AB12345678 | Administration area – if<br>different from development<br>site | Distance<br>from<br>development<br>site (m) |
|-----------|------------------------------|--|---|
| PS18      | TQ 67812 74138               | Kent   | Adjacent                                    |

##### E2.4 Receptor site(s): ownership and land status.

| Site name | Site Ownership      | Conservation<br>Designation? |
|-----------|---------------------|------------------------------|
| PS18      | Return to landowner | Yes – LWS                    |

##### E2.5 Receptor site: habitat description, size (ha) & adjacent land use.

| Site name | Habitat description   | Size (ha) | Adjacent<br>Land Use                 |
|-----------|---|-----------|--------------------------------------|
| PS18      | Police firing range comprising tall ruderals and SI grassland | 0.12      | Police firing range and RSPB reserve |

#### E3 Habitat Creation, Restoration and/or Enhancement

| Aquatic<br>habitat | Impacts |        |                                 | Compensation |        |                                 |
|--------------------|---------|--------|---------------------------------|--------------|--------|---------------------------------|
|                    | Effect  | Number | Total Area<br>(m <sup>2</sup> ) | Measure      | Number | Total Area<br>(m <sup>2</sup> ) |
| GCN ponds          | Lost    | 0      | 0                               | Created      | 0      | 0                               |

|  |         |   |   |                                  |   |   |
|--|---------|---|---|----------------------------------|---|---|
|  | Damaged | 0 | 0 | Restored / reinstated / enhanced | 0 | 0 |
|--|---------|---|---|----------------------------------|---|---|

| Terrestrial habitat | Impacts        |           | Compensation   |                                  |
|---------------------|----------------|-----------|--|----------------------------------|
|                     | Area lost (ha) |           | Area gained (ha)   |                                  |
|                     | Permanent      | Temporary | Suitable GCN habitat created within the wider landscaping design | Restored / reinstated / enhanced |
| Core                | 0              | 0         | 0  | 0                                |
| Intermediate        | 0.12           | 0         | 0.10   | 0                                |
| Distant             | 1.98           | 0.12      | 1.72   | 0.12                             |
| <b>Totals</b>       | 2.10           | 0.12      | 1.82   | 0.12                             |

### E3.1 Creation, restoration and/or enhancement of aquatic habitats

No aquatic habitat creation is proposed for Assumed Metapopulation S04.

### E3.2 Terrestrial Habitat Measures

|                                     | Number/area (ha)/length** |                                  |
|-------------------------------------|---------------------------|----------------------------------|
|                                     | Created                   | Reinstated / Restored / Enhanced |
| Hedgerow planting                   | 0                         | 0                                |
| Grassland re-seeding                | 0                         | 0                                |
| Grassland management (just for GCN) | 0                         | 0                                |
| Scrub planting                      | 0                         | 0                                |
| Woodland planting                   | 0                         | 0                                |
| Tall herb and fern                  | 0                         | 0                                |
| Wetland creation                    | 1.82                      | 0.12                             |
| Hibernacula creation*               | 0                         | 0                                |
| Refuge creation                     | 0                         | 0                                |

All temporary habitat loss will be reinstated. A very small area of permanent habitat loss will occur. The largest area of habitat loss is the provision of 1.82ha of wetland creation within the intermediate and distant zones. This habitat is being created primarily for mitigation for SPA birds using functionally linked land. The ditches created will likely contain fish, and will therefore not be suitable for GCN,



however this area will also include approx. 1ha of wet grassland, which although not specifically managed for GCN, will be a beneficial terrestrial habitat in this area.

### E3.3 Integration of roads and other hard landscapes

Metapopulation S04 is located over 1km from the proposed carriageway and other permanent works with no fragmentation or barriers to movement anticipated, as such there would be no additional integrations with roads or other hard surfaces.

### E4 Capture, Exclusion & Translocation

|  | Use method?<br>Yes/no | Minimum capture effort (days) |
|--|-----------------------|-------------------------------|
| At pond: bottle-trap, net, hand search &/or drain down | No                    |                               |
| At pond: ring-fence, pitfall trap (+ fence & refuges)  | No                    |                               |
| Away from pond: hand search                            | Yes                   | 3 days                        |
| Away from pond: destructive search                     | Yes                   | 3 days                        |
| Away from pond: fence, pitfall trap (& refuges)        | No                    |                               |
| Away from pond: night search                           | No                    |                               |
| Away from pond: exclusion fence only                   | Yes                   |                               |

Habitat manipulation would be implemented within areas of temporary loss within 500m of the ponds as the perceived importance of the habitats in this area is low. Any animals captured would be released "over the fence" into Receptor Site PS18. Once habitat manipulation has been undertaken, exclusion fencing would be installed within 500m of the ponds to prevent GCN from entering the construction area. This will remain in place for the duration of construction and will be removed post-works. Following installation of the fencing hand searches will be undertaken.

### E5 Post-development Site Safeguard

#### E5.1 Habitat management & maintenance

All habitat within 500m of this population will be reinstated and returned to the landowner.

| <b>Habitat management operations</b>                                |    |
|---|----|
| Aquatic vegetation management in water bodies                       | No |
| Clearance of shading tree or scrub cover around pond margins        | No |
| Mowing, cutting or grazing of grassland                             | No |
| Desilting and clearance of leaf-fall                                | No |
| Woodland and scrub management                                       | No |
| Other (state below)   | No |
| <b>Site management operations</b>                                   |    |
| Checking for fish presence, and removal through appropriate methods | No |
| Checking pond condition and remedial action as required             | No |
| Checking for and removal of dumped rubbish                          | No |
| Reinstatement following fire, acute pollution or other major damage | No |
| Repair or replace fences  | No |
| Maintain tunnel, underpass, guide fencing in good condition         | No |
| Repair or replace interpretation boards                             | No |
| Other (state below)   | No |

State the period for which habitat management and maintenance plan will continue

### E5.2 Post-development Population Monitoring

No post-development population monitoring is proposed for Metapopulation S04.

### Assumed Metapopulation S06

Pond P296S (Assumed medium population)

#### E1 The Mitigation Solution

Mitigation in the vicinity of Assumed Metapopulation S06 would comprise habitat manipulation. Any captured animals would be released at Receptor Area PS31 or PS38 (within the core zone of this metapopulation). The abundance of GCN is not known within PS31 or PS38, these are immediately adjacent to P296S. Due to the isolation of this potential GCN population between HS1 and the A2/M2, no other release sites are considered appropriate.

#### E2 Receptor Site Selection

##### E2.1 Existing GCN status at receptor site(s)

Unknown

##### E2.2 Survey information for receptor site if different from the survey for the application proposal.

Same as application proposal

##### E2.3 Receptor site locations

| Site name | OS grid ref<br>eg AB12345678 | Administration area - if<br>different from development<br>site | Distance<br>from<br>development<br>site (m). |
|-----------|------------------------------|--|--|
| PS31      | TQ 64807 70814               | Kent   | Adjacent                                     |
| PS38      | TQ 65067 70676               | Kent   | Adjacent                                     |

##### E2.4 Receptor site(s): ownership and land status.

| Site name | Site Ownership        | Conservation<br>Designation? |
|-----------|-----------------------|------------------------------|
| PS31      | Returned to landowner | No                           |
| PS38      | Returned to landowner | No                           |

##### E2.5 Receptor site: habitat description, size (ha) & adjacent land use.

| Site name | Habitat description | Size (ha) | Adjacent<br>Land Use                 |
|-----------|---------------------|-----------|--------------------------------------|
| PS31      | Scrub and grassland | 0.44      | Road, HS1,<br>scrub and<br>grassland |
| PS38      | Scrub and grassland | 0.44      | Road, HS1,<br>scrub and<br>grassland |

**E3 Habitat Creation, Restoration and/or Enhancement**

| Aquatic habitat | Impacts |        |                              | Compensation                     |        |                              |
|-----------------|---------|--------|------------------------------|----------------------------------|--------|------------------------------|
|                 | Effect  | Number | Total Area (m <sup>2</sup> ) | Measure                          | Number | Total Area (m <sup>2</sup> ) |
| GCN ponds       | Lost    | 0      | 0                            | Created                          | 0      | 0                            |
|                 | Damaged | 0      | 0                            | Restored / reinstated / enhanced | 0      | 0                            |

| Terrestrial habitat | Impacts        |             | Compensation   |                                       |                                  |
|---------------------|----------------|-------------|--|---------------------------------------|----------------------------------|
|                     | Area lost (ha) |             | Area gained (ha)   |                                       |                                  |
|                     | Permanent      | Temporary   | Suitable GCN habitat created within the wider landscaping design | Reinstated for bespoke GCN Mitigation | Restored / reinstated / enhanced |
| Core                | 0              | 0.43        | 0  | 0.22                                  | 0.21                             |
| Intermediate        | 0.21           | 2.34        | 0.21   | 2.09                                  | 0.25                             |
| Distant             | 0.42           | 1.75        | 0.42   | 0.7                                   | 1.05                             |
| <b>Totals</b>       | <b>0.63</b>    | <b>4.52</b> | <b>0.63</b>  | <b>3.01</b>                           | <b>1.51</b>                      |

**E3.1 Creation, restoration and/or enhancement of aquatic habitats**

No aquatic habitat creation is proposed for Assumed Metapopulation S06.

**E3.2 Terrestrial Habitat Measures**

|                                     | Number/area (ha)/length** |                                  |
|-------------------------------------|---------------------------|----------------------------------|
|                                     | Created                   | Reinstated / Restored / Enhanced |
| Hedgerow planting                   | 0                         | 0                                |
| Grassland re-seeding                | 0.05                      | 0.42                             |
| Grassland management (just for GCN) | 0                         | 3.01                             |
| Scrub planting                      | 0.58                      | 0.02                             |
| Woodland planting                   | 0                         | 1.07                             |
| Arable                              | 0                         | 0                                |
| Hibernacula creation*               | 0                         | 0                                |
| Refuge creation                     | 0                         | 0                                |

The Project will result in the overall permanent loss of 0.63 ha of predominately woodland habitat due to new road alignment, the majority of which is located in distant zone. A total of 3.01ha of reinstated grassland will be managed specifically for GCN. Given the extent of high-quality habitat within the close proximity to the GCN ponds, the loss is considered to be small scale.

### E3.3 Integration of roads and other hard landscapes

No impact requiring mitigation comprising integration with the road or other hard landscapes has been anticipated and therefore no further mitigation has been proposed.

### E4 Capture, Exclusion & Translocation

|  | Use method?<br>Yes/no | Minimum capture effort (days) |
|--|-----------------------|-------------------------------|
| At pond: bottle-trap, net, hand search &/or drain down | No                    |                               |
| At pond: ring-fence, pitfall trap (+ fence & refuges)  | No                    |                               |
| Away from pond: hand search                            | Yes                   | 3 days                        |
| Away from pond: destructive search                     | Yes                   | 3 days                        |
| Away from pond: fence, pitfall trap (& refuges)        | No                    |                               |
| Away from pond: night search                           | No                    |                               |
| Away from pond: exclusion fence only                   | No                    |                               |

Given the small-scale vegetation clearance required for the gantry and widening works. Habitat manipulation is proposed within any suitable habitat due to be removed within 250m of the pond. As such, any animals captured will be released within suitable retained habitat within Receptor Site PS31 or PS38. Selection of receptor site will be undertaken closer to construction and will be dependent on work schedules, so animals are moved away from works as appropriate at the time.

### E5 Post-development Site Safeguard

#### E5.1 Habitat management & maintenance

Most of the lost habitats will be reinstated and returned to landowner. The area of grassland reinstatement for GCN will be retained by NH and managed specifically for the benefit of GCN. The small area of landscape planting adjacent to the road will be managed, however, not specifically for GCN.

| <b>Habitat management operations</b>                                |     |
|---|-----|
| Aquatic vegetation management in water bodies                       | No  |
| Clearance of shading tree or scrub cover around pond margins        | No  |
| Mowing, cutting or grazing of grassland                             | Yes |
| Desilting and clearance of leaf-fall                                | No  |
| Woodland and scrub management                                       | No  |
| Other (state below)   | No  |
| <b>Site management operations</b>                                   |     |
| Checking for fish presence, and removal through appropriate methods | No  |
| Checking pond condition and remedial action as required             | No  |
| Checking for and removal of dumped rubbish                          | No  |
| Reinstatement following fire, acute pollution or other major damage | No  |
| Repair or replace fences  | No  |
| Maintain tunnel, underpass, guide fencing in good condition         | No  |

|  |          |
|--|----------|
| Repair or replace interpretation boards  | No       |
| Other (state below)  | No       |
|  |          |
| State the period for which habitat management and maintenance plan will continue | 30 years |

### E5.2 Post-development Population Monitoring

Post-development population monitoring is proposed at P296S comprising population size class assessments for four years.

### Assumed Metapopulation S07

Ponds P373S (Assumed medium population)

#### E1 The Mitigation Solution

Mitigation in the vicinity of Assumed Metapopulation S07 would comprise habitat manipulation. Any captured animals would be released at Receptor Area PS41 (within the core zone of this metapopulation). The abundance of GCN is not known within PS41, this is immediately adjacent to P378S. Due to the isolation of this potential GCN population between HS1 and the A2/M2, no other release sites are considered appropriate.

#### E2 Receptor Site Selection

##### E2.1 Existing GCN status at receptor site(s)

Unknown

##### E2.2 Survey information for receptor site if different from the survey for the application proposal.

Same as application proposal

##### E2.3 Receptor site locations

| Site name | OS grid ref<br>eg AB12345678 | Administration area – if<br>different from development<br>site | Distance<br>from<br>development<br>site (m). |
|-----------|------------------------------|--|--|
| PS41      | TQ 64520 78875               | Kent   | Adjacent                                     |

##### E2.4 Receptor site(s): ownership and land status.

| Site name | Site Ownership        | Conservation<br>Designation? |
|-----------|-----------------------|------------------------------|
| PS41      | Returned to landowner | No                           |

##### E2.5 Receptor site: habitat description, size (ha) & adjacent land use.

| Site name | Habitat description | Size (ha) | Adjacent<br>Land Use |
|-----------|---------------------|-----------|----------------------|
| PS41      | Scrub and grassland | 0.24      | Cemetery             |

**E3 Habitat Creation, Restoration and/or Enhancement**

| Aquatic habitat | Impacts |        |                              | Compensation                     |        |                              |
|-----------------|---------|--------|------------------------------|----------------------------------|--------|------------------------------|
|                 | Effect  | Number | Total Area (m <sup>2</sup> ) | Measure                          | Number | Total Area (m <sup>2</sup> ) |
| GCN ponds       | Lost    | 0      | 0                            | Created                          | 0      | 0                            |
|                 | Damaged | 0      | 0                            | Restored / reinstated / enhanced | 0      | 0                            |

| Terrestrial habitat | Impacts        |             | Compensation   |                                  |
|---------------------|----------------|-------------|--|----------------------------------|
|                     | Area lost (ha) |             | Area gained (ha)   |                                  |
|                     | Permanent      | Temporary   | Suitable GCN habitat created within the wider landscaping design | Restored / reinstated / enhanced |
| Core                | 0              | 0.04        | 0  | 0.04                             |
| Intermediate        | 0              | 0.24        | 0  | 0.24                             |
| Distant             | 0              | 1.25        | 0  | 1.25                             |
| <b>Totals</b>       | <b>0</b>       | <b>1.53</b> | <b>0</b>   | <b>1.53</b>                      |

**E3.1** Creation, restoration and/or enhancement of aquatic habitats

No aquatic habitat creation is proposed for Assumed Metapopulation S07.

**E3.2** Terrestrial Habitat Measures

|                                     | Number/area (ha)/length** |                                  |
|-------------------------------------|---------------------------|----------------------------------|
|                                     | Created                   | Reinstated / Restored / Enhanced |
| Hedgerow planting                   | 0                         | 0                                |
| Grassland re-seeding                | 0                         | 1.23                             |
| Grassland management (just for GCN) | 0                         | 0                                |
| Scrub planting                      | 0                         | 0                                |
| Woodland planting                   | 0                         | 0.30                             |
| Arable                              | 0                         | 0                                |
| Hibernacula creation*               | 0                         | 0                                |
| Refuge creation                     | 0                         | 0                                |

No permanent loss of habitat. All habitat that is temporarily lost will be reinstated.

**E3.3** Integration of roads and other hard landscapes

No impact requiring mitigation comprising integration with the road or other hard landscapes has been anticipated and therefore no further mitigation has been proposed.

#### E4 Capture, Exclusion & Translocation

|  | Use method?<br>Yes/no | Minimum capture effort (days) |
|--|-----------------------|-------------------------------|
| At pond: bottle-trap, net, hand search &/or drain down | No                    |                               |
| At pond: ring-fence, pitfall trap (+ fence & refuges)  | No                    |                               |
| Away from pond: hand search                            | Yes                   | 3 days                        |
| Away from pond: destructive search                     | Yes                   | 3 days                        |
| Away from pond: fence, pitfall trap (& refuges)        | No                    |                               |
| Away from pond: night search                           | No                    |                               |
| Away from pond: exclusion fence only                   | No                    |                               |

Given the small-scale vegetation clearance required for the gantry and access works. Habitat manipulation is proposed within any suitable habitat due to be removed within 250m of the pond. As such, any animals captured will be released within suitable retained habitat within Receptor Site PS41.

#### E5 Post-development Site Safeguard

##### E5.1 Habitat management & maintenance

Most of the lost habitats will be reinstated and returned to landowner. The small area of landscape planting adjacent to the road will be managed, however, not specifically for GCN.

| <b>Habitat management operations</b>   |  |    |
|--|--|----|
| Aquatic vegetation management in water bodies                                    |  | No |
| Clearance of shading tree or scrub cover around pond margins                     |  | No |
| Mowing, cutting or grazing of grassland  |  | No |
| Desilting and clearance of leaf-fall   |  | No |
| Woodland and scrub management  |  | No |
| Other (state below)  |  | No |
| <b>Site management operations</b>  |  |    |
| Checking for fish presence, and removal through appropriate methods              |  | No |
| Checking pond condition and remedial action as required                          |  | No |
| Checking for and removal of dumped rubbish                                       |  | No |
| Reinstatement following fire, acute pollution or other major damage              |  | No |
| Repair or replace fences   |  | No |
| Maintain tunnel, underpass, guide fencing in good condition                      |  | No |
| Repair or replace interpretation boards  |  | No |
| Other (state below)  |  | No |
| State the period for which habitat management and maintenance plan will continue |  |    |

##### E5.2 Post-development Population Monitoring

No post-development population monitoring is proposed for Assumed Metapopulation S07.

#### Assumed Metapopulation S08

Pond P374S (Assumed medium population)

### E1 The Mitigation Solution

Mitigation in the vicinity of Assumed Metapopulation S08 would comprise habitat manipulation. Any captured animals would be released at Receptor Area PS33 (within the core zone of this metapopulation). Receptor Area PS33 currently covers the entire area of the site boundary within 250m which includes the construction areas. Construction works, comprising underground line installation, will not require the entire width of the site boundary, although exact location is yet to be determined. Due to this, the habitat loss presented below is an overestimate of the extent of loss. Once the final location has been determined, for the final licence submission, the receptor area will be changed to ensure animals are released as far from works as possible. Additional fencing requirements will also be considered necessary. The abundance of GCN is not known within PS33, this is immediately adjacent to P374S. Due to the isolation of this potential GCN population between Gravesend and the A2/M2, no other release sites are considered appropriate.

### E2 Receptor Site Selection

#### E2.1 Existing GCN status at receptor site(s)

Unknown

#### E2.2 Survey information for receptor site if different from the survey for the application proposal.

Same as application proposal

#### E2.3 Receptor site locations

| Site name | OS grid ref<br>eg AB12345678 | Administration area – if<br>different from development<br>site | Distance<br>from<br>development<br>site (m). |
|-----------|------------------------------|--|--|
| PS33      | TQ 64090 71343               | Kent   | Adjacent                                     |

#### E2.4 Receptor site(s): ownership and land status.

| Site name | Site Ownership        | Conservation<br>Designation? |
|-----------|-----------------------|------------------------------|
| PS33      | Returned to landowner | No                           |

#### E2.5 Receptor site: habitat description, size (ha) & adjacent land use.

| Site name | Habitat description | Size (ha) | Adjacent<br>Land Use            |
|-----------|---------------------|-----------|---------------------------------|
| PS33      | Scrub and grassland | 1.50      | Road, scrub<br>and<br>grassland |



**E3 Habitat Creation, Restoration and/or Enhancement**

| Aquatic habitat | Impacts |        |                              | Compensation                     |        |                              |
|-----------------|---------|--------|------------------------------|----------------------------------|--------|------------------------------|
|                 | Effect  | Number | Total Area (m <sup>2</sup> ) | Measure                          | Number | Total Area (m <sup>2</sup> ) |
| GCN ponds       | Lost    | 0      | 0                            | Created                          | 0      | 0                            |
|                 | Damaged | 0      | 0                            | Restored / reinstated / enhanced | 0      | 0                            |

| Terrestrial habitat | Impacts        |             | Compensation   |                                  |
|---------------------|----------------|-------------|--|----------------------------------|
|                     | Area lost (ha) |             | Area gained (ha)   |                                  |
|                     | Permanent      | Temporary   | Suitable GCN habitat created within the wider landscaping design | Restored / reinstated / enhanced |
| Core                | 0.03           | 0.05        | 0.03   | 0.05                             |
| Intermediate        | 0.15           | 1.03        | 0.15   | 1.03                             |
| Distant             | 0              | 0.36        | 0  | 0.36                             |
| <b>Totals</b>       | <b>0.18</b>    | <b>1.44</b> | <b>0.18</b>  | <b>1.44</b>                      |

**E3.1** Creation, restoration and/or enhancement of aquatic habitats

No aquatic habitat creation is proposed for Assumed Metapopulation S08.

**E3.2** Terrestrial Habitat Measures

|                                     | Number/area (ha)/length** |                                  |
|-------------------------------------|---------------------------|----------------------------------|
|                                     | Created                   | Reinstated / Restored / Enhanced |
| Hedgerow planting                   | 0                         | 0                                |
| Grassland re-seeding                | 0                         | 1.05                             |
| Grassland management (just for GCN) | 0                         | 0                                |
| Scrub planting                      | 0.18                      | 0                                |
| Woodland planting                   | 0                         | 0.38                             |
| Hibernacula creation*               | 0                         | 0                                |
| Refuge creation                     | 0                         | 0                                |

The same amount of semi natural habitat that is permanently lost due to the new road alignment will be created as part of the mitigation solution for metapopulation S08, due to the loss of woodland habitat, by the planting of newly created scrub habitat.

**E3.3** Integration of roads and other hard landscapes

No impact requiring mitigation comprising integration with the road or other hard landscapes has been anticipated and therefore none have been proposed.

**E4 Capture, Exclusion & Translocation**

|  | Use method?<br>Yes/no | Minimum capture effort (days) |
|--|-----------------------|-------------------------------|
| At pond: bottle-trap, net, hand search &/or drain down | No                    |                               |
| At pond: ring-fence, pitfall trap (+ fence & refuges)  | No                    |                               |
| Away from pond: hand search                            | Yes                   | 2 days                        |
| Away from pond: destructive search                     | Yes                   | 2 days                        |
| Away from pond: fence, pitfall trap (& refuges)        | No                    |                               |
| Away from pond: night search                           | No                    |                               |
| Away from pond: exclusion fence only                   | No                    |                               |

Given the small-scale vegetation clearance required for the underground utilities. Habitat manipulation is proposed within any suitable habitat due to be removed within 250m of the pond. The utilities work will not require the entirety of the site boundary within this location. As such, any animals captured will be released within suitable retained habitat within PS33 with the exact location determined once utility location has been finalised.

**E5 Post-development Site Safeguard**

**E5.1 Habitat management & maintenance**

All habitat within 500m of this population will be reinstated or landscaped and returned to the landowner.

| <b>Habitat management operations</b>   |    |
|--|----|
| Aquatic vegetation management in water bodies                                    | No |
| Clearance of shading tree or scrub cover around pond margins                     | No |
| Mowing, cutting or grazing of grassland  | No |
| Desilting and clearance of leaf-fall   | No |
| Woodland and scrub management  | No |
| Other (state below)  | No |
| <b>Site management operations</b>  |    |
| Checking for fish presence, and removal through appropriate methods              | No |
| Checking pond condition and remedial action as required                          | No |
| Checking for and removal of dumped rubbish                                       | No |
| Reinstatement following fire, acute pollution or other major damage              | No |
| Repair or replace fences   | No |
| Maintain tunnel, underpass, guide fencing in good condition                      | No |
| Repair or replace interpretation boards  | No |
| Other (state below)  | No |
| State the period for which habitat management and maintenance plan will continue |    |

**E5.2 Post-development Population Monitoring**

No post-development population monitoring is proposed for Assumed Metapopulation S08.

**Assumed Metapopulation S09**

Pond P351S (Assumed medium population)

**E1 The Mitigation Solution**

Mitigation in the vicinity of Assumed Metapopulation S09 would comprise habitat manipulation. Any captured animals would be released at Receptor Area PS32 (within the intermediate zone of this metapopulation).. Receptor Area PS32 currently covers the entire area of the site boundary within 250m which includes the construction areas. Construction works, comprising underground line installation, will not require the entire width of the site boundary, although exact location is yet to be determined. Due to this, the habitat loss presented below is an overestimate of the extent of loss. Once the final location has been determined, for the final licence submission, the receptor area will be changed to ensure animals are released as far from works as possible. Additional fencing requirements will also be considered necessary. The abundance of GCN is not known within PS32, this is within 100m of P374S. Due to the isolation of this potential GCN population between Gravesend and the A2/M2, no other release sites are considered appropriate.

**E2 Receptor Site Selection**

**E2.1 Existing GCN status at receptor site(s)**

Unknown

**E2.2 Survey information for receptor site if different from the survey for the application proposal.**

Same as application proposal

**E2.3 Receptor site locations**

| Site name | OS grid ref<br>eg AB12345678 | Administration area - if<br>different from development<br>site | Distance<br>from<br>development<br>site (m). |
|-----------|------------------------------|--|--|
| PS32      | TQ 62937 71929               | Kent   | Adjacent                                     |

**E2.4 Receptor site(s): ownership and land status.**

| Site name | Site Ownership        | Conservation<br>Designation? |
|-----------|-----------------------|------------------------------|
| PS32      | Returned to landowner | No                           |

**E2.5 Receptor site: habitat description, size (ha) & adjacent land use.**

| Site name | Habitat description | Size (ha) | Adjacent<br>Land Use   |
|-----------|---------------------|-----------|------------------------|
| PS32      | Scrub and grassland | 0.41      | Scrub and<br>grassland |

**E3 Habitat Creation, Restoration and/or Enhancement**

| Aquatic habitat | Impacts |        |                              | Compensation                     |        |                              |
|-----------------|---------|--------|------------------------------|----------------------------------|--------|------------------------------|
|                 | Effect  | Number | Total Area (m <sup>2</sup> ) | Measure                          | Number | Total Area (m <sup>2</sup> ) |
| GCN ponds       | Lost    | 0      | 0                            | Created                          | 0      | 0                            |
|                 | Damaged | 0      | 0                            | Restored / reinstated / enhanced | 0      | 0                            |

| Terrestrial habitat | Impacts        |           | Compensation   |                                  |
|---------------------|----------------|-----------|--|----------------------------------|
|                     | Area lost (ha) |           | Area gained (ha)   |                                  |
|                     | Permanent      | Temporary | Suitable GCN habitat created within the wider landscaping design | Restored / reinstated / enhanced |
| Core                | 0              | 0         | 0  | 0                                |
| Intermediate        | 0              | 0.20      | 0  | 0.20                             |
| Distant             | 0              | 0.64      | 0  | 0.64                             |
| <b>Totals</b>       | 0              | 0.84      | 0  | 0.84                             |

**E3.1** Creation, restoration and/or enhancement of aquatic habitats

No aquatic habitat creation is proposed for Assumed Metapopulation S09.

**E3.2** Terrestrial Habitat Measures

|                                     | Number/area (ha)/length** |                                  |
|-------------------------------------|---------------------------|----------------------------------|
|                                     | Created                   | Reinstated / Restored / Enhanced |
| Hedgerow planting                   | 0                         | 0                                |
| Grassland re-seeding                | 0                         | 0.68                             |
| Grassland management (just for GCN) | 0                         | 0                                |
| Scrub planting                      | 0                         | 0                                |
| Woodland planting                   | 0                         | 0.10                             |
| Hibernacula creation*               | 0                         | 0.06                             |
| Refuge creation                     | 0                         | 0                                |

No permanent loss of habitat within metapopulation S09. All habitat that is temporarily lost will be reinstated.

**E3.3** Integration of roads and other hard landscapes

No impact requiring mitigation comprising integration with the road or other hard landscapes has been anticipated and therefore none have been proposed.

**E4 Capture, Exclusion & Translocation**

|  | Use method?<br>Yes/no | Minimum capture effort (days) |
|--|-----------------------|-------------------------------|
| At pond: bottle-trap, net, hand search &/or drain down | No                    |                               |
| At pond: ring-fence, pitfall trap (+ fence & refuges)  | No                    |                               |
| Away from pond: hand search                            | Yes                   | 3 days                        |
| Away from pond: destructive search                     | Yes                   | 3 days                        |
| Away from pond: fence, pitfall trap (& refuges)        | No                    |                               |
| Away from pond: night search                           | No                    |                               |
| Away from pond: exclusion fence only                   | No                    |                               |

Given the small-scale vegetation clearance required for the underground utilities. Habitat manipulation is proposed within any suitable habitat due to be removed. The utilities work will not require the entirety of the site boundary within this location. As such, any animals captured will be released within suitable retained habitat within PS33 with the exact location determined once utility location has been finalised.

**E5 Post-development Site Safeguard**

**E5.1 Habitat management & maintenance**

All habitat within 500m of this population will be reinstated or landscaped and returned to the landowner.

| <b>Habitat management operations</b>   |    |
|--|----|
| Aquatic vegetation management in water bodies                                    | No |
| Clearance of shading tree or scrub cover around pond margins                     | No |
| Mowing, cutting or grazing of grassland  | No |
| Desilting and clearance of leaf-fall   | No |
| Woodland and scrub management  | No |
| Other (state below)  | No |
| <b>Site management operations</b>  |    |
| Checking for fish presence, and removal through appropriate methods              | No |
| Checking pond condition and remedial action as required                          | No |
| Checking for and removal of dumped rubbish                                       | No |
| Reinstatement following fire, acute pollution or other major damage              | No |
| Repair or replace fences   | No |
| Maintain tunnel, underpass, guide fencing in good condition                      | No |
| Repair or replace interpretation boards  | No |
| Other (state below)  | No |
| State the period for which habitat management and maintenance plan will continue |    |

**E5.2 Post-development Population Monitoring**

No post-development population monitoring is proposed for Metapopulation S09.

### Metapopulation S10

Ponds P294S P350S P383S P385S P398S P483S P501S P502S P503S P504S and P505S  
(Assumed large population)

Although the impacts for Assumed Metapopulation S10 are Negligible and therefore no mitigation proposals are required, this population has been included in the mitigation solution to ensure the woodland planting within the arable fields, which would be of benefit to GCN, has been captured within the calculations.

### E3 Habitat Creation, Restoration and/or Enhancement

| Terrestrial habitat | Impacts        |             | Compensation   |                                  |
|---------------------|----------------|-------------|--|----------------------------------|
|                     | Area lost (ha) |             | Area gained (ha)   |                                  |
|                     | Permanent      | Temporary   | Suitable GCN habitat created within the wider landscaping design | Restored / reinstated / enhanced |
| Core                | 0.61           | 0.01        | 0.61   | 0.01                             |
| Intermediate        | 18.90          | 0.15        | 18.92  | 0.15                             |
| Distant             | 17.84          | 6.42        | 17.80  | 6.42                             |
| <b>Totals</b>       | <b>37.35</b>   | <b>6.58</b> | <b>37.33</b>   | <b>6.58</b>                      |

### E3.2 Terrestrial Habitat Measures

|                                     | Number/area (ha)/length** |                                  |
|-------------------------------------|---------------------------|----------------------------------|
|                                     | Created                   | Reinstated / Restored / Enhanced |
| Hedgerow planting                   | 100m                      | 0                                |
| Grassland re-seeding                | 8.28                      | 0.43                             |
| Grassland management (just for GCN) | 0                         | 0                                |
| Scrub planting                      | 0                         | 0.09                             |
| Woodland planting                   | 29.05                     | 0.12                             |
| Tall herb and fern                  | 0                         | 0.07                             |
| Arable                              | 0                         | 5.86                             |
| Hibernacula creation*               | 0                         | 0                                |
| Refuge creation                     | 0                         | 0                                |

### Assumed Metapopulation S13

Ponds P497S, P498S, P499S and P500S (Assumed medium population)

Although the impacts for Assumed Metapopulation S13 are considered to be Negligible and therefore no mitigation proposals are required, this population has been included in the mitigation solution to

ensure the woodland planting within the arable fields, which would be of great benefit to GCN, has been captured within the calculations.

### E3 Habitat Creation, Restoration and/or Enhancement

| Terrestrial habitat | Impacts        |             | Compensation   |                                  |
|---------------------|----------------|-------------|--|----------------------------------|
|                     | Area lost (ha) |             | Area gained (ha)   |                                  |
|                     | Permanent      | Temporary   | Suitable GCN habitat created within the wider landscaping design | Restored / reinstated / enhanced |
| Core                | 0              | 0           | 0  | 0                                |
| Intermediate        | 5.74           | 0.09        | 5.76   | 0.09                             |
| Distant             | 28.99          | 0.50        | 29.13  | 0.50                             |
| <b>Totals</b>       | <b>34.73</b>   | <b>0.59</b> | <b>34.89</b>   | <b>0.59</b>                      |

### E3.2 Terrestrial Habitat Measures

|                                     | Number/area (ha)/length** |                                  |
|-------------------------------------|---------------------------|----------------------------------|
|                                     | Created                   | Reinstated / Restored / Enhanced |
| Hedgerow planting                   | 0                         | 0                                |
| Grassland re-seeding                | 16.30                     | 0                                |
| Grassland management (just for GCN) | 0                         | 0                                |
| Scrub planting                      | 0                         | 0                                |
| Woodland planting                   | 18.58                     | 0                                |
| Tall herb and fern                  | 0                         | 0.20                             |
| Arable                              | 0                         | 0.39                             |
| Hibernacula creation*               | 0                         | 0                                |
| Refuge creation                     | 0                         | 0                                |

The project will result in the permanent loss of 34.73ha of habitat, the majority of which is arable. This will be replaced with higher value semi-natural woodland and grassland, which although not bespoke mitigation for GCN, is considered of higher suitability. The increase in compensation habitat compared to the permanent habitat lost is due to the conversion of unsuitable GCN habitat to suitable GCN habitats. All habitat that is temporarily lost will be reinstated.

### Metapopulation N01

Ponds P193N and P195N (Assumed Medium population)

#### E1 The Mitigation Solution

Mitigation for Metapopulation N01 would comprise habitat manipulation within lower value habitats. All captured animals would be released either into Mitigation Area HC27 (within the core zone of this

metapopulation). or into the existing area of continuous scrub within Receptor Area PS27 (within the distant zone of this metapopulation).. Habitat creation and enhancement would be undertaken at Mitigation Area HC27.

Mitigation Area HC27 also provides habitat creation and a receptor area for Metapopulation N02. Where this mitigation area falls within 500m of Metapopulation N01, this area has been included in the loss and gain calculations below. However, any area within falls within 500m of Metapopulation N02 as well as all pond, hibernacula and refugia creation, monitoring and maintenance for the entire mitigation area has been included within Metapopulation N02. Further habitat creation is proposed to the north of P195N within Mitigation Area NC26 which will benefit both great crested newt and reptiles.

## E2 Receptor Site Selection

### E2.1 Existing GCN status at receptor site(s)

Great crested newts absent/highly likely to be absent

### E2.2 Survey information for receptor site if different from the survey for the application proposal.

Same as application proposal

### E2.3 Receptor site locations

| Site name | OS grid ref<br>eg AB12345678 | Administration area – if<br>different from development<br>site | Distance<br>from<br>development<br>site (m). |
|-----------|------------------------------|--|--|
| HC26      | TQ 68706 77643               | Essex  | Adjacent                                     |
| HC27      | TQ 68223 77284               | Essex  | Adjacent                                     |
| PS27      | TQ 68078 77004               | Essex  | Adjacent                                     |

### E2.4 Receptor site(s): ownership and land status.

| Site name | Site Ownership    | Conservation<br>Designation? |
|-----------|-------------------|------------------------------|
| HC26      | National Highways | No                           |
| HC27      | National Highways | No                           |
| PS27      | National Highways | No                           |

### E2.5 Receptor site: habitat description, size (ha) & adjacent land use.

| Site name | Habitat description   | Size (ha) | Adjacent<br>Land Use |
|-----------|---|-----------|----------------------|
| HC26      | Currently arable land use. An open mosaic of grassland, woodland, scrub, banks, ditches and refuse piles will be created. | 36.98     | Arable               |
| HC27      | Currently arable land use. An open mosaic of grassland, woodland, scrub, banks, ditches and refuse piles will be created. | 21.58     | Arable               |
| PS27      | Scrub and woodland  | 1.55      | Arable               |



**E3 Habitat Creation, Restoration and/or Enhancement**

| Aquatic habitat | Impacts |        |                              | Compensation                     |        |                              |
|-----------------|---------|--------|------------------------------|----------------------------------|--------|------------------------------|
|                 | Effect  | Number | Total Area (m <sup>2</sup> ) | Measure                          | Number | Total Area (m <sup>2</sup> ) |
| GCN ponds       | Lost    | 0      | 0                            | Created                          | 0      | 0                            |
|                 | Damaged | 0      | 0                            | Restored / reinstated / enhanced | 0      | 0                            |

| Terrestrial habitat | Impacts        |           | Compensation   |                                    |                                  |
|---------------------|----------------|-----------|--|------------------------------------|----------------------------------|
|                     | Area lost (ha) |           | Area gained (ha)   |                                    |                                  |
|                     | Permanent      | Temporary | Suitable GCN habitat created within the wider landscaping design | Created for bespoke GCN Mitigation | Restored / reinstated / enhanced |
| Core                | 0.48           | 0.29      | 0.11   | 0.36                               | 0.28                             |
| Intermediate        | 18.57          | 1.88      | 8.73   | 8.20                               | 1.88                             |
| Distant             | 30.48          | 4.36      | 11.01  | 16.01                              | 4.35                             |
| <b>Totals</b>       | 49.53          | 6.53      | 19.85  | 24.58                              | 6.51                             |

**E3.1 Creation, restoration and/or enhancement of aquatic habitats**

The mitigation ponds proposed for Metapopulation N02 would also benefit GCN associated with Metapopulation N01. However, as these ponds are to specifically offset pond loss associated with Metapopulation N02, these are detailed below under Metapopulation N02.

**Non-GCN Ponds**

| Pond reference | Surface Area (m <sup>2</sup> ) | Max. Depth (m) | Design / enhancement measures and location |
|----------------|--------------------------------|----------------|--|
| HC26_P1        | 300                            | 1.5            | New Pond in Mitigation Area HC26           |

**E3.2 Terrestrial Habitat Measures**

|                      | Number/area (ha)/length** |                                  |
|----------------------|---------------------------|----------------------------------|
|                      | Created                   | Reinstated / Restored / Enhanced |
| Hedgerow planting    | 0                         | 601.04m                          |
| Grassland re-seeding | 4.86                      | 3.77                             |

|                                      | Number/area (ha)/length** |                                  |
|--------------------------------------|---------------------------|----------------------------------|
|                                      | Created                   | Reinstated / Restored / Enhanced |
| Grassland management (just for GCN)  | 0                         | 0                                |
| Scrub planting                       | 0                         | 0.65                             |
| Woodland planting                    | 0                         | 0                                |
| Tall herb and fern                   | 0                         | 0.02                             |
| Arable                               | 0                         | 2.06                             |
| Open mosaic (bespoke GCN mitigation) | 24.58                     | 0                                |
| Wetland creation                     | 14.99                     | 0                                |
| Hibernacula creation*                | 0                         | 0                                |
| Refuge creation                      | 0                         | 0                                |

The project will result in the permanent loss of 49.53ha of habitat, however large areas of this are of low value arable. To mitigate for this loss, two bespoke GCN habitat creation area will be planted and managed specifically for GCN (HC26 and HC27). In addition, there is a further 19.85ha of suitable habitat for GCN within the wider landscape design. All temporary habitat loss will be reinstated.

### E3.3 Integration of roads and other hard landscapes

Metapopulation N01 is located over 1km from the proposed carriageway and other permanent works with no fragmentation or barriers to movement anticipated, as such, there would be no additional integrations with roads or other hard surfaces.

### E4 Capture, Exclusion & Translocation

|  | Use method?<br>Yes/no | Minimum capture effort<br>(days) |
|--|-----------------------|----------------------------------|
| At pond: bottle-trap, net, hand search &/or drain down | No                    |                                  |
| At pond: ring-fence, pitfall trap (+ fence & refuges)  | No                    |                                  |
| Away from pond: hand search                            | Yes                   | 10 days                          |
| Away from pond: destructive search                     | Yes                   | 10 days                          |
| Away from pond: fence, pitfall trap (& refuges)        | No                    |                                  |
| Away from pond: night search                           | No                    |                                  |
| Away from pond: exclusion fence only                   | No                    |                                  |

The fields to the north of P195N currently comprise semi-improved grassland and hedgerows that are proposed for reptile mitigation and acid grassland translocation. Works would comprise mainly habitat management to alleviate current pressures and to promote rougher grassland establishment and scrub encroachment. Where works would require vegetation clearance or earth works, i.e. the installation of reptile hibernacula, habitat manipulation would be undertaken within these small, isolated areas within 250m of the pond. Although this area is not proposed for specific mitigation for GCN, the habitat creation within this area would be beneficial to the local GCN population.

The access track proposed to the south of P193N would require the temporary loss of semi-improved grassland within the intermediate zone of this pond. Given the small-scale loss of this habitat, habitat manipulation would be undertaken within this area.

The arable fields to the north of the P193N are proposed for habitat creation (Mitigation Area HC27) for GCN and the fields to the south are proposed for water vole mitigation (requiring new ditches to be

created). Although, arable fields can be utilised by GCN, both areas considered to be of negligible value, due to the extent of good habitat (woodland and scrub) close to and between the ponds in this metapopulation. As such, no mitigation measures are proposed within these habitats.

Mitigation Area HC27 would be created adjacent to P193N, creating connectivity between this population and Metapopulation N02. Any captured animals would be released Mitigation Area HC27. If habitats have not yet established, animals will be released into the existing area of continuous scrub within Receptor Area PS27, indicated on Figure E2. Mitigation Area HC27 is 21.67 ha and currently comprises intensively managed arable fields (sub-optimal for GCN). Habitat creation and enhancement would be implemented to create a mosaic habitat of rough grassland and scrub. Four new GCN ponds would be excavated along with the creation of five hibernacula (two large and three small) and five refugia. In addition to this, four ponds would also be created within the area to offset non-GCN pond loss. Further habitat creation is proposed to the north of P195N within Mitigation Area NC26 which will benefit both great crested newt and reptiles.

## E5 Post-development Site Safeguard

### E5.1 Habitat management & maintenance

Management and maintenance of Mitigation Area HC27 is included within Metapopulation N02. The other mitigation areas within 500m of this population will not be managed specifically for GCN. However, the management in these areas for water vole and reptiles will be beneficial to GCN. All other habitats are to be reinstated and returned to the landowner.

| <b>Habitat management operations</b>   |          |
|--|----------|
| Aquatic vegetation management in water bodies                                    | Yes      |
| Clearance of shading tree or scrub cover around pond margins                     | Yes      |
| Mowing, cutting or grazing of grassland  | No       |
| Desilting and clearance of leaf-fall   | Yes      |
| Woodland and scrub management  | No       |
| Other (state below)  | No       |
| <b>Site management operations</b>  |          |
| Checking for fish presence, and removal through appropriate methods              | Yes      |
| Checking pond condition and remedial action as required                          | Yes      |
| Checking for and removal of dumped rubbish                                       | Yes      |
| Reinstatement following fire, acute pollution or other major damage              | No       |
| Repair or replace fences   | No       |
| Maintain tunnel, underpass, guide fencing in good condition                      | No       |
| Repair or replace interpretation boards  | No       |
| Other (state below)  | No       |
| <b>Management of refugia and hibernacula</b>                                     |          |
| State the period for which habitat management and maintenance plan will continue | 30 years |

### E5.2 Post-development Population Monitoring

No post-development population monitoring is proposed for Metapopulation N01.

## Metapopulation N02

Ponds P001N, P216N, P222N and P467N (Medium population)

### E1 The Mitigation Solution

Mitigation for Metapopulation N02 would comprise conventional capture and relocation of GCN as well as habitat manipulation, where appropriate. Ponds P215N, P222N and P467N which are to be permanently lost, will be trapped out and drained down. Mitigation Area HC27 would be created 400m to the west of P001N where habitat creation and enhancement would be implemented. All captured animals would be released within this area (within the distant zone of this metapopulation), or Receptor Area PS27 (immediately adjacent to the distant zone of this metapopulation), if habitats are yet to be established. In addition, new GCN ponds and non-GCN ponds would be excavated as well as the creation of hibernacula and refugia.

### E2 Receptor Site Selection

#### E2.1 Existing GCN status at receptor site(s)

Great crested newts absent/highly likely to be absent

#### E2.2 Survey information for receptor site if different from the survey for the application proposal.

Same as application proposal

#### E2.3 Receptor site locations

| Site name | OS grid ref<br>eg AB12345678 | Administration area - if<br>different from development<br>site | Distance<br>from<br>development<br>site (m). |
|-----------|------------------------------|--|--|
| HC27      | TQ 68223 77284               | Essex  | 360m   |
| PS27      | TQ 68078 77004               | Essex  | 360m   |

#### E2.4 Receptor site(s): ownership and land status.

| Site name | Site Ownership    | Conservation<br>Designation? |
|-----------|-------------------|------------------------------|
| HC27      | National Highways | No                           |
| PS27      | National Highways | No                           |

#### E2.5 Receptor site: habitat description, size (ha) & adjacent land use.

| Site name | Habitat description   | Size (ha) | Adjacent<br>Land Use |
|-----------|---|-----------|----------------------|
| HC27      | Currently arable land use. An open mosaic of grassland, woodland, scrub, banks, ditches and refuse piles will be created. | 21.58     | Arable               |
| PS27      | Scrub and woodland  | 1.63      | Arable               |

**E3 Habitat Creation, Restoration and/or Enhancement**

| Aquatic habitat | Impacts |                          |                              | Compensation                     |        |                              |
|-----------------|---------|--------------------------|------------------------------|----------------------------------|--------|------------------------------|
|                 | Effect  | Number                   | Total Area (m <sup>2</sup> ) | Measure                          | Number | Total Area (m <sup>2</sup> ) |
| GCN ponds       | Lost    | 3 (P216N, P222N & P467N) | 3805.35                      | Created                          | 6      | 3,600                        |
|                 | Damaged | 0                        | 0                            | Restored / reinstated / enhanced | 0      | 0                            |

| Terrestrial habitat | Impacts        |           | Compensation   |   |                                  |
|---------------------|----------------|-----------|--|---|----------------------------------|
|                     | Area lost (ha) |           | Area gained (ha)   |   |                                  |
|                     | Permanent      | Temporary | Suitable GCN habitat created within the wider landscaping design | Created/reinstated for bespoke GCN Mitigation | Restored / reinstated / enhanced |
| Core                | 3.64           | 1.20      | 2.49   | 0.9   | 1.20                             |
| Intermediate        | 16.60          | 19.38     | 8.07   | 4.43  | 19.17                            |
| Distant             | 21.40          | 44.04     | 8.45   | 9.97  | 42.59                            |
| <b>Totals</b>       | 41.64          | 64.62     | 19.01  | 15.3  | 62.97                            |

**E3.1 Creation, restoration and/or enhancement of aquatic habitats**

**GCN Mitigation Ponds**

| Pond reference | Surface Area (m <sup>2</sup> ) | Max. Depth (m) | Design / enhancement measures and location   |
|----------------|--------------------------------|----------------|--|
| HC27_P1        | 750                            | 1.5            | New Pond in Mitigation Area HC27. Design to follow <i>Creating ponds for amphibians and reptiles</i> (Freshwater Habitat Trust). |
| HC27_P2        | 500                            | 1.5            | New Pond in Mitigation Area HC27. Design to follow <i>Creating ponds for amphibians and reptiles</i> (Freshwater Habitat Trust). |
| HC27_P3        | 600                            | 1.5            | New Pond in Mitigation Area HC27. Design to follow <i>Creating ponds for amphibians and reptiles</i> (Freshwater Habitat Trust). |
| HC27_P4        | 500                            | 1.5            | New Pond in Mitigation Area HC27. Design to follow <i>Creating ponds for amphibians and reptiles</i> (Freshwater Habitat Trust). |
| HC27_P5        | 750                            | 1.5            | New Pond in Mitigation Area HC27. Design to follow <i>Creating ponds for amphibians and reptiles</i> (Freshwater Habitat Trust). |
| HC27_P6        | 500                            | 1.5            | New Pond in Mitigation Area HC27. Design to follow <i>Creating ponds for amphibians and reptiles</i> (Freshwater Habitat Trust). |

**Non-GCN pond creation**

| Pond reference | Surface Area (m <sup>2</sup> ) | Max. Depth (m) | Design / enhancement measures and location |
|----------------|--------------------------------|----------------|--|
| HC27_P7        | 150                            | 1.5            | New Pond in Mitigation Area HC27           |
| HC27_P8        | 300                            | 1.5            | New Pond in Mitigation Area HC27           |
| HC27_P9        | 150                            | 1.5            | New Pond in Mitigation Area HC27           |
| HC27_P10       | 150                            | 1.5            | New Pond in Mitigation Area HC27           |

**E3.2 Terrestrial Habitat Measures**

|                                      | Number/area (ha)/length** |                                  |
|--------------------------------------|---------------------------|----------------------------------|
|                                      | Created                   | Reinstated / Restored / Enhanced |
| Hedgerow planting                    | 231.48m                   | 703.50m                          |
| Grassland re-seeding                 | 8.68                      | 5.62                             |
| Grassland management (just for GCN)  | 0                         | 0                                |
| Scrub planting                       | 2.69                      | 1.39                             |
| Woodland planting                    | 5.69                      | 1.17                             |
| Tall herb and fern                   | 0                         | 1.91                             |
| Arable                               | 0                         | 52.85                            |
| Open mosaic (bespoke GCN mitigation) | 13.89                     | 1.41                             |
| Gardens/Allotments                   | 0                         | 0.02                             |
| Wetland creation                     | 1.95                      | 0.01                             |
| Hibernacula creation*                | 5                         | 0                                |
| Refuge creation                      | 5                         | 0                                |

The Project will result in the overall permanent loss of 41.64 ha of predominately arable land due to the new road alignment, the majority of which is located in the distant zone. The habitat that will be newly created however (grassland, scrub and woodland), is considered to be of higher quality for GCN. An additional 231.48m of hedgerow would also be planted within the vicinity of the ponds.

**E3.3 Integration of roads and other hard landscapes**

Drainage systems can result in high mortality of amphibians, as such the drainage for the scheme is being designed to use amphibian friendly drainage options; this is an ongoing process and the impact on amphibians is constantly being reviewed.

**E4 Capture, Exclusion & Translocation**

|  | Use method?<br>Yes/no | Minimum capture effort (days) |
|--|-----------------------|-------------------------------|
| At pond: bottle-trap, net, hand search &/or drain down | Yes                   | 60                            |
| At pond: ring-fence, pitfall trap (+ fence & refuges)  | Yes                   | 60                            |
| Away from pond: hand search                            | Yes                   | 10 days                       |
| Away from pond: destructive search                     | Yes                   | 10 days                       |
| Away from pond: fence, pitfall trap (& refuges)        | Yes                   | 30                            |

|                                      | Use method?<br>Yes/no | Minimum capture effort (days) |
|--------------------------------------|-----------------------|-------------------------------|
| Away from pond: night search         | Yes                   | 30                            |
| Away from pond: exclusion fence only | Yes                   |                               |

To facilitate utility works, Pond P467N will be removed in advance of the other ponds. This pond will be ring fenced, trapping effort is proposed to be reduced to 30 days with pitfall traps installed at a density of 30 per hectare. Any animals captured would be released at the receptor site within PS27. To compensate for this loss, two ponds will be created in advance of the others within Mitigation Area HC27.

TAF would be installed to enclose all areas of the Site that fall within 250m of the ponds within this metapopulation, with the exception of

- a) The areas of arable and improved grassland, which are considered to be of negligible value for GCN.
- b) Boundary features (i.e. hedgerow and verge) associated with the sections of Station Road. Habitat manipulation would instead be undertaken in these areas.

A medium population size class has been assumed for Metapopulation N02 due to constraints with surveys at P001N, which is considered likely to be the source population. However, a reduced survey effort (using Licencing Policy 1) of 30 days trapping is proposed while pitfall traps would still be installed at a density of 60 per hectare. Traps will also be installed on the outside of the TAF to catch any GCN coming to the ponds from the habitats within 250m for which trapping is not proposed. As per the requirements of Licencing Policy 1, greater benefit to the local population would be achieved through the creation of additional non-GCN ponds and habitat which would provide a direct link this population and Metapopulation N01, benefiting the location population. Any animals captured would be released at the receptor site within Mitigation Area HC27.

As, small numbers of GCN were recorded at P216N (peak count = 1) and P222N (peak count = 5), and P467N is included within this population on a precautionary, trapping effort is proposed to be reduced to 30 days with pitfall traps installed at a density of 30 per hectare. Any animals captured would be released at the receptor site within PS27.

Drift fencing as well as areas of the TAF, for which trapping will be undertaken, would only remain in place until construction activities require its removal (i.e. it would be removed when development commences in that area). The TAF adjacent to P001N, show as exclusion only fencing on Figure D, will be used to create a barrier during construction, remaining in place for the duration of construction. This fencing will be removed once construction works are complete.

Ponds P216N and P222N, which would be lost as part of the Project, would be subject to nightly funnel trapping and dip netting for a minimum of 60 days before being drained down (as per EN, 2001). Where possible, ring fencing and trapping of the ponds would be undertaken at a least impacting time of year (i.e. ring fence before the breeding season and drain down late in the year). Any animals captured would be released into the receptor site within Mitigation Area HC27. Ring fencing would only remain in place until construction activities require its removal (i.e. it would be removed when development commences in that area).

Habitat manipulation is proposed (i.e. using Licencing Policy 1), as opposed to conventional capture and relocation methods, within boundary features (i.e. hedgerow and verge) associated with the sections of Station Road within 250m of the ponds.

Mitigation Area HC27 would be created 400m to the west of P001N creating connectivity between existing populations. All captured animals would be released within this area. If habitat is not yet established, animals will be released into the existing area of continuous scrub within Receptor Area

PS27, indicated on Figure E2. Mitigation Area HC27 is 21.67 ha. Habitat creation and enhancement would be implemented to create an open mosaic habitat of rough grassland and scrub.

To mitigate for the loss of terrestrial and aquatic habitats during construction, habitat creation within Mitigation Area HC27 would be undertaken, which currently comprises intensively managed arable fields (sub-optimal for GCN). The grassland would be left to rough up and new GCN ponds would be excavated along with the creation of an additional ponds to offset the loss of the other non-GCN ponds close to P216N and P222N. Hibernacula and refugia would also be created which would benefit the population in a mainly arable landscape.

## E5 Post-development Site Safeguard

### E5.1 Habitat management & maintenance

The below table relates to habitat management and maintenance for Mitigation Area HC27. More detail is provided in section 6.4 of the outline Landscape and Ecology Management Plan (oLEMP) (Application Document 6.7). The areas of landscape planting adjacent to the road will be managed, although, not specifically for GCN.

| <b>Habitat management operations</b>   |          |
|--|----------|
| Aquatic vegetation management in water bodies                                    | Yes      |
| Clearance of shading tree or scrub cover around pond margins                     | Yes      |
| Mowing, cutting or grazing of grassland  | Yes      |
| Desilting and clearance of leaf-fall   | Yes      |
| Woodland and scrub management  | Yes      |
| Other (state below)  | Yes      |
| Management of refugia and hibernacula  |          |
| <b>Site management operations</b>  |          |
| Checking for fish presence, and removal through appropriate methods              | Yes      |
| Checking pond condition and remedial action as required                          | Yes      |
| Checking for and removal of dumped rubbish                                       | Yes      |
| Reinstatement following fire, acute pollution or other major damage              | Yes      |
| Repair or replace fences   | No       |
| Maintain tunnel, underpass, guide fencing in good condition                      | No       |
| Repair or replace interpretation boards  | No       |
| Other (state below)  | Yes      |
| Management of refugia and hibernacula  |          |
| State the period for which habitat management and maintenance plan will continue | 30 years |

### E5.2 Post-development Population Monitoring

Post-development population monitoring is proposed at P001N, HC27\_P1, HC27\_P2, HC27\_P3, HC27\_P4, HC27\_P5, HC27\_P6, HC27\_P7, HC27\_P8, HC27\_P9 and HC27\_P10 comprising population size class assessments for six years.

## Metapopulation N04

Ponds P023N, P051N, P135N, P307N and P411N (Assumed medium population)

### E1 The Mitigation Solution

Mitigation in the vicinity of Metapopulation N04 would comprise habitat manipulation. Any captured animals would be released at Receptor Sites PS21 and PS22 (within the core zone of this metapopulation).



**E2 Receptor Site Selection**

**E2.1 Existing GCN status at receptor site(s)**

Great crested newts present; small population size class

**E2.2 Survey information for receptor site if different from the survey for the application proposal.**

Same as application proposal

**E2.3 Receptor site locations**

| Site name | OS grid ref<br>eg AB12345678 | Administration area - if<br>different from development<br>site | Distance<br>from<br>development<br>site (m). |
|-----------|------------------------------|--|--|
| PS21      | TQ 63268 82000               | Essex  | Adjacent                                     |
| PS22      | TQ 63285 81883               | Essex  | Adjacent                                     |

**E2.4 Receptor site(s): ownership and land status.**

| Site name | Site Ownership      | Conservation<br>Designation? |
|-----------|---------------------|------------------------------|
| PS21      | Return to landowner | No                           |
| PS22      | Return to landowner | No                           |

**E2.5 Receptor site: habitat description, size (ha) & adjacent land use.**

| Site name | Habitat description | Size (ha) | Adjacent<br>Land Use |
|-----------|---------------------|-----------|----------------------|
| PS21      | Hedgerow            | 0.03      | Arable               |
| PS22      | Hedgerow            | 0.06      | Arable               |

**E3 Habitat Creation, Restoration and/or Enhancement**

| Aquatic<br>habitat | Impacts |        |                                 | Compensation                           |        |                                 |
|--------------------|---------|--------|---------------------------------|--|--------|---------------------------------|
|                    | Effect  | Number | Total Area<br>(m <sup>2</sup> ) | Measure                                | Number | Total Area<br>(m <sup>2</sup> ) |
| GCN ponds          | Lost    | 0      | 0                               | Created                                | 0      | 0                               |
|                    | Damaged | 0      | 0                               | Restored /<br>reinstated /<br>enhanced | 0      | 0                               |

| Terrestrial habitat | Impacts        |              | Compensation   |                                  |
|---------------------|----------------|--------------|--|----------------------------------|
|                     | Area lost (ha) |              | Area gained (ha)   |                                  |
|                     | Permanent      | Temporary    | Suitable GCN habitat created within the wider landscaping design | Restored / reinstated / enhanced |
| Core                | 0              | 0.22         | 0  | 0.22                             |
| Intermediate        | 0.33           | 9.10         | 0.33   | 9.10                             |
| Distant             | 16.64          | 10.41        | 5.21   | 10.41                            |
| <b>Totals</b>       | <b>16.97</b>   | <b>19.73</b> | <b>5.54</b>  | <b>19.73</b>                     |

### E3.1 Creation, restoration and/or enhancement of aquatic habitats

No aquatic habitat creation is proposed for Metapopulation N04.

### E3.2 Terrestrial Habitat Measures

|                                     | Number/area (ha)/length** |                                  |
|-------------------------------------|---------------------------|----------------------------------|
|                                     | Created                   | Reinstated / Restored / Enhanced |
| Hedgerow planting                   | 1200.93m                  | 1078.08m                         |
| Grassland re-seeding                | 3.88                      | 0.85                             |
| Grassland management (just for GCN) | 0                         | 0                                |
| Scrub planting                      | 0.61                      | 0.02                             |
| Woodland planting                   | 0.72                      | 0.36                             |
| Arable                              | 0                         | 18.27                            |
| Wetland creation                    | 0.34                      | 0                                |
| Tall herb and fern                  | 0                         | 0.01                             |
| Gardens/allotments                  | 0                         | 0.21                             |
| Hibernacula creation*               | 0                         | 0                                |
| Refuge creation                     | 0                         | 0                                |

The Project will result in the overall permanent loss of 16.97 ha of predominately arable land due to the new road alignment, the majority of which is located in the distant zone. The habitat that will be newly created however (grassland, scrub and woodland), is considered to be of higher quality for GCN. An additional 1200.93m of hedgerow would also be planted within the vicinity of the ponds.

### E3.3 Integration of roads and other hard landscapes

No impact requiring mitigation comprising integration with the road or other hard landscapes has been anticipated and therefore no further mitigation has been proposed.

#### E4 Capture, Exclusion & Translocation

|  | Use method?<br>Yes/no | Minimum capture<br>effort (days) |
|--|-----------------------|----------------------------------|
| At pond: bottle-trap, net, hand search &/or drain down | No                    |                                  |
| At pond: ring-fence, pitfall trap (+ fence & refuges)  | No                    |                                  |
| Away from pond: hand search                            | Yes                   | 2 days                           |
| Away from pond: destructive search                     | Yes                   | 2 days                           |
| Away from pond: fence, pitfall trap (& refuges)        | No                    |                                  |
| Away from pond: night search                           | No                    |                                  |
| Away from pond: exclusion fence only                   | No                    |                                  |

The majority of habitats within the Site Boundary associated with this metapopulation are intensively managed arable fields and are considered to be of negligible value to GCN. The small section of hedgerow between pond P023N and the other ponds, and the area of woodland to the south of the ponds proposed for temporary removal would only be removed following habitat manipulation. Any captured animals would be released within the retained hedgerow at Receptor Sites PS21 and PS22.

#### E5 Post-development Site Safeguard

##### E5.1 Habitat management & maintenance

Most of the lost habitats will be reinstated and returned to landowner. The areas of landscape planting adjacent to the road will be managed however, not specifically for GCN.

| <b>Habitat management operations</b>   |             |
|--|-------------|
| Aquatic vegetation management in water bodies                                    | No          |
| Clearance of shading tree or scrub cover around pond margins                     | No          |
| Mowing, cutting or grazing of grassland  | Yes         |
| Desilting and clearance of leaf-fall   | No          |
| Woodland and scrub management  | No          |
| Other (state below)  | No          |
| <b>Site management operations</b>  |             |
| Checking for fish presence, and removal through appropriate methods              | No          |
| Checking pond condition and remedial action as required                          | No          |
| Checking for and removal of dumped rubbish                                       | No          |
| Reinstatement following fire, acute pollution, or other major damage             | No          |
| Repair or replace fences   | No          |
| Maintain tunnel, underpass, guide fencing in good condition                      | No          |
| Repair or replace interpretation boards  | No          |
| Other (state below)  | No          |
| State the period for which habitat management and maintenance plan will continue | 30<br>years |

##### E5.2 Post-development Population Monitoring

No post-development population monitoring is proposed for Metapopulation N04.

### Metapopulation N05

Ponds P045N and P116N (Small population)

#### E1 The Mitigation Solution

Mitigation in the vicinity of Metapopulation N05 would comprise habitat manipulation. Any captured animals would be released at Mitigation Area HC15 or Receptor Area PS30 (within the core zone of this metapopulation).

#### E2 Receptor Site Selection

##### E2.1 Existing GCN status at receptor site(s)

HC15 Great crested newt present; small population size  
 PS30 Great crested newt present; small population size

##### E2.2 Survey information for receptor site if different from the survey for the application proposal.

Same as application proposal

##### E2.3 Receptor site locations

| Site name | OS grid ref<br>eg AB12345678 | Administration area - if<br>different from development<br>site | Distance<br>from<br>development<br>site (m). |
|-----------|------------------------------|--|--|
| HC15      | TQ 61986 82556               | Essex  | Adjacent                                     |

##### E2.4 Receptor site(s): ownership and land status.

| Site name | Site Ownership    | Conservation<br>Designation? |
|-----------|-------------------|------------------------------|
| HC15      | National Highways | No                           |

##### E2.5 Receptor site: habitat description, size (ha) & adjacent land use.

| Site name | Habitat description   | Size (ha) | Adjacent<br>Land Use |
|-----------|---|-----------|----------------------|
| HC15      | Currently arable land use. An open mosaic of grassland, woodland, scrub, banks, ditches and refuse piles will be created, with ponds. | 15.92     | Arable               |

#### E3 Habitat Creation, Restoration and/or Enhancement

| Aquatic<br>habitat | Impacts |        |                                 | Compensation                           |        |                                 |
|--------------------|---------|--------|---------------------------------|--|--------|---------------------------------|
|                    | Effect  | Number | Total Area<br>(m <sup>2</sup> ) | Measure                                | Number | Total Area<br>(m <sup>2</sup> ) |
| GCN ponds          | Lost    | 0      | 0                               | Created                                | 0      | 0                               |
|                    | Damaged | 0      | 0                               | Restored /<br>reinstated /<br>enhanced | 0      | 0                               |

| Terrestrial habitat | Impacts        |              | Compensation   |                                    |                                  |
|---------------------|----------------|--------------|--|------------------------------------|----------------------------------|
|                     | Area lost (ha) |              | Area gained (ha)   |                                    |                                  |
|                     | Permanent      | Temporary    | Suitable GCN habitat created within the wider landscaping design | Created for bespoke GCN Mitigation | Restored / reinstated / enhanced |
| Core                | 0.39           | 0.98         | 0  | 0.38                               | 0.97                             |
| Intermediate        | 16.03          | 17.74        | 3.5  | 9.41                               | 17.73                            |
| Distant             | 29.07          | 20.16        | 6.04   | 5.94                               | 20.16                            |
| <b>Totals</b>       | <b>45.49</b>   | <b>38.88</b> | <b>9.54</b>  | <b>15.73</b>                       | <b>38.86</b>                     |

### E3.1 Creation, restoration and/or enhancement of aquatic habitats

#### GCN Mitigation Ponds

No GCN mitigation pond creation is proposed for Metapopulation N05. However, to offset the loss of non-GCN ponds along the scheme, four new ponds are proposed within Mitigation Area HC15, which could then be utilised by foraging/breeding GCN.

#### Non-GCN pond creation

| Pond reference | Surface Area (m <sup>2</sup> ) | Max. Depth (m) | Design / enhancement measures and location |
|----------------|--------------------------------|----------------|--|
| HC15_P1        | 500                            | 1.5            | New Pond in Mitigation Area HC15           |
| HC15_P2        | 750                            | 2.5            | New Pond in Mitigation Area HC15           |
| HC15_P3        | 300                            | 1.5            | New Pond in Mitigation Area HC15           |
| HC15_P4        | 300                            | 1.5            | New Pond in Mitigation Area HC15           |

### E3.2 Terrestrial Habitat Measures

|                                      | Number/area (ha)/length** |                                  |
|--------------------------------------|---------------------------|----------------------------------|
|                                      | Created                   | Reinstated / Restored / Enhanced |
| Hedgerow planting                    | 255.71m                   | 412.28m                          |
| Grassland re-seeding                 | 4.11                      | 0                                |
| Grassland management (just for GCN)  | 0                         | 0                                |
| Scrub planting                       | 0.10                      | 0                                |
| Woodland planting                    | 0.83                      | 0.58                             |
| Arable                               | 0                         | 38.28                            |
| Open mosaic (bespoke GCN mitigation) | 15.72                     | 0                                |
| Wetland creation                     | 4.25                      | 0                                |

|                       | Number/area (ha)/length** |                                  |
|-----------------------|---------------------------|----------------------------------|
|                       | Created                   | Reinstated / Restored / Enhanced |
| Hibernacula creation* | 3                         | 0                                |
| Refuge creation       | 3                         | 0                                |

The Project will result in the overall permanent loss of 45.49 ha of predominately arable land due to the new road alignment, the majority of which is located in the distant zone. The habitat that will be newly created however (grassland, scrub and woodland), is considered to be of higher quality for GCN. An additional 255.71m of hedgerow would also be planted within the vicinity of the ponds.

### E3.3 Integration of roads and other hard landscapes

No impact requiring mitigation comprising integration with the road or other hard landscapes has been anticipated and therefore no further mitigation has been proposed.

### E4 Capture, Exclusion & Translocation

|  | Use method?<br>Yes/no | Minimum capture effort (days) |
|--|-----------------------|-------------------------------|
| At pond: bottle-trap, net, hand search &/or drain down | No                    |                               |
| At pond: ring-fence, pitfall trap (+ fence & refuges)  | No                    |                               |
| Away from pond: hand search                            | Yes                   | 5 days                        |
| Away from pond: destructive search                     | Yes                   | 5 days                        |
| Away from pond: fence, pitfall trap (& refuges)        | No                    |                               |
| Away from pond: night search                           | No                    |                               |
| Away from pond: exclusion fence only                   | No                    |                               |

The majority of habitats within the Site Boundary associated with this metapopulation are intensively managed arable fields and are considered to be of negligible value to GCN. The hedgerows within the intermediate and distant zones will be largely retained. Habitat manipulation using Licensing Policy 1 is proposed as opposed to conventional capture and relocation methods within the sections of hedgerow requiring removal. As per the requirements for Licensing Policy 1, a greater benefit to the local population would be achieved through the creation of four additional non-GCN ponds will be created within Mitigation Area HC15. Any captured animals would be released within Mitigation Area HC15, if habitats have established, or adjacent to P045N.

### E5 Post-development Site Safeguard

#### E5.1 Habitat management & maintenance

The below table relates to habitat management and maintenance for Mitigation Area HC15. More detail is provided in Section 7.5 of the oLEMP (Application Document 6.7). The areas of landscape planting adjacent to the road will be managed, although, not specifically for GCN.

| Habitat management operations                                |     |
|--|-----|
| Aquatic vegetation management in water bodies                | Yes |
| Clearance of shading tree or scrub cover around pond margins | Yes |
| Mowing, cutting or grazing of grassland                      | Yes |
| Desilting and clearance of leaf-fall                         | Yes |
| Woodland and scrub management                                | Yes |
| Other (state below)  | Yes |

|  |          |
|--|----------|
| <b>Management of refugia and hibernacula</b>                                     |          |
| <b>Site management operations</b>  |          |
| Checking for fish presence, and removal through appropriate methods              | Yes      |
| Checking pond condition and remedial action as required                          | Yes      |
| Checking for and removal of dumped rubbish                                       | Yes      |
| Reinstatement following fire, acute pollution or other major damage              | Yes      |
| Repair or replace fences   | No       |
| Maintain tunnel, underpass, guide fencing in good condition                      | No       |
| Repair or replace interpretation boards  | No       |
| Other (state below)  | Yes      |
| <b>Management of refugia and hibernacula</b>                                     |          |
| State the period for which habitat management and maintenance plan will continue | 30 years |

**E5.2 Post-development Population Monitoring**

Post-development population monitoring is proposed at P045N, P116N, HC15\_P1, HC15\_P2, HC15\_P3, HC15\_P4, HC15\_P5 and HC15\_P6 comprising population size class assessments for two years.

**Metapopulation N07**

Ponds P075N, P076N, P077N, P079N, P095N, P096N and P197N (Assumed large population)

**E1 The Mitigation Solution**

Mitigation for Metapopulation N07 would comprise conventional capture and relocation of GCN as well as habitat manipulation, where appropriate. Any animals captured would be released into Receptor Area PS03 (within the intermediate zone of this metapopulation). Although the number of GCN in PS03 is unknown, it connects into suitable habitat within the wider landscape, and is therefore a suitable location for animals to disperse away from the construction site. Refugia will be created within 250m of the existing ponds.

**E2 Receptor Site Selection**

**E2.1 Existing GCN status at receptor site(s)**

Great crested newts present; abundance unknown

**E2.2 Survey information for receptor site if different from the survey for the application proposal.**

Same as application proposal

**E2.3 Receptor site locations**

| Site name | OS grid ref<br>eg AB12345678 | Administration area - if<br>different from development<br>site | Distance<br>from<br>development<br>site (m). |
|-----------|------------------------------|--|--|
| PS03      | TQ 61305 83549               | Essex  | Adjacent                                     |

**E2.4 Receptor site(s): ownership and land status.**

|           |                     |                           |
|-----------|---------------------|---------------------------|
| Site name | Site Ownership      | Conservation Designation? |
| PS03      | Return to landowner | No                        |

**E2.5** Receptor site: habitat description, size (ha) & adjacent land use.

|           |                     |           |                          |
|-----------|---------------------|-----------|--------------------------|
| Site name | Habitat description | Size (ha) | Adjacent Land Use        |
| PS03      | Woodland            | 1.25      | Arable and landfill site |

**E3** Habitat Creation, Restoration and/or Enhancement

| Aquatic habitat | Impacts |        |                              | Compensation                     |        |                              |
|-----------------|---------|--------|------------------------------|----------------------------------|--------|------------------------------|
|                 | Effect  | Number | Total Area (m <sup>2</sup> ) | Measure                          | Number | Total Area (m <sup>2</sup> ) |
| GCN ponds       | Lost    | 0      | 0                            | Created                          | 0      | 0                            |
|                 | Damaged | 0      | 0                            | Restored / reinstated / enhanced | 0      | 0                            |

| Terrestrial habitat | Impacts        |             | Compensation   |   |                                  |
|---------------------|----------------|-------------|--|---|----------------------------------|
|                     | Area lost (ha) |             | Area gained (ha)   |   |                                  |
|                     | Permanent      | Temporary   | Suitable GCN habitat created within the wider landscaping design | Created/reinstated for bespoke GCN Mitigation | Restored / reinstated / enhanced |
| Core                | 0              | 1.29        | 0  | 0   | 1.29                             |
| Intermediate        | 6.98           | 2.31        | 3.02   | 0   | 2.31                             |
| Distant             | 24.75          | 2.65        | 2.39   | 3.38  | 2.65                             |
| <b>Totals</b>       | <b>31.73</b>   | <b>6.25</b> | <b>5.41</b>  | <b>3.38</b>                                   | <b>6.25</b>                      |

**E3.1** Creation, restoration and/or enhancement of aquatic habitats

No aquatic habitat creation is proposed for Metapopulation N07.

**E3.2** Terrestrial Habitat Measures

|                   | Number/area (ha)/length** |                                  |
|-------------------|---------------------------|----------------------------------|
|                   | Created                   | Reinstated / Restored / Enhanced |
| Hedgerow planting | 0                         | 2.21m                            |



|                                     |      |      |
|-------------------------------------|------|------|
| Grassland re-seeding                | 2.54 | 3.35 |
| Grassland management (just for GCN) | 3.38 | 0    |
| Scrub planting                      | 0.53 | 0.07 |
| Woodland planting                   | 1.33 | 0.66 |
| Wetland creation                    | 1.02 | 0    |
| Arable                              | 0    | 2.12 |
| Tall ruderal and fern               | 0    | 0.05 |
| Hibernacula creation*               | 0    | 0    |
| Refuge creation                     | 2    | 0    |

The Project will result in the overall permanent loss of 31.73 ha of predominately arable land due to the new road alignment, the majority of which is located in the distant zone. The habitat that will be newly created however (grassland, scrub and woodland), is considered to be of higher quality for GCN, including 3.38ha of grassland specifically managed for GCN.

### E3.3 Integration of roads and other hard landscapes

No impact requiring mitigation comprising integration with the road or other hard landscapes has been anticipated and therefore no further mitigation has been proposed.

### E4 Capture, Exclusion & Translocation

|  | Use method?<br>Yes/no | Minimum capture effort (days) |
|--|-----------------------|-------------------------------|
| At pond: bottle-trap, net, hand search &/or drain down | No                    |                               |
| At pond: ring-fence, pitfall trap (+ fence & refuges)  | No                    |                               |
| Away from pond: hand search                            | Yes                   | 5 days                        |
| Away from pond: destructive search                     | Yes                   | 5 days                        |
| Away from pond: fence, pitfall trap (& refuges)        | Yes                   | 60                            |
| Away from pond: night search                           | Yes                   | 60                            |
| Away from pond: exclusion fence only                   | Yes                   |                               |

TAF and drift fencing would be installed within the large area of rough grassland, woodland and scrub to the north-east of P079N. Although a large population has been assumed across these ponds, P079N has a medium population present and as such, the area would be trapped out for 60 days at a density of 80 traps per ha as per EN, 2001. Any animal captures would be released into Receptor Area PS03. Additional exclusion fencing will be installed to the east of the ponds to create a barrier between construction works and the population.

Drift fencing as well as some areas of the TAF would only remain in place until construction activities require its removal (i.e. it would be removed when development commences in that area). All TAF and exclusion fencing located adjacent to the site boundary will be used to create a barrier during construction, remaining in place for the duration of construction. This fencing will be removed once construction works are complete.

Most of the remaining habitat within 500m of the ponds comprise intensively managed arable fields. Habitat manipulation would be undertaken within the small areas of hedgerow and scrub proposed to be lost as part of the new road proposals within 500m of the ponds. Habitat manipulation will be undertaken before any exclusion fencing is installed to allow animals to return to the ponds. Any animal captures would be released into Receptor Area PS03.

## E5 Post-development Site Safeguard

### E5.1 Habitat management & maintenance

Most of the lost habitats will be reinstated and returned to landowner. An area of grassland retained by NH will be managed specifically for GCN. The areas of landscape planting adjacent to the road will be managed however, not specifically for GCN.

| <b>Habitat management operations</b>   |          |
|--|----------|
| Aquatic vegetation management in water bodies                                    | No       |
| Clearance of shading tree or scrub cover around pond margins                     | No       |
| Mowing, cutting or grazing of grassland  | Yes      |
| Desilting and clearance of leaf-fall   | No       |
| Woodland and scrub management  | No       |
| Other (state below)  | Yes      |
| Management of refugia and hibernacula  |          |
| <b>Site management operations</b>  |          |
| Checking for fish presence, and removal through appropriate methods              | No       |
| Checking pond condition and remedial action as required                          | No       |
| Checking for and removal of dumped rubbish                                       | No       |
| Reinstatement following fire, acute pollution or other major damage              | No       |
| Repair or replace fences   | No       |
| Maintain tunnel, underpass, guide fencing in good condition                      | No       |
| Repair or replace interpretation boards  | No       |
| Other (state below)  | Yes      |
| Management of refugia and hibernacula  |          |
| State the period for which habitat management and maintenance plan will continue | 30 years |

### E5.2 Post-development Population Monitoring

Post-development population monitoring is proposed at P075N, P076N, P077N, P079N, P095N, P096N and P197N comprising population size class assessments for six years.

## Metapopulation N09

Ponds P317N, P319N and P321N (Assumed medium population)

### E1 The Mitigation Solution

Mitigation in the vicinity of Metapopulation N09 would comprise habitat manipulation. Any animal captures would be released into the retained hedgerows at Receptor Site PS19 or PS34 (within the intermediate zone of this metapopulation). Although the abundance of GCN is not known within either PS19 or PS34, the area of translocation is small and it is unlikely a large amount of GCN will be translocated. In addition, these areas connect into the wider landscape and will allow animals to disperse away from the construction area.

The overhead line works are currently not finalised; however, the works are considered to be less than currently shown within this licence as this is based on worst case scenario. Once the works have been determined, a refined mitigation strategy, with fencing if appropriate, will be submitted for the final licence.

## E2 Receptor Site Selection

### E2.1 Existing GCN status at receptor site(s)

Great crested newts present; abundance unknown

### E2.2 Survey information for receptor site if different from the survey for the application proposal.

Same as application proposal

### E2.3 Receptor site locations

| Site name | OS grid ref<br>eg AB12345678 | Administration area - if<br>different from development<br>site | Distance<br>from<br>development<br>site (m). |
|-----------|------------------------------|--|--|
| PS19      | TQ 60041 84963               | Essex  | Adjacent                                     |
| PS34      | TQ 60952 84998               | Essex  | Adjacent                                     |

### E2.4 Receptor site(s): ownership and land status.

| Site name | Site Ownership        | Conservation<br>Designation? |
|-----------|-----------------------|------------------------------|
| PS19      | Returned to landowner | No                           |
| PS34      | Returned to landowner | No                           |

### E2.5 Receptor site: habitat description, size (ha) & adjacent land use.

| Site name | Habitat description        | Size (ha) | Adjacent<br>Land Use |
|-----------|----------------------------|-----------|----------------------|
| PS19      | Recreational (golf course) | 0.09      | Arable               |
| PS34      | Recreational (golf course) | 0.12      | Arable               |

## E3 Habitat Creation, Restoration and/or Enhancement

| Aquatic<br>habitat | Impacts |        |                                 | Compensation                           |        |                                 |
|--------------------|---------|--------|---------------------------------|--|--------|---------------------------------|
|                    | Effect  | Number | Total Area<br>(m <sup>2</sup> ) | Measure                                | Number | Total Area<br>(m <sup>2</sup> ) |
| GCN ponds          | Lost    | 0      | 0                               | Created                                | 0      | 0                               |
|                    | Damaged | 0      | 0                               | Restored /<br>reinstated /<br>enhanced | 0      | 0                               |

| Terrestrial habitat | Impacts        |           | Compensation   |                                  |
|---------------------|----------------|-----------|--|----------------------------------|
|                     | Area lost (ha) |           | Area gained (ha)   |                                  |
|                     | Permanent      | Temporary | Suitable GCN habitat created within the wider landscaping design | Restored / reinstated / enhanced |
| Core                | 0              | 0         | 0  | 0                                |
| Intermediate        | 0.01           | 1.45      | 0  | 1.45                             |
| Distant             | 0.02           | 4.84      | 0  | 4.84                             |
| <b>Totals</b>       | 0.03           | 6.29      | 0  | 6.29                             |

### E3.1 Creation, restoration and/or enhancement of aquatic habitats

No aquatic habitat creation is proposed for Metapopulation N09.

### E3.2 Terrestrial Habitat Measures

|                                     | Number/area (ha)/length** |                                  |
|-------------------------------------|---------------------------|----------------------------------|
|                                     | Created                   | Reinstated / Restored / Enhanced |
| Hedgerow planting                   | 0                         | 0                                |
| Grassland re-seeding                | 0                         | 1.45                             |
| Grassland management (just for GCN) | 0                         | 0                                |
| Scrub planting                      | 0                         | 0                                |
| Woodland planting                   | 0                         | 0                                |
| Arable                              | 0                         | 4.84                             |
| Hibernacula creation*               | 0                         | 0                                |
| Refuge creation                     | 0                         | 0                                |

All temporary habitat loss will be reinstated. Therefore, only a minor (0.03ha) amount of permanent habitat loss would occur in the intermediate or distant zone of metapopulation N09.

### E3.3 Integration of roads and other hard landscapes

Metapopulation N09 is over 500m from the proposed carriageway and any other permanent works with no fragmentation or barriers to movement anticipated. As such, there would be little risk of injury and mortality of GCN due to additional integrations with roads or other hard surfaces.

### E4 Capture, Exclusion & Translocation

|  | Use method?<br>Yes/no | Minimum capture effort<br>(days) |
|--|-----------------------|----------------------------------|
| At pond: bottle-trap, net, hand search &/or drain down | No                    |                                  |

|   |     |        |
|---|-----|--------|
| At pond: ring-fence, pitfall trap (+ fence & refuges) | No  |        |
| Away from pond: hand search                           | Yes | 2 days |
| Away from pond: destructive search                    | Yes | 2 days |
| Away from pond: fence, pitfall trap (& refuges)       | No  |        |
| Away from pond: night search                          | No  |        |
| Away from pond: exclusion fence only                  | No  |        |

Habitat manipulation would be undertaken within suitable habitat proposed for removal within 250m of the GCN ponds associated with Metapopulation N09, as the perceived importance of the habitats due to be removed in this area is low, and habitat removal is small scale. Any animal captures would be released back into the existing hedgerow at Receptor Area PS19 or PS34.

## E5 Post-development Site Safeguard

### E5.1 Habitat management & maintenance

All the habitats within 500m of the population will be reinstated and returned to the landowner.

| <b>Habitat management operations</b>   |  |    |
|--|--|----|
| Aquatic vegetation management in water bodies                                    |  | No |
| Clearance of shading tree or scrub cover around pond margins                     |  | No |
| Mowing, cutting or grazing of grassland  |  | No |
| Desilting and clearance of leaf-fall   |  | No |
| Woodland and scrub management  |  | No |
| Other (state below)  |  | No |
| <b>Site management operations</b>  |  |    |
| Checking for fish presence, and removal through appropriate methods              |  | No |
| Checking pond condition and remedial action as required                          |  | No |
| Checking for and removal of dumped rubbish                                       |  | No |
| Reinstatement following fire, acute pollution or other major damage              |  | No |
| Repair or replace fences   |  | No |
| Maintain tunnel, underpass, guide fencing in good condition                      |  | No |
| Repair or replace interpretation boards  |  | No |
| Other (state below)  |  | No |
| State the period for which habitat management and maintenance plan will continue |  |    |

### E5.2 Post-development Population Monitoring

No post-development monitoring is proposed for population N09.

## Metapopulation N10

Ponds P206N and P137N (Large population)

### E1 The Mitigation Solution

Mitigation for the Metapopulation N10 would comprise conventional capture and relocation. Any animals captured would be released at Receptor Area PS24 or within Mitigation Area NC09 (within the intermediate zone of this metapopulation), which will comprise woodland planting as well as pond,

hibernaculum and refugia creation. Most of the habitats within this area would be reinstated after construction.

## E2 Receptor Site Selection

### E2.1 Existing GCN status at receptor site(s)

PS24 - Great crested newts present; large population size class  
 HC09 – Great crested newts present; large population size class

### E2.2 Survey information for receptor site if different from the survey for the application proposal.

Same as application proposal

### E2.3 Receptor site locations

| Site name | OS grid ref<br>eg AB12345678 | Administration area - if<br>different from development<br>site | Distance<br>from<br>development<br>site (m). |
|-----------|------------------------------|--|--|
| PS24      | TQ 58262 85932               | Essex  | Adjacent                                     |
| HC09      | TQ 58040 85431               | Essex  | Adjacent                                     |

### E2.4 Receptor site(s): ownership and land status.

| Site name | Site Ownership      | Conservation<br>Designation? |
|-----------|---------------------|------------------------------|
| PS24      | Return to landowner | No                           |
| HC09      | National Highways   | No                           |

### E2.5 Receptor site: habitat description, size (ha) & adjacent land use.

| Site name | Habitat description  | Size (ha) | Adjacent<br>Land Use             |
|-----------|--|-----------|----------------------------------|
| PS24      | Rough grassland  | 0.13      | Community<br>woodland            |
| HC09      | Currently arable land use. This area will<br>be predominantly woodland with ponds. | 11.85     | Arable,<br>community<br>woodland |

## E3 Habitat Creation, Restoration and/or Enhancement

| Aquatic<br>habitat | Impacts |        |                                 | Compensation                           |        |                                 |
|--------------------|---------|--------|---------------------------------|--|--------|---------------------------------|
|                    | Effect  | Number | Total Area<br>(m <sup>2</sup> ) | Measure                                | Number | Total Area<br>(m <sup>2</sup> ) |
| GCN ponds          | Lost    | 0      | 0                               | Created                                | 0      | 0                               |
|                    | Damaged | 0      | 0                               | Restored /<br>reinstated /<br>enhanced | 0      | 0                               |

| Terrestrial habitat | Impacts        |             | Compensation   |                                    |                                  |
|---------------------|----------------|-------------|--|------------------------------------|----------------------------------|
|                     | Area lost (ha) |             | Area gained (ha)   |                                    |                                  |
|                     | Permanent      | Temporary   | Suitable GCN habitat created within the wider landscaping design | Created for bespoke GCN Mitigation | Restored / reinstated / enhanced |
| Core                | 0              | 0           | 0  | 0                                  | 0                                |
| Intermediate        | 7.58           | 2.03        | 5.4  | 1.18                               | 2.03                             |
| Distant             | 15.22          | 0.05        | 3.61   | 6.11                               | 0.05                             |
| <b>Totals</b>       | <b>22.80</b>   | <b>2.08</b> | <b>7.84</b>  | <b>7.28</b>                        | <b>2.08</b>                      |

### E3.1 Creation, restoration and/or enhancement of aquatic habitats

#### GCN Mitigation Ponds

No GCN mitigation pond creation is proposed for Metapopulation N10. However, to offset the loss of non-GCN ponds along the scheme, two new ponds are proposed within Mitigation Area HC09, which could be utilised by foraging/breeding GCN.

#### Non-GCN pond creation

| Pond reference | Surface Area (m <sup>2</sup> ) | Max. Depth (m) | Design / enhancement measures and location |
|----------------|--------------------------------|----------------|--|
| HC09_P1        | 500                            | 1.5            | Situated within Receptor Site HC09         |
| HC09_P2        | 600                            | 1.5            | Situated within Receptor Site HC09         |

### E3.2 Terrestrial Habitat Measures

|  | Number/area (ha)/length** |                                  |
|--|---------------------------|----------------------------------|
|  | Created                   | Reinstated / Restored / Enhanced |
| Hedgerow planting  | 0                         | 67.67m                           |
| Grassland re-seeding   | 2.66                      | 1.92                             |
| Grassland management (just for GCN)  | 0                         | 0                                |
| Scrub planting   | 0                         | 0.01                             |
| Woodland planting (including a mosaic of woodland, woodland edge and open grassland) | 12.46                     | 0.09                             |
| Tall ruderal and fern  | 0                         | 0.07                             |
| Arable   | 0                         | 0                                |
| Hibernacula creation*  | 2                         | 0                                |
| Refuge creation  | 4                         | 0                                |

Although Mitigation Area HC09 is currently proposed as woodland only, the landscape shall be a mosaic of woodland, woodland edge and open grassland, designed in the same character of Thames

Chase Community Woodland. The exact proportion of which will be included within the final licence submission.

The Project will result in the overall permanent loss of 22.80ha of predominately arable land due to the new road alignment, the majority of which is located in the distant zone. The habitat that will be newly created however (woodland, grassland), is considered to be of higher quality for GCN. 7.28ha of mosaic planting of woodland, open grassland, and woodland edge specifically for GCN is also being planted.

### E3.3 Integration of roads and other hard landscapes

No impact is anticipated due to the widening of the road and as such, no further mitigation is proposed.

### E4 Capture, Exclusion & Translocation

|  | Use method?<br>Yes/no | Minimum capture<br>effort (days) |
|--|-----------------------|----------------------------------|
| At pond: bottle-trap, net, hand search &/or drain down | No                    |                                  |
| At pond: ring-fence, pitfall trap (+ fence & refuges)  | No                    |                                  |
| Away from pond: hand search                            | Yes                   | 7 days                           |
| Away from pond: destructive search                     | Yes                   | 7 days                           |
| Away from pond: fence, pitfall trap (& refuges)        | Yes                   | 90                               |
| Away from pond: night search                           | Yes                   | 90                               |
| Away from pond: exclusion fence only                   | Yes                   |                                  |

TAF and drift fencing would be installed in all areas of the Site that fall within 500m of the ponds containing this population, with the exception of:

- a) The arable fields to the south of the ponds for which woodland planting is proposed, as these are considered to be of negligible value to GCN.
- b) Areas of the soft estate. Although attempts would be made to fence close to the highway, the soft estate is dangerous and the installation/checking of fencing and pitfall traps would involve a high number of people working close to the live carriageway which has H&S implications. Habitat manipulation would be undertaken within these areas within 500m of the ponds.

A large population size class has been recorded for Metapopulation N10 and accordingly, 90 days trapping is proposed with pitfall traps installed at a density of 100 per hectare. Trapping effort would be reduced to 60 days in habitats over 250m from the ponds, although trap density would remain at 100 per hectare. Any animals captured would be released back into Receptor Area PS24 or Mitigation Area HC09, if habitat is established. Fencing adjacent to the soft estate will be trapped on both side of the fence. One-way fencing would be installed where fencing is adjacent to the retained habitat. Additional exclusion fencing will be installed adjacent to Mitigation Area HC09, while works are undertaken within this area, prevent any GCN entering the works area.

Drift fencing would only remain in place until construction activities require its removal (i.e. it would be removed when development commences in that area). The exclusion and one-way fencing would be used to create a barrier during construction, remaining in place for the duration of development. This fencing will be removed following construction.

Habitat manipulation, as opposed to conventional capture and relocation methods, would be undertaken within any habitat loss within 500m of the ponds within the soft estate of the M25, due to health and safety implications, and within the arable fields, as these are perceived to be of low value to GCN. This would be undertaken before fencing has been installed to allow animals to move out of the area.



The majority of the habitat loss is temporary. To mitigate for this loss, new woodland planting is proposed to the south of the ponds within Mitigation Area HC09. To greater benefit the local population, two new ponds along with two hibernacula and four refugia will be created to expand the range of this population.

## E5 Post-development Site Safeguard

### E5.1 Habitat management & maintenance

The below table relates to habitat management and maintenance for Mitigation Area HC09. More detail is provided in section 7.9 of the outline Landscape and Ecology Management Plan (oLEMP) (Application Document 6.7). The majority of the land will be reinstated and returned to the landowner. The areas of landscape planting adjacent to the road will be managed, although, not specifically for GCN.

| <b>Habitat management operations</b>   |          |
|--|----------|
| Aquatic vegetation management in water bodies                                    | Yes      |
| Clearance of shading tree or scrub cover around pond margins                     | Yes      |
| Mowing, cutting or grazing of grassland  | No       |
| Desilting and clearance of leaf-fall   | Yes      |
| Woodland and scrub management  | Yes      |
| Other (state below)  | Yes      |
| Management of refugia and hibernacula  |          |
| <b>Site management operations</b>  |          |
| Checking for fish presence, and removal through appropriate methods              | Yes      |
| Checking pond condition and remedial action as required                          | Yes      |
| Checking for and removal of dumped rubbish                                       | Yes      |
| Reinstatement following fire, acute pollution or other major damage              | Yes      |
| Repair or replace fences   | No       |
| Maintain tunnel, underpass, guide fencing in good condition                      | No       |
| Repair or replace interpretation boards  | No       |
| Other (state below)  | Yes      |
| Management of refugia and hibernacula  |          |
| State the period for which habitat management and maintenance plan will continue | 30 years |

### E5.2 Post-development Population Monitoring

Post-development population monitoring is proposed at P137N, P206N, HC09\_P1 and HC09\_P2 comprising population size class assessments for six years.

## Metapopulation N11/N12

Ponds P166N, P227N, P240N, P241N and P242N (Assumed medium population)

### E1 The Mitigation Solution

Mitigation in the vicinity of Metapopulation N11/N12 would comprise mainly conventional capture and translocation to Mitigation Area HC07 (within the intermediate zone of this metapopulation), which will be created prior to construction. Other mitigation including habitat manipulation would also be undertaken, where appropriate.

Habitat creation at Mitigation Area HC07 would involve management to allow rough grassland and scrub development as well as the creation of four hibernacula and four refugia. In addition to this, two

ponds would be excavated to offset the loss of non-GCN ponds, which although not created as compensation for the loss of GCN ponds, will be created to be suitable for GCN.

## E2 Receptor Site Selection

### E2.1 Existing GCN status at receptor site(s)

Great crested newts absent/highly likely to be absent

### E2.2 Survey information for receptor site if different from the survey for the application proposal.

Same as application proposal

### E2.3 Receptor site locations

| Site name | OS grid ref<br>eg AB12345678 | Administration area - if<br>different from development<br>site | Distance<br>from<br>development<br>site (m). |
|-----------|------------------------------|--|--|
| HC07      | TQ 59124 87003               | Essex  | Adjacent                                     |
| PS40      | TQ 58985 87082               | Essex  | Adjacent                                     |

### E2.4 Receptor site(s): ownership and land status.

| Site name | Site Ownership      | Conservation<br>Designation? |
|-----------|---------------------|------------------------------|
| HC07      | National Highways   | No                           |
| PS40      | Return to landowner | No                           |

### E2.5 Receptor site: habitat description, size (ha) & adjacent land use.

| Site name | Habitat description   | Size (ha) | Adjacent<br>Land Use |
|-----------|---|-----------|----------------------|
| HC07      | Currently arable land use. An open mosaic of grassland, woodland, scrub, banks, ditches and refuse piles will be created. | 4.58      | Arable               |
| PS40      | Currently arable land use. Adjacent to a hedgerow.  | 0.01      | Arable               |

## E3 Habitat Creation, Restoration and/or Enhancement

| Aquatic<br>habitat | Impacts |        |                                 | Compensation                           |        |                                 |
|--------------------|---------|--------|---------------------------------|--|--------|---------------------------------|
|                    | Effect  | Number | Total Area<br>(m <sup>2</sup> ) | Measure                                | Number | Total Area<br>(m <sup>2</sup> ) |
| GCN ponds          | Lost    | 0      | 0                               | Created                                | 0      | 0                               |
|                    | Damaged | 0      | 0                               | Restored /<br>reinstated /<br>enhanced | 0      | 0                               |

| Terrestrial habitat | Impacts        |             | Compensation   |                                    |                                  |
|---------------------|----------------|-------------|--|------------------------------------|----------------------------------|
|                     | Area lost (ha) |             | Area gained (ha)   |                                    |                                  |
|                     | Permanent      | Temporary   | Suitable GCN habitat created within the wider landscaping design | Created for bespoke GCN Mitigation | Restored / reinstated / enhanced |
| Core                | 0.03           | 0.47        | 0.03   | 0                                  | 0.47                             |
| Intermediate        | 5.44           | 3.32        | 1.07   | 4.31                               | 3.32                             |
| Distant             | 2.97           | 3.95        | 2.07   | 0.15                               | 3.95                             |
| <b>Totals</b>       | <b>8.44</b>    | <b>7.74</b> | <b>3.17</b>  | <b>4.47</b>                        | <b>7.74</b>                      |

**E3.1** Creation, restoration and/or enhancement of aquatic habitats

**GCN Mitigation Ponds**

No GCN mitigation pond creation is proposed for Metapopulation N11/N12. However, to offset the loss of non-GCN ponds along the scheme, two new ponds are proposed within Mitigation Area HC07, which could be utilised by foraging/breeding GCN.

**Non-GCN pond creation**

| Pond reference | Surface Area (m <sup>2</sup> ) | Max. Depth (m) | Design / enhancement measures and location |
|----------------|--------------------------------|----------------|--|
| HC07_P1        | 500                            | 1.5            | Situated within Receptor Site HC07         |
| HC07_P2        | 600                            | 1.5            | Situated within Receptor Site HC07         |

**E3.2** Terrestrial Habitat Measures

|                                      | Number/area (ha)/length** |                                  |
|--------------------------------------|---------------------------|----------------------------------|
|                                      | Created                   | Reinstated / Restored / Enhanced |
| Hedgerow planting                    | 30.11m                    | 896.84m                          |
| Grassland re-seeding                 | 2.18                      | 5.93                             |
| Grassland management (just for GCN)  | 0                         | 0                                |
| Scrub planting                       | 0.83                      | 0.14                             |
| Woodland planting                    | 0                         | 0.11                             |
| Tall ruderal and fern                | 0                         | 0.01                             |
| Arable                               | 0                         | 1.08                             |
| Wetland creation                     | 0.16                      | 0.01                             |
| Caravan site                         | 0                         | 0.46                             |
| Open mosaic (bespoke GCN mitigation) | 4.47                      | 0                                |

|                       | Number/area (ha)/length** |                                  |
|-----------------------|---------------------------|----------------------------------|
|                       | Created                   | Reinstated / Restored / Enhanced |
| Hibernacula creation* | 4                         | 0                                |
| Refuge creation       | 4                         | 0                                |

The Project will result in the overall permanent loss of 8.44ha of predominately improved grassland due to the new road alignment, the majority of which is located in the intermediate zone. The habitat that will be newly created however (grassland, scrub and woodland), is considered to be of higher quality for GCN. 4.47ha of open mosaic habitat is also being planted as bespoke mitigation for GCN.

### E3.3 Integration of roads and other hard landscapes

No impact is anticipated due to the widening of the road and as such, no further mitigation is proposed.

### E4 Capture, Exclusion & Translocation

|  | Use method?<br>Yes/no | Minimum capture effort (days) |
|--|-----------------------|-------------------------------|
| At pond: bottle-trap, net, hand search &/or drain down | No                    |                               |
| At pond: ring-fence, pitfall trap (+ fence & refuges)  | No                    |                               |
| Away from pond: hand search                            | Yes                   | 7 days                        |
| Away from pond: destructive search                     | Yes                   | 7 days                        |
| Away from pond: fence, pitfall trap (& refuges)        | Yes                   | 60                            |
| Away from pond: night search                           | Yes                   | 60                            |
| Away from pond: exclusion fence only                   | Yes                   |                               |

Fencing would be installed to enclose all areas of the Site Boundary that fall within 250m of all the ponds within this metapopulation, with the exception of:

- a) The habitats within the soft estate due to H&S implications; although a line of TAF will be installed adjacent to the soft estate, this fencing will also be trapped on western side.
- b) The grazed semi-improved fields to the south of the ponds, as these are perceived to be of low importance to GCN.

As a medium population size class has been assumed here; 60 days trapping is proposed with pitfall traps installed at a density of 80 per hectare. Any animals captured would be released into Mitigation Area HC07, if created in advance of construction works, or within Receptor Area PS40. Drift fencing would only remain in place until construction activities require its removal (i.e. it would be removed when development commences in that area). The TAF adjacent to the site boundary would remain in place for the duration of construction and will be removed upon completion of works.

One-way fencing would also be installed between the construction works and the mitigation site to ensure no GCN enter the works area, which would remain in place for the duration of the development. This fencing would be installed with fencing 'ends' turned back at 45° for c.5m to deflect amphibians back towards the mitigation area. All fencing will be removed following construction.

Habitat manipulation, as opposed to conventional capture and relocation methods, would be undertaken within 250m of the ponds within the semi-improved fields to the south of the ponds (i.e. using Licensing Policy P1). The perceived importance of the habitats in this area is low and thus, the cost/effort required to implement a conventional capture and relocation approach is considered unproportionate to the number of animals anticipated to be present and the impact that the loss of

these habitats would have on this population. Habitat manipulation is also proposed within areas of habitat loss within 250m of the ponds along the hard shoulder of the M25 due to health and safety implications as these methods are considered to require less time and therefore would reduce exposure of surveyors to the dangers of hard-shoulder working.

It is also felt that greater aquatic habitat provision secured by Licensing Policy 1 would provide the opportunity to significantly benefit this population and would provide a stronger link between the P227N and P166N and the rest of the ponds within this population. To mitigate for the loss of terrestrial habitats during construction it is proposed that four hibernacula (two large and two small) and four refugia be created within Mitigation Area HC07. Given the small size of this population, it is anticipated that the creation of these habitat piles alone, in proximity of the GCN pond, would be sufficient to maintain/increase the terrestrial habitat requirements.

As per the requirements of Licensing Policy 1, greater benefit to the local population would be achieved through the creation of two new non-GCN ponds which could be utilised by foraging/breeding GCN within Mitigation Area HC07. Mitigation Area HC07 (comprising 4.54 ha), which currently comprises of heavily grazed semi-improved grassland (sub-optimal for GCN), would be alleviated from current agricultural pressures to enhance its suitability. It is hoped this area would provide a stronger link between P227N and P166N and the rest of the ponds within this population.

## E5 Post-development Site Safeguard

### E5.1 Habitat management & maintenance

The below table relates to habitat management and maintenance for Mitigation Area HC07. More detail is provided in section 7.10 of the outline Landscape and Ecology Management Plan (oLEMP) (Application Document 6.7). The majority of the land will be reinstated and returned to the landowner. The areas of landscape planting adjacent to the road will be managed, although, not specifically for GCN.

| <b>Habitat management operations</b>   |          |
|--|----------|
| Aquatic vegetation management in water bodies                                    | Yes      |
| Clearance of shading tree or scrub cover around pond margins                     | Yes      |
| Mowing, cutting or grazing of grassland  | Yes      |
| Desilting and clearance of leaf-fall   | Yes      |
| Woodland and scrub management  | Yes      |
| Other (state below)  | Yes      |
| Management of refugia and hibernacula  |          |
| <b>Site management operations</b>  |          |
| Checking for fish presence, and removal through appropriate methods              | Yes      |
| Checking pond condition and remedial action as required                          | Yes      |
| Checking for and removal of dumped rubbish                                       | Yes      |
| Reinstatement following fire, acute pollution or other major damage              | Yes      |
| Repair or replace fences   | No       |
| Maintain tunnel, underpass, guide fencing in good condition                      | No       |
| Repair or replace interpretation boards  | No       |
| Other (state below)  | Yes      |
| Management of refugia and hibernacula  |          |
| State the period for which habitat management and maintenance plan will continue | 30 years |

### E5.2 Post-development Population Monitoring

Post-development population monitoring is proposed at P166N, P227N, P240N, P241N, HC07\_P1 and HC07\_P2 comprising population class estimate surveys for four years.

### Metapopulation N13

Ponds P157N, P158N, P159N, P299N and P300N (Large population)

#### E1 The Mitigation Solution

Mitigation in the vicinity of Metapopulation N13 would comprise conventional capture and relocation to Mitigation Area HC06 (within the intermediate zone of this metapopulation). Other mitigation including habitat manipulation would also be undertaken, where appropriate.

#### E2 Receptor Site Selection

##### E2.1 Existing GCN status at receptor site(s)

Great crested newts present; small population size class

##### E2.2 Survey information for receptor site if different from the survey for the application proposal.

Same as application proposal

##### E2.3 Receptor site locations

| Site name | OS grid ref<br>eg AB12345678 | Administration area – if different<br>from development site | Distance<br>from<br>development<br>site (m). |
|-----------|------------------------------|---|--|
| HC06      | TQ 58745 86931               | Essex   | Adjacent                                     |
| PS39      | TQ 58612 87040               | Essex   | Adjacent                                     |

##### E2.4 Receptor site(s): ownership and land status.

| Site name | Site Ownership      | Conservation<br>Designation? |
|-----------|---------------------|------------------------------|
| HC06      | National Highways   | No                           |
| PS39      | Return to landowner | No                           |

##### E2.5 Receptor site: habitat description, size (ha) & adjacent land use.

| Site name | Habitat description   | Size (ha) | Adjacent<br>Land Use                           |
|-----------|---|-----------|--|
| HC06      | Currently seeded grassland under solar farm. An open mosaic of grassland, woodland, scrub, banks, ditches and refuse piles will be created. | 4.06      | Recreational (golf course), arable and a road. |
| PS39      | Within a block of woodland connecting to a larger woodland to the north.  | 0.24      | Arable and residential grounds.                |

#### E3 Habitat Creation, Restoration and/or Enhancement

| Aquatic<br>habitat | Impacts |        |                                 | Compensation |        |                                 |
|--------------------|---------|--------|---------------------------------|--------------|--------|---------------------------------|
|                    | Effect  | Number | Total Area<br>(m <sup>2</sup> ) | Measure      | Number | Total Area<br>(m <sup>2</sup> ) |
|                    |         |        |                                 |              |        |                                 |

Additional Sheet E - Mitigation and Compensation

|                  |         |   |   |                                  |   |   |
|------------------|---------|---|---|----------------------------------|---|---|
| <b>GCN ponds</b> | Lost    | 0 | 0 | Created                          | 0 | 0 |
|                  | Damaged | 0 | 0 | Restored / reinstated / enhanced | 0 | 0 |

| <b>Terrestrial habitat</b> | <b>Impacts</b>        |                  | <b>Compensation</b>   |   |   |
|----------------------------|-----------------------|------------------|---|---|---|
|                            | <b>Area lost (ha)</b> |                  | <b>Area gained (ha)</b>   |   |   |
|                            | <b>Permanent</b>      | <b>Temporary</b> | <b>Suitable GCN habitat created within the wider landscaping design</b> | <b>Created for bespoke GCN Mitigation</b> | <b>Restored / reinstated / enhanced</b> |
| Core                       | 0.01                  | 0.24             | 0.01  | 0   | 0.24                                    |
| Intermediate               | 6.14                  | 2.61             | 2.46  | 1.40                                      | 2.61                                    |
| Distant                    | 5.64                  | 3.97             | 1.17  | 2.27                                      | 3.97                                    |
| <b>Totals</b>              | <b>11.79</b>          | <b>6.81</b>      | <b>3.63</b>   | <b>3.67</b>                               | <b>6.82</b>                             |

**E3.1 Creation, restoration and/or enhancement of aquatic habitats**

**GCN Mitigation Ponds**

No GCN mitigation pond creation is proposed for Metapopulation N13. However, to offset the loss of non-GCN ponds along the scheme, one new pond is proposed within Mitigation Area HC06, which will be designed to be suitable for foraging/breeding GCN.

**Non-GCN pond creation**

| Pond reference | Surface Area (m <sup>2</sup> ) | Max. Depth (m) | Design / enhancement measures and location |
|----------------|--------------------------------|----------------|--|
| HC06_P1        | 500                            | 1.5            | Situated within Mitigation Area HC06       |
| HC06_P2        | 500                            | 1.5            | Situated within Mitigation Area HC06       |

**E3.2 Terrestrial Habitat Measures**

|                                     | Number/area (ha)/length** |                                  |
|-------------------------------------|---------------------------|----------------------------------|
|                                     | Created                   | Reinstated / Restored / Enhanced |
| Hedgerow planting                   | 785.91m                   | 356.50m                          |
| Grassland re-seeding                | 2.0                       | 0.53                             |
| Grassland management (just for GCN) | 0                         | 0                                |
| Scrub planting                      | 1.37                      | 0.02                             |
| Woodland planting                   | 0                         | 0.18                             |
| Arable                              | 0                         | 6.08                             |

|                                      |      |   |
|--------------------------------------|------|---|
| Wetland creation                     | 0.27 | 0 |
| Open mosaic (bespoke GCN mitigation) | 3.67 | 0 |
| Hibernacula creation*                | 3    | 0 |
| Refuge creation                      | 3    | 0 |

The Project will result in the overall permanent loss of 11.79ha of predominately improved grassland and woodland due to the new road alignment, the majority of which is located in the intermediate and distant zones. Despite the woodland not being replaced, there will be new habitat created which is considered suitable to GCN (including 3.67 ha of open mosaic which will be managed for GCN). Additionally, there are two mitigation ponds as well as three hibernacula and three refugia proposed for this area which will strengthen the link between metapopulations N10 and N13. An additional 786m of hedgerow would also be planted within the vicinity of the ponds

### E3.3 Integration of roads and other hard landscapes

No impact is anticipated due to the widening of the road and as such, no further mitigation is proposed.

### E4 Capture, Exclusion & Translocation

|  | Use method?<br>Yes/no | Minimum capture effort (days) |
|--|-----------------------|-------------------------------|
| At pond: bottle-trap, net, hand search &/or drain down | No                    |                               |
| At pond: ring-fence, pitfall trap (+ fence & refuges)  | No                    |                               |
| Away from pond: hand search                            | Yes                   | 10 days                       |
| Away from pond: destructive search                     | Yes                   | 10 days                       |
| Away from pond: fence, pitfall trap (& refuges)        | Yes                   | 90                            |
| Away from pond: night search                           | Yes                   | 90                            |
| Away from pond: exclusion fence only                   | Yes                   |                               |

Fencing would be installed to enclose all areas of the Site Boundary that fall within 250m of all ponds, with the exception of:

- a) The arable fields to the north of railway line and the amenity grassland within the golf course as these are of negligible importance to GCN.
- b) Areas of suitable habitat within the soft estate of the M25 and within the railway land holding due to H&S implications. Habitat manipulation would be undertaken at these locations.
- c) The small section of hedgerow and plantation woodland within the golf course are perceived to be of low importance to GCN. Habitat manipulation would be undertaken at this location.

As a large population size class has been recorded here; 90 days trapping is proposed with pitfall traps installed at a density of 100 per hectare. Where fencing is adjacent to the soft estate, trapping will be undertaken on both sides, if safe to do so. Any animals captured would be released into Mitigation Area HC06, if created in advance of construction works, or within Receptor Area PS39. Drift fencing would only remain in place until construction activities require its removal (i.e. it would be removed when development commences in that area). Additional exclusion fencing will be installed to the north of the railway to prevent animals from re-entering the works areas. This fencing will remain in place for the duration of construction works and be removed upon completion.

Habitat manipulation, as opposed to conventional capture and relocation methods, would be undertaken within any habitat loss within 500m of the ponds within the soft estate of the M25 and within the railway land holding, due to health and safety implications, and the small section of



hedgerow and plantation woodland within the golf course, as these are perceived to be of low value to GCN.

Mitigation Area HC06 would be created within the intermediate terrestrial habitat associated with this metapopulation. Any animals captured would be released into this area. HC06 is approximately 4.06 ha and currently comprises improved grassland (sub-optimal for GCN). To mitigate for the loss of terrestrial habitat during construction, grazing would be removed from this location and grassland would be reseeded to enhance its suitability and two hibernacula and four refugia would be created. In addition to this, two non-GCN ponds would be created within this area which would create a stronger link between this metapopulation and Metapopulation N10.

## E5 Post-development Site Safeguard

### E5.1 Habitat management & maintenance

The below table relates to habitat management and maintenance for Mitigation Area HC06. More detail is provided in section 7.10 of the outline Landscape and Ecology Management Plan (oLEMP) (Application Document 6.7). The majority of the land will be reinstated and returned to the landowner. The areas of landscape planting adjacent to the road will be managed, although, not specifically for GCN.

| <b>Habitat management operations</b>  |  |          |
|---------------------------------------|--|----------|
|                                       | Aquatic vegetation management in water bodies                                    | Yes      |
|                                       | Clearance of shading tree or scrub cover around pond margins                     | Yes      |
|                                       | Mowing, cutting or grazing of grassland  | Yes      |
|                                       | Desilting and clearance of leaf-fall   | Yes      |
|                                       | Woodland and scrub management  | Yes      |
|                                       | Other (state below)  | Yes      |
| Management of refugia and hibernacula |  |          |
| <b>Site management operations</b>     |  |          |
|                                       | Checking for fish presence, and removal through appropriate methods              | Yes      |
|                                       | Checking pond condition and remedial action as required                          | Yes      |
|                                       | Checking for and removal of dumped rubbish                                       | Yes      |
|                                       | Reinstatement following fire, acute pollution or other major damage              | Yes      |
|                                       | Repair or replace fences   | No       |
|                                       | Maintain tunnel, underpass, guide fencing in good condition                      | No       |
|                                       | Repair or replace interpretation boards  | No       |
|                                       | Other (state below)  | Yes      |
| Management of refugia and hibernacula |  |          |
|                                       | State the period for which habitat management and maintenance plan will continue | 30 years |

### E5.2 Post-development Population Monitoring

Post-development population monitoring is proposed at P157N, P158N, P159N, HC06\_P1 and HC06\_P2 comprising population size class assessments for six years.

## Metapopulation N14

Ponds P149N, P150N, P276N, P440N, P510N and P511N (Assumed medium population)

### E1 The Mitigation Solution

Mitigation in the vicinity of Metapopulation N14 would comprise habitat manipulation. Any captured animals would be released at Receptor Area PS37 (within the intermediate zone of this

metapopulation). Receptor Area PS37 currently covers the entire area of the site boundary within 250m which includes the construction areas. Construction works, comprising temporary signalling will not require the entire area of the site boundary, although exact location is yet to be determined. Due to this, the habitat loss presented below is an overestimate of the extent of loss. Once the final location has been determined, for the final licence submission, the receptor area will be changed to ensure animals are released as far from works as possible. Additional fencing requirements will also be considered be necessary. Although the abundance of GCN is not known within PS37, the area of translocation is small and it is unlikely a large amount of GCN will be translocated. In addition, this area connects into the wider landscape and will allow animals to disperse away from the construction area. This habitat creation is due to the need for mitigation for air quality impacts on designated sites, and has led to the creation of a new country park called Hole Farm.

## E2 Receptor Site Selection

### E2.1 Existing GCN status at receptor site(s)

Unknown

### E2.2 Survey information for receptor site if different from the survey for the application proposal.

Same as application proposal

### E2.3 Receptor site locations

| Site name | OS grid ref<br>eg AB12345678 | Administration area - if<br>different from development<br>site | Distance<br>from<br>development<br>site (m). |
|-----------|------------------------------|--|--|
| PS37      | TQ 59494 88763               | Essex  | Adjacent                                     |

### E2.4 Receptor site(s): ownership and land status.

| Site name | Site Ownership        | Conservation<br>Designation? |
|-----------|-----------------------|------------------------------|
| PS37      | Returned to landowner | No                           |

### E2.5 Receptor site: habitat description, size (ha) & adjacent land use.

| Site name | Habitat description | Size (ha) | Adjacent<br>Land Use                |
|-----------|---------------------|-----------|-------------------------------------|
| PS37      | Road, hedgerows     | 0.47      | Road,<br>hedgerows,<br>hardstanding |

## E3 Habitat Creation, Restoration and/or Enhancement

| Aquatic<br>habitat | Impacts |        |                                 | Compensation |        |                                 |
|--------------------|---------|--------|---------------------------------|--------------|--------|---------------------------------|
|                    | Effect  | Number | Total Area<br>(m <sup>2</sup> ) | Measure      | Number | Total Area<br>(m <sup>2</sup> ) |
| GCN ponds          | Lost    | 0      | 0                               | Created      | 0      | 0                               |

|  |         |   |   |                                  |   |   |
|--|---------|---|---|----------------------------------|---|---|
|  | Damaged | 0 | 0 | Restored / reinstated / enhanced | 0 | 0 |
|--|---------|---|---|----------------------------------|---|---|

| Terrestrial habitat | Impacts        |           | Compensation   |                                  |
|---------------------|----------------|-----------|--|----------------------------------|
|                     | Area lost (ha) |           | Area gained (ha)   |                                  |
|                     | Permanent      | Temporary | Suitable GCN habitat created within the wider landscaping design | Restored / reinstated / enhanced |
| Core                | 0              | 0         | 0  | 0                                |
| Intermediate        | 2.10           | 0.26      | 2.07   | 0.26                             |
| Distant             | 12.10          | 0.90      | 12   | 0.90                             |
| <b>Totals</b>       | 14.20          | 1.16      | 14.07  | 1.16                             |

### E3.1 Creation, restoration and/or enhancement of aquatic habitats

No aquatic habitat creation is proposed for Assumed Metapopulation N14.

### E3.2 Terrestrial Habitat Measures

|                                     | Number/area (ha)/length** |                                  |
|-------------------------------------|---------------------------|----------------------------------|
|                                     | Created                   | Reinstated / Restored / Enhanced |
| Hedgerow planting                   | 0                         | 50.74m                           |
| Grassland re-seeding                | 0                         | 0.04                             |
| Grassland management (just for GCN) | 0                         | 0                                |
| Scrub planting                      | 0                         | 0                                |
| Woodland planting                   | 14.07                     | 0.70                             |
| Arable                              | 0                         | 0.42                             |
| Hibernacula creation*               | 0                         | 0                                |
| Refuge creation                     | 0                         | 0                                |

The Project will result in the overall permanent loss of 14.20 ha of predominately arable land due to habitat creation, all of which is located in the distant zone. The 14.07ha of newly created woodland habitat is considered to be of higher quality for GCN.

### E3.3 Integration of roads and other hard landscapes

No impact requiring mitigation comprising integration with the road or other hard landscapes has been anticipated and therefore none have been proposed.

**E4 Capture, Exclusion & Translocation**

|  | Use method?<br>Yes/no | Minimum capture effort (days) |
|--|-----------------------|-------------------------------|
| At pond: bottle-trap, net, hand search &/or drain down | No                    |                               |
| At pond: ring-fence, pitfall trap (+ fence & refuges)  | No                    |                               |
| Away from pond: hand search                            | Yes                   | 2 days                        |
| Away from pond: destructive search                     | Yes                   | 2 days                        |
| Away from pond: fence, pitfall trap (& refuges)        | No                    |                               |
| Away from pond: night search                           | No                    |                               |
| Away from pond: exclusion fence only                   | No                    |                               |

Given the small-scale vegetation clearance required for the signalling works, habitat manipulation is proposed within any suitable habitat due to be removed. Any animals captured will be released within suitable retained habitat within Receptor Area PS37.

**E5 Post-development Site Safeguard**

**E5.1 Habitat management & maintenance**

The majority of habitat will be reinstated and returned to the landowner. The small area of landscaping to the west of the ponds will be managed, however, not specifically for GCN.

| <b>Habitat management operations</b>   |  |    |
|--|--|----|
| Aquatic vegetation management in water bodies                                    |  | No |
| Clearance of shading tree or scrub cover around pond margins                     |  | No |
| Mowing, cutting or grazing of grassland  |  | No |
| Desilting and clearance of leaf-fall   |  | No |
| Woodland and scrub management  |  | No |
| Other (state below)  |  | No |
| <b>Site management operations</b>  |  |    |
| Checking for fish presence, and removal through appropriate methods              |  | No |
| Checking pond condition and remedial action as required                          |  | No |
| Checking for and removal of dumped rubbish                                       |  | No |
| Reinstatement following fire, acute pollution or other major damage              |  | No |
| Repair or replace fences   |  | No |
| Maintain tunnel, underpass, guide fencing in good condition                      |  | No |
| Repair or replace interpretation boards  |  | No |
| Other (state below)  |  | No |
| State the period for which habitat management and maintenance plan will continue |  |    |

**E5.2 Post-development Population Monitoring**

No post-development monitoring is proposed for Metapopulation N14.

## Metapopulation N15

Pond P210N (Small population)

### E1 The Mitigation Solution

Mitigation in the vicinity of Metapopulation N15 would comprise of conventional capture and relocation close to the pond as well as habitat manipulation. Ponds within mitigation Area HC02 would be created within the intermediate zone associated with the metapopulation. No terrestrial habitat creation is possible for this metapopulation due to the presence of a SINC site which is contained within the metapopulation core, intermediate and distant zones. Any animals captured would be released into this area (within the core zone of this metapopulation). New GCN ponds, non-GCN ponds, hibernacula and refugia would also be created.

### E2 Receptor Site Selection

#### E2.1 Existing GCN status at receptor site(s)

Great crested newts present; small population size class

#### E2.2 Survey information for receptor site if different from the survey for the application proposal.

Same as application proposal

#### E2.3 Receptor site locations

| Site name | OS grid ref<br>eg AB12345678 | Administration area - if<br>different from development<br>site | Distance<br>from<br>development<br>site (m). |
|-----------|------------------------------|--|--|
| HC02      | TQ 57747 89208               | Essex  | Adjacent                                     |

#### E2.4 Receptor site(s): ownership and land status.

| Site name | Site Ownership    | Conservation<br>Designation? |
|-----------|-------------------|------------------------------|
| HC02      | National Highways | No                           |

#### E2.5 Receptor site: habitat description, size (ha) & adjacent land use.

| Site name | Habitat description  | Size (ha) | Adjacent<br>Land Use |
|-----------|--|-----------|----------------------|
| HC02      | Currently an open mosaic of grassland, woodland and scrub. Ponds and refuse piles will be created. | 2.14      | Woodland and arable  |

### E3 Habitat Creation, Restoration and/or Enhancement

| Aquatic<br>habitat | Impacts |              |                                 | Compensation |        |                                 |
|--------------------|---------|--------------|---------------------------------|--------------|--------|---------------------------------|
|                    | Effect  | Number       | Total Area<br>(m <sup>2</sup> ) | Measure      | Number | Total Area<br>(m <sup>2</sup> ) |
| GCN ponds          | Lost    | 1<br>(P210N) | 106.17                          | Created      | 2      | 1320                            |

Additional Sheet E - Mitigation and Compensation

|  |         |   |   |                                  |   |   |
|--|---------|---|---|----------------------------------|---|---|
|  | Damaged | 0 | 0 | Restored / reinstated / enhanced | 0 | 0 |
|--|---------|---|---|----------------------------------|---|---|

| Terrestrial habitat | Impacts        |           | Compensation   |                                  |
|---------------------|----------------|-----------|--|----------------------------------|
|                     | Area lost (ha) |           | Area gained (ha)   |                                  |
|                     | Permanent      | Temporary | Suitable GCN habitat created within the wider landscaping design | Restored / reinstated / enhanced |
| Core                | 0.47           | 0.33      | 0.49   | 0.33                             |
| Intermediate        | 0.75           | 2.06      | 0.70   | 2.06                             |
| Distant             | 0.31           | 0.31      | 0.24   | 0.31                             |
| <b>Totals</b>       | 1.53           | 2.70      | 1.43   | 2.70                             |

**E3.1** Creation, restoration and/or enhancement of aquatic habitats

**GCN Mitigation Ponds**

| Pond reference | Surface Area (m <sup>2</sup> ) | Max. Depth (m) | Design / enhancement measures and location   |
|----------------|--------------------------------|----------------|--|
| HC02_P1        | 750                            | 1.5            | New Pond in Mitigation Area HC02. Design to follow <i>Creating ponds for amphibians and reptiles</i> (Freshwater Habitat Trust). |
| HC02_P2        | 570                            | 1.5            | New Pond in Mitigation Area HC02. Design to follow <i>Creating ponds for amphibians and reptiles</i> (Freshwater Habitat Trust). |

**E3.2** Terrestrial Habitat Measures

|                                     | Number/area (ha)/length** |                                  |
|-------------------------------------|---------------------------|----------------------------------|
|                                     | Created                   | Reinstated / Restored / Enhanced |
| Hedgerow planting                   | 0                         | 0                                |
| Grassland re-seeding                | 0.67                      | 1.76                             |
| Grassland management (just for GCN) | 0                         | 0                                |
| Scrub planting                      | 0.12                      | 0                                |
| Woodland planting                   | 0.64                      | 0.94                             |
| Hibernacula creation*               | 3                         | 0                                |
| Refuge creation                     | 2                         | 0                                |

The Project will result in an overall permanent loss 1.53 ha of predominantly poor semi-improved grassland due to the new road alignment, the majority of which is located in the intermediate zone. The habitat that will be newly created (grassland and woodland) is considered to be of similar

suitability for GCN. Although this habitat is not specifically managed for GCN, it is located within Folkes Lane SINC, and is managed by the forestry commission for the benefit of both nature and the local community.

### E3.3 Integration of roads and other hard landscapes

No impact requiring mitigation comprising integration with the road or other hard landscapes has been anticipated and therefore none have been proposed.

### E4 Capture, Exclusion & Translocation

|  | Use method?<br>Yes/no | Minimum capture effort<br>(days) |
|--|-----------------------|----------------------------------|
| At pond: bottle-trap, net, hand search &/or drain down | Yes                   | 60                               |
| At pond: ring-fence, pitfall trap (+ fence & refuges)  | Yes                   | 60                               |
| Away from pond: hand search                            | Yes                   | 3 days                           |
| Away from pond: destructive search                     | Yes                   | 3 days                           |
| Away from pond: fence, pitfall trap (& refuges)        | Yes                   | 30                               |
| Away from pond: night search                           | Yes                   | 30                               |
| Away from pond: exclusion fence only                   | Yes                   |                                  |

Ponds P210N would be ringed and trapped out for a minimum of 30 days (i.e. subject to five clear nights). Amphibian fencing would be installed in all areas of the Site that fall within 50m of the pond within this population, with the exception of:

- a) Habitats to the north east of the M25 as the M25 is considered to be a barrier to dispersal/movement and as such GCN from this population will not be present within these habitats.
- b) The habitats within the soft estate due to H&S implications. Habitat manipulation will be undertaken at this location.

A small population size class has been recorded here (max adult count of one) and accordingly, 30 days trapping is proposed with pitfall traps installed at a density of 50 per hectare. The pond would be subject to nightly funnel trapping and dip netting for a minimum of 60 days before being drained down (as per EN, 2001). Where possible, ring fencing and trapping of the ponds would be undertaken at the least impacting time of year (i.e. ring fence before the breeding season and drain down late in the year). Any animals captured would be released into Mitigation Area HC02. Additional exclusion only fencing will be installed to the south of P210N to prevent animals re-entering the works space.

Most of the fencing would be removed once trapping has finished (i.e. before construction works commences). However, the exclusions only fencing and that to the south-west of the pond will remain in place for the duration of construction. This fencing will be removed once construction works are complete.

For all areas outside of 50m, habitat manipulation (i.e. using Licensing Policy 1), in place of conventional capture and relocation is proposed because the perceived population size is low (max adult count of 1) and the perceived importance of the habitats in this area is low. Thus, the cost/effort required to implement a conventional capture and relocation approach is considered unproportionate to the number of animals anticipated to be present and the impact that the loss of these habitats would have on this population. It is also felt that greater aquatic habitat provision secured by Licensing Policy 1 provides the opportunity to significantly benefit this population. All habitat manipulation will be undertaken prior to fence installation.

To mitigate for the loss of terrestrial habitats during construction it is proposed that three hibernaculum (one large and two small) and two refugia be created within Mitigation Area HC02.

Given the small size of this population, it is anticipated that the creation of these habitat piles alone, in proximity of the GCN pond, would be sufficient to maintain/increase the terrestrial habitat requirements.

As per the requirements of Licensing Policy 1, greater benefit to the local population would be achieved through the creation of Mitigation Area HC02 (comprising 7.88 ha), which would increase the vitality of Metapopulation N15 with the creation of two new GCN.

## E5 Post-development Site Safeguard

### E5.1 Habitat management & maintenance

The below table relates to habitat management and maintenance for Mitigation Area HC02. More detail is provided in section 5.9 of the outline Landscape and Ecology Management Plan (oLEMP) (Application Document 6.7). The remainder of the habitats will be reinstated and returned to the landowner and the small areas of landscape planting adjacent to the road will be managed, although, not specifically for GCN.

| <b>Habitat management operations</b>   |          |
|--|----------|
| Aquatic vegetation management in water bodies                                    | Yes      |
| Clearance of shading tree or scrub cover around pond margins                     | Yes      |
| Mowing, cutting or grazing of grassland  | Yes      |
| Desilting and clearance of leaf-fall   | Yes      |
| Woodland and scrub management  | Yes      |
| Other (state below)  | Yes      |
| Management of refugia and hibernacula  |          |
| <b>Site management operations</b>  |          |
| Checking for fish presence, and removal through appropriate methods              | Yes      |
| Checking pond condition and remedial action as required                          | Yes      |
| Checking for and removal of dumped rubbish                                       | Yes      |
| Reinstatement following fire, acute pollution or other major damage              | Yes      |
| Repair or replace fences   | No       |
| Maintain tunnel, underpass, guide fencing in good condition                      | No       |
| Repair or replace interpretation boards  | No       |
| Other (state below)  | Yes      |
| Management of refugia and hibernacula  |          |
| State the period for which habitat management and maintenance plan will continue | 30 years |

### E5.2 Post-development Population Monitoring

Post-development population monitoring is proposed at HC02\_P1 and HC02\_P2 comprising presence/absence surveys for four years.

## Metapopulation N16

Ponds P097N, P098N, P099N and P313N (Assumed medium population)

### E1 The Mitigation Solution

Mitigation in the vicinity of Metapopulation N16 would comprise conventional capture and relocation to HC37 or PS27 (within the core zone of this metapopulation). Other mitigation including habitat manipulation would also be undertaken, where appropriate.

### E2 Receptor Site Selection

#### E2.1 Existing GCN status at receptor site(s)



HC36 - Great crested newts present; Medium population size class  
 PS27 - Great crested newts present; Medium population size class

**E2.2** Survey information for receptor site if different from the survey for the application proposal.

Same as application proposal

**E2.3** Receptor site locations

| Site name | OS grid ref<br>eg AB12345678 | Administration area - if<br>different from development<br>site | Distance<br>from<br>development<br>site (m). |
|-----------|------------------------------|--|--|
| HC36      | TQ 6261 8085                 | Essex  | Adjacent                                     |
| HC37      | TQ 6278 8039                 | Essex  | Adjacent                                     |
| PS27      | TQ 6290 8074                 | Essex  | Adjacent                                     |

**E2.4** Receptor site(s): ownership and land status.

| Site name | Site Ownership        | Conservation<br>Designation? |
|-----------|-----------------------|------------------------------|
| HC36.1    | National Highways     | No                           |
| HC37      | National Highways     | No                           |
| PS27      | Returned to landowner | Yes – LWS                    |

**E2.5** Receptor site: habitat description, size (ha) & adjacent land use.

| Site name | Habitat description  | Size (ha) | Adjacent<br>Land Use                           |
|-----------|--|-----------|--|
| HC36      | Currently arable land use. An open mosaic of grassland, scrub and ponds will be created. | 10.49     | Blackshots LWS, arable, housing and a motorway |
| HC37      | Currently arable land use. An open mosaic of grassland, scrub and ponds will be created. | 3.47      | Blackshots LWS, arable and housing             |
| PS27      | Currently within Blackshots LWS  | 1.63      | Arable and a motorway                          |

**E3** Habitat Creation, Restoration and/or Enhancement

| Aquatic habitat | Impacts |        |                              | Compensation                     |        |                              |
|-----------------|---------|--------|------------------------------|----------------------------------|--------|------------------------------|
|                 | Effect  | Number | Total Area (m <sup>2</sup> ) | Measure                          | Number | Total Area (m <sup>2</sup> ) |
| GCN ponds       | Lost    | 0      | 0                            | Created                          | 0      | 0                            |
|                 | Damaged | 0      | 0                            | Restored / reinstated / enhanced | 0      | 0                            |

| Terrestrial habitat | Impacts        |              | Compensation   |                                    |                                  |
|---------------------|----------------|--------------|--|------------------------------------|----------------------------------|
|                     | Area lost (ha) |              | Area gained (ha)   |                                    |                                  |
|                     | Permanent      | Temporary    | Suitable GCN habitat created within the wider landscaping design | Created for bespoke GCN Mitigation | Restored / reinstated / enhanced |
| Core                | 0.08           | 0            | 0  | 0.08                               | 0                                |
| Intermediate        | 6.37           | 5.63         | 2.29   | 3.30                               | 5.63                             |
| Distant             | 11.85          | 4.81         | 1.75   | 6.20                               | 4.81                             |
| <b>Totals</b>       | <b>18.30</b>   | <b>10.44</b> | <b>4.04</b>  | <b>9.59</b>                        | <b>10.44</b>                     |

### E3.1 Creation, restoration and/or enhancement of aquatic habitats

#### GCN Mitigation Ponds

No GCN mitigation pond creation is proposed for Metapopulation N16. However, to offset the loss of non-GCN ponds along the scheme, one new pond is proposed within Mitigation Areas HC36 and HC37, which would be designed to be suitable for foraging/breeding GCN and create stronger links between existing GCN ponds within this population.

#### Non-GCN pond creation

| Pond reference | Surface Area (m <sup>2</sup> ) | Max. Depth (m) | Design / enhancement measures and location |
|----------------|--------------------------------|----------------|--|
| HC36_P1        | 750                            | 1.5            | New Pond in Mitigation Area HC36           |

### E3.2 Terrestrial Habitat Measures

|                                      | Number/area (ha)/length** |                                  |
|--------------------------------------|---------------------------|----------------------------------|
|                                      | Created                   | Reinstated / Restored / Enhanced |
| Hedgerow planting                    | 507.47m                   | 152.24m                          |
| Grassland re-seeding                 | 0.85                      | 6.63                             |
| Grassland management (just for GCN)  | 0                         | 0                                |
| Scrub planting                       | 1.15                      | 0.67                             |
| Woodland planting                    | 1.71                      | 0.29                             |
| Tall ruderal and fern                | 0                         | 0.01                             |
| Arable                               | 0                         | 2.83                             |
| Open mosaic (bespoke GCN mitigation) | 9.59                      | 0                                |
| Wetland creation                     | 0.32                      | 0                                |
| Gardens/allotments                   | 0                         | 0.01                             |

|                       | Number/area (ha)/length** |                                  |
|-----------------------|---------------------------|----------------------------------|
|                       | Created                   | Reinstated / Restored / Enhanced |
| Hibernacula creation* | 3                         | 0                                |
| Refuge creation       | 4                         | 0                                |

The Project will result in the overall permanent loss of 18.30 ha of predominately arable land due to the new road alignment, the majority of which is located in the distant zone. The habitat that will be newly created however (grassland, scrub and woodland), is considered to be of higher quality for GCN.

### E3.3 Integration of roads and other hard landscapes

No impact is anticipated due to the new junction and as such, no further mitigation is proposed.

### E4 Capture, Exclusion & Translocation

|  | Use method?<br>Yes/no | Minimum capture effort (days) |
|--|-----------------------|-------------------------------|
| At pond: bottle-trap, net, hand search &/or drain down | No                    |                               |
| At pond: ring-fence, pitfall trap (+ fence & refuges)  | No                    |                               |
| Away from pond: hand search                            | Yes                   | 5 days                        |
| Away from pond: destructive search                     | Yes                   | 5 days                        |
| Away from pond: fence, pitfall trap (& refuges)        | Yes                   | 60                            |
| Away from pond: night search                           | Yes                   | 60                            |
| Away from pond: exclusion fence only                   | Yes                   |                               |

Fencing would be installed to enclose all areas of the Site Boundary that fall within 250m of all ponds, with the exception of:

- Any habitat to the north of the A13. The A13 is a major barrier to dispersal and as such GCN from this population will not be present within habitats to the north of this road.
- The arable field between P313N and P098N, which would be set aside for GCN mitigation (Mitigation Area HC36) and open space creation. Vegetation clearance in this area would comprise discrete areas for the provision of new ponds, hibernacula/refugia and planting. Habitat manipulation would be undertaken here.
- The arable field to the north west of N097N as this habitat is considered to be of low value to GCN. Habitat manipulation would be undertaken here.

As eDNA surveys only were undertaken at these ponds a medium population size class has been assumed and therefore, 60 days trapping is proposed with pitfall traps installed at a density of 80 per hectare. Any animals captured would be released into Mitigation Area HC36 or HC37, if created in advance of construction works or at Receptor Site PS27; indicated on Figure E5.1. One-way fencing would be installed where fencing is adjacent to the retained habitat, this area would not be trapped. Drift fencing would only remain in place until construction activities require its removal (i.e. it would be removed when development commences in that area). TAF and one-way fencing would be used to create a barrier during construction, remaining in place for the duration of development. This would be removed after construction works are complete.

Habitat manipulation, as opposed to conventional capture and relocation methods, would be undertaken within any habitat loss within 250m of the ponds within the road verge of the A13, due to health and safety implications, and within any small sections of hedgerow adjacent to the arable fields

requiring removal to facilitate the development. Any animals captured will be released into Receptor Site PS27 or within Mitigation Area HC36, for which habitats have established.

Mitigation Area HC36 and HC37 would be created within between P098N and the other ponds within this metapopulation. HC36 is approximately 10.49ha and HC37 is 3.47ha and both currently comprises intensively managed arable fields (sub-optimal for GCN). To mitigate for the loss of terrestrial habitat, grazing would be removed from this location to enhance its suitability for GCN. One new pond will be created (HC36\_P1) along with 3 hibernacula (1 large and 2 small) and 4 refugia. The pond will be positioned as such to strengthen the link between P098N and the other ponds within the population.

## E5 Post-development Site Safeguard

### E5.1 Habitat management & maintenance

The below table relates to habitat management and maintenance for Mitigation Area HC36 and HC37. More detail is provided in section 6.12 of the outline Landscape and Ecology Management Plan (oLEMP) (Application Document 6.7). The majority of the land will be reinstated and returned to the landowner. The areas of landscape planting adjacent to the road will be managed, although, not specifically for GCN.

| <b>Habitat management operations</b>   |          |
|--|----------|
| Aquatic vegetation management in water bodies                                    | Yes      |
| Clearance of shading tree or scrub cover around pond margins                     | Yes      |
| Mowing, cutting or grazing of grassland  | Yes      |
| Desilting and clearance of leaf-fall   | Yes      |
| Woodland and scrub management  | Yes      |
| Other (state below)  | Yes      |
| Management of refugia and hibernacula  |          |
| <b>Site management operations</b>  |          |
| Checking for fish presence, and removal through appropriate methods              | Yes      |
| Checking pond condition and remedial action as required                          | Yes      |
| Checking for and removal of dumped rubbish                                       | Yes      |
| Reinstatement following fire, acute pollution or other major damage              | Yes      |
| Repair or replace fences   | No       |
| Maintain tunnel, underpass, guide fencing in good condition                      | No       |
| Repair or replace interpretation boards  | No       |
| Other (state below)  | Yes      |
| Management of refugia and hibernacula  |          |
| State the period for which habitat management and maintenance plan will continue | 30 years |

### E5.2 Post-development Population Monitoring

Post-development population monitoring is proposed at P097N, P098N, P099N, P313N and HC36\_P1 comprising population class estimates for four years.

## Assumed Metapopulation N18

Ponds P252N, P253N and P303N (Assumed medium population)

### E1 The Mitigation Solution

Mitigation in the vicinity of Assumed Metapopulation N18 would comprise habitat manipulation, using Licencing Policy 1. Any captured animals would be released at Mitigation Area HC26 (within the intermediate zone of this metapopulation). Mitigation Area HC26 currently covers the entire area of

the site boundary within 500m of the ponds which includes the construction areas. Construction works, comprising pond and ditch creation, although exact locations are yet to be determined. Due to this, the habitat loss presented below is an overestimate of the extent of loss. Once the final location has been determined, for the final licence submission, the receptor area will be changed to ensure animals are released as far from works as possible. Although the abundance of GCN is not known within HC26, the area of translocation is small and it is unlikely a large amount of GCN will be translocated. In addition, this area connects into the wider landscape and will allow animals to disperse away from the construction area.

## E2 Receptor Site Selection

### E2.1 Existing GCN status at receptor site(s)

Unknown

### E2.2 Survey information for receptor site if different from the survey for the application proposal.

Same as application proposal

### E2.3 Receptor site locations

| Site name | OS grid ref<br>eg AB12345678 | Administration area - if<br>different from development<br>site | Distance<br>from<br>development<br>site (m). |
|-----------|------------------------------|--|--|
| HC26      | TQ 68950 77755               | Essex  | Adjacent                                     |

### E2.4 Receptor site(s): ownership and land status.

| Site name | Site Ownership    | Conservation<br>Designation? |
|-----------|-------------------|------------------------------|
| HC26      | National Highways | No                           |

### E2.5 Receptor site: habitat description, size (ha) & adjacent land use.

| Site name | Habitat description  | Size (ha) | Adjacent<br>Land Use        |
|-----------|--|-----------|-----------------------------|
| HC26      | Currently arable land use. An open mosaic of grassland, scrub and ponds will be created. | 36.98     | Arable, sand and gravel pit |

## E3 Habitat Creation, Restoration and/or Enhancement

| Aquatic<br>habitat | Impacts |        |                                 | Compensation                           |        |                                 |
|--------------------|---------|--------|---------------------------------|--|--------|---------------------------------|
|                    | Effect  | Number | Total Area<br>(m <sup>2</sup> ) | Measure                                | Number | Total Area<br>(m <sup>2</sup> ) |
| GCN ponds          | Lost    | 0      | 0                               | Created                                | 0      | 0                               |
|                    | Damaged | 0      | 0                               | Restored /<br>reinstated /<br>enhanced | 0      | 0                               |

| Terrestrial habitat | Impacts        |             | Compensation   |                                    |                                  |
|---------------------|----------------|-------------|--|------------------------------------|----------------------------------|
|                     | Area lost (ha) |             | Area gained (ha)   |                                    |                                  |
|                     | Permanent      | Temporary   | Suitable GCN habitat created within the wider landscaping design | Created for bespoke GCN Mitigation | Restored / reinstated / enhanced |
| Core                | 0.08           | 0           | 0  | 0.08                               | 0.01                             |
| Intermediate        | 9.85           | 0.34        | 0  | 9.89                               | 0.35                             |
| Distant             | 18.12          | 0.67        | 0  | 18.21                              | 0.64                             |
| <b>Totals</b>       | <b>28.05</b>   | <b>1.01</b> | <b>0</b>   | <b>28.19</b>                       | <b>1</b>                         |

### E3.1 Creation, restoration and/or enhancement of aquatic habitats

No GCN mitigation pond creation is proposed for Metapopulation N18. However, to offset the loss of non-GCN ponds along the scheme, three new ponds are proposed within Mitigation Area HC26, which would be designed to be suitable for foraging/breeding GCN.

#### Non-GCN pond creation

| Pond reference | Surface Area (m <sup>2</sup> ) | Max. Depth (m) | Design / enhancement measures and location |
|----------------|--------------------------------|----------------|--|
| HC26_P1        | 250                            | 1.5            | Situated within Mitigation Area HC26       |
| HC26_P2        | 300                            | 1.5            | Situated within Mitigation Area HC26       |
| HC26_P3        | 200                            | 1.5            | Situated within Mitigation Area HC26       |

### E3.2 Terrestrial Habitat Measures

|                                      | Number/area (ha)/length** |                                  |
|--------------------------------------|---------------------------|----------------------------------|
|                                      | Created                   | Reinstated / Restored / Enhanced |
| Hedgerow planting                    | 0                         | 589.57m                          |
| Grassland re-seeding                 | 0                         | 0.78                             |
| Grassland management (just for GCN)  | 0                         | 0                                |
| Scrub planting                       | 0                         | 0                                |
| Woodland planting                    | 0                         | 0.12                             |
| Arable                               | 0                         | 0.10                             |
| Tall ruderal and fern                | 0                         | 0.01                             |
| Open mosaic (bespoke GCN mitigation) | 28.19                     | 0                                |
| Hibernacula creation*                | 0                         | 0                                |
| Refuge creation                      | 0                         | 0                                |

The Project will result in the overall permanent loss of 28.05ha of predominately low value arable land and semi-improved grassland due to the creation of open mosaic habitat specifically managed for the benefit of GCN.

### E3.3 Integration of roads and other hard landscapes

Assumed Metapopulation N18 is located over 1km from the proposed carriageway, with permanent works consisting of habitat creation no fragmentation or barriers to movement are anticipated, as such, there would be no additional integrations with roads or other hard surfaces.

### E4 Capture, Exclusion & Translocation

|  | Use method?<br>Yes/no | Minimum capture effort (days) |
|--|-----------------------|-------------------------------|
| At pond: bottle-trap, net, hand search &/or drain down | No                    |                               |
| At pond: ring-fence, pitfall trap (+ fence & refuges)  | No                    |                               |
| Away from pond: hand search                            | Yes                   | 3 days                        |
| Away from pond: destructive search                     | Yes                   | 3 days                        |
| Away from pond: fence, pitfall trap (& refuges)        | No                    |                               |
| Away from pond: night search                           | No                    |                               |
| Away from pond: exclusion fence only                   | No                    |                               |

Habitat manipulation is proposed, using Licensing Policy 1, as opposed to conventional capture and relocation methods, within suitable habitat within 250m of the ponds. As per the requirements of Licensing Policy 1, greater benefit to the local population would be achieved through the creation of additional non-GCN ponds benefiting the location population, if present. Any animals captured would be released within Mitigation Area HC26.

Mitigation Area HC26 is proposed for invertebrate, GCN and reptile mitigation for which open mosaic habitat will be created along with three ponds. The mitigation area would also provide stronger links between this population and Metapopulation N01 to the south.

### E5 Post-development Site Safeguard

#### E5.1 Habitat management & maintenance

The below table relates to habitat management and maintenance for Mitigation Area HC26. More detail is provided in section 5.9 of the outline Landscape and Ecology Management Plan (oLEMP) (Application Document 6.7).

| <b>Habitat management operations</b>                                |     |
|---|-----|
| Aquatic vegetation management in water bodies                       | Yes |
| Clearance of shading tree or scrub cover around pond margins        | Yes |
| Mowing, cutting or grazing of grassland                             | Yes |
| Desilting and clearance of leaf-fall                                | Yes |
| Woodland and scrub management                                       | Yes |
| Other (state below)   | Yes |
| <b>Site management operations</b>                                   |     |
| Checking for fish presence, and removal through appropriate methods | Yes |
| Checking pond condition and remedial action as required             | Yes |
| Checking for and removal of dumped rubbish                          | Yes |
| Reinstatement following fire, acute pollution or other major damage | Yes |
| Repair or replace fences  | No  |
| Maintain tunnel, underpass, guide fencing in good condition         | No  |
| Repair or replace interpretation boards                             | No  |

|  |          |
|--|----------|
| Other (state below)  | No       |
|  |          |
| State the period for which habitat management and maintenance plan will continue | 30 years |

**E5.2 Post-development Population Monitoring**

No post-development monitoring is proposed for Assumed Metapopulation N18.

**Assumed Metapopulation N21**

Ponds P168N, P169N and P267N (Assumed medium population)

**E1 The Mitigation Solution**

Mitigation in the vicinity of Assumed Metapopulation N21 would comprise habitat manipulation. Any captured animals would be released at Mitigation Area HC07 (within the distant zone of this metapopulation).

**E2 Receptor Site Selection**

**E2.1 Existing GCN status at receptor site(s)**

Great crested newts absent/highly likely to be absent

**E2.2 Survey information for receptor site if different from the survey for the application proposal.**

Same as application proposal

**E2.3 Receptor site locations**

| Site name | OS grid ref<br>eg AB12345678 | Administration area - if<br>different from development<br>site | Distance<br>from<br>development<br>site (m). |
|-----------|------------------------------|--|--|
| HC07      | TQ 59124 87003               | Essex  | Adjacent                                     |

**E2.4 Receptor site(s): ownership and land status.**

| Site name | Site Ownership    | Conservation<br>Designation? |
|-----------|-------------------|------------------------------|
| HC07      | National Highways | No                           |

**E2.5 Receptor site: habitat description, size (ha) & adjacent land use.**

| Site name | Habitat description   | Size (ha) | Adjacent<br>Land Use |
|-----------|---|-----------|----------------------|
| HC07      | Currently arable land use. An open mosaic of grassland, woodland, scrub, banks, ditches and refuse piles will be created. | 4.58      | Arable               |



**E3 Habitat Creation, Restoration and/or Enhancement**

| Aquatic habitat | Impacts |        |                              | Compensation                     |        |                              |
|-----------------|---------|--------|------------------------------|----------------------------------|--------|------------------------------|
|                 | Effect  | Number | Total Area (m <sup>2</sup> ) | Measure                          | Number | Total Area (m <sup>2</sup> ) |
| GCN ponds       | Lost    | 0      | 0                            | Created                          | 0      | 0                            |
|                 | Damaged | 0      | 0                            | Restored / reinstated / enhanced | 0      | 0                            |

| Terrestrial habitat | Impacts        |           | Compensation   |                                  |
|---------------------|----------------|-----------|--|----------------------------------|
|                     | Area lost (ha) |           | Area gained (ha)   |                                  |
|                     | Permanent      | Temporary | Suitable GCN habitat created within the wider landscaping design | Restored / reinstated / enhanced |
| Core                | 0              | 0         | 0  | 0                                |
| Intermediate        | 0              | 1.09      | 0  | 1.09                             |
| Distant             | 1.60           | 2.25      | 1.15   | 2.25                             |
| <b>Totals</b>       | 1.60           | 3.34      | 1.15   | 3.34                             |

**E3.1** Creation, restoration and/or enhancement of aquatic habitats

No aquatic habitat creation is proposed for Assumed Metapopulation N21.

**E3.2** Terrestrial Habitat Measures

|                                     | Number/area (ha)/length** |                                  |
|-------------------------------------|---------------------------|----------------------------------|
|                                     | Created                   | Reinstated / Restored / Enhanced |
| Hedgerow planting                   | 0                         | 114.61m                          |
| Grassland re-seeding                | 0.52                      | 0.37                             |
| Grassland management (just for GCN) | 0                         | 0                                |
| Scrub planting                      | 0.01                      | 0.10                             |
| Woodland planting                   | 0.34                      | 0.06                             |
| Tall ruderal and fern               | 0                         | 0.01                             |
| Arable                              | 0                         | 2.75                             |
| Wetland creation                    | 0.27                      | 0                                |
| Gardens/allotments                  | 0                         | 0.05                             |
| Hibernacula creation*               | 0                         | 0                                |
| Refuge creation                     | 0                         | 0                                |

The Project will result in a very small amount of overall permanent loss (1.60 ha), all of which is located in the distant zone. The habitat that will be newly created however (grassland and woodland), is considered to be of similar and/or higher quality for GCN.

**E3.3 Integration of roads and other hard landscapes**

No impact requiring mitigation comprising integration with the road or other hard landscapes has been anticipated and therefore no further mitigation has been proposed.

**E4 Capture, Exclusion & Translocation**

|  | Use method?<br>Yes/no | Minimum capture effort (days) |
|--|-----------------------|-------------------------------|
| At pond: bottle-trap, net, hand search &/or drain down | No                    |                               |
| At pond: ring-fence, pitfall trap (+ fence & refuges)  | No                    |                               |
| Away from pond: hand search                            | Yes                   | 3 days                        |
| Away from pond: destructive search                     | Yes                   | 3 days                        |
| Away from pond: fence, pitfall trap (& refuges)        | No                    |                               |
| Away from pond: night search                           | No                    |                               |
| Away from pond: exclusion fence only                   | No                    |                               |

As habitat clearance is proposed largely within intensively managed arable fields, habitat manipulation within suitable habitat is proposed within 250m of the ponds. Any animals captured will be released within Mitigation Area HC07.

**E5 Post-development Site Safeguard**

**E5.1 Habitat management & maintenance**

Most of the lost habitats will be reinstated and returned to landowner. The areas of landscape planting adjacent to the road will be managed however, not specifically for GCN. Any maintenance and management for Mitigation Area HC07, which will act as a receptor site for this population, is included in Metapopulation N11/N12, above.

| <b>Habitat management operations</b>                                |    |
|---|----|
| Aquatic vegetation management in water bodies                       | No |
| Clearance of shading tree or scrub cover around pond margins        | No |
| Mowing, cutting or grazing of grassland                             | No |
| Desilting and clearance of leaf-fall                                | No |
| Woodland and scrub management                                       | No |
| Other (state below)   | No |
| <b>Site management operations</b>                                   |    |
| Checking for fish presence, and removal through appropriate methods | No |
| Checking pond condition and remedial action as required             | No |
| Checking for and removal of dumped rubbish                          | No |
| Reinstatement following fire, acute pollution or other major damage | No |
| Repair or replace fences  | No |
| Maintain tunnel, underpass, guide fencing in good condition         | No |
| Repair or replace interpretation boards                             | No |
| Other (state below)   | No |

|  |  |
|--|--|
| State the period for which habitat management and maintenance plan will continue |  |
|--|--|

**E5.2 Post-development Population Monitoring**

No post-development monitoring is proposed for Assumed Metapopulation N21.

**Assumed Metapopulation N25**

Ponds P506N, P507N and P508N (Assumed medium population)

Although the impacts for Assumed Metapopulation N25 are Negligible and therefore no mitigation proposals are required, this population has been included in the mitigation solution to ensure the woodland planting within the arable fields, which would be of benefit to GCN, has been captured within the calculations.

**E3 Habitat Creation, Restoration and/or Enhancement**

| Terrestrial habitat | Impacts        |           | Compensation   |                                  |
|---------------------|----------------|-----------|--|----------------------------------|
|                     | Area lost (ha) |           | Area gained (ha)   |                                  |
|                     | Permanent      | Temporary | Suitable GCN habitat created within the wider landscaping design | Restored / reinstated / enhanced |
| Core                | 0              | 0         | 0  | 0                                |
| Intermediate        | 4.20           | 0.04      | 4.21   | 0.04                             |
| Distant             | 11.90          | 0.22      | 11.99  | 0.22                             |
| <b>Totals</b>       | 16.10          | 0.26      | 16.20  | 0.26                             |

**E3.2 Terrestrial Habitat Measures**

|                                     | Number/area (ha)/length** |                                  |
|-------------------------------------|---------------------------|----------------------------------|
|                                     | Created                   | Reinstated / Restored / Enhanced |
| Hedgerow planting                   | 0                         | 34.72m                           |
| Grassland re-seeding                | 12.04                     | 0.24                             |
| Grassland management (just for GCN) | 0                         | 0                                |
| Scrub planting                      | 0                         | 0.01                             |
| Woodland planting                   | 4.16                      | 0.01                             |
| Tall ruderal and fern               | 0                         | 0                                |
| Arable                              | 0                         | 0                                |
| Hibernacula creation*               | 0                         | 0                                |
| Refuge creation                     | 0                         | 0                                |

The project will result in the permanent loss of 16.1ha of habitat, the majority of which is arable. This will be replaced with higher value semi-natural woodland and grassland, which although not bespoke mitigation for GCN, is considered of higher suitability. The increase in compensation habitat compared to the permanent habitat lost is due to the conversion of unsuitable GCN habitat to suitable GCN habitats. All habitat that is temporarily lost will be reinstated.

### Assumed Metapopulation N26

Pond P509N (Assumed medium population)

Although the impacts for Assumed Metapopulation N26 are Negligible and therefore no mitigation proposals are required, this population has been included in the mitigation solution to ensure the woodland planting within the arable fields, which would be of benefit to GCN, has been captured within the calculations.

### E3 Habitat Creation, Restoration and/or Enhancement

| Terrestrial habitat | Impacts        |           | Compensation   |                                  |
|---------------------|----------------|-----------|--|----------------------------------|
|                     | Area lost (ha) |           | Area gained (ha)   |                                  |
|                     | Permanent      | Temporary | Suitable GCN habitat created within the wider landscaping design | Restored / reinstated / enhanced |
| Core                | 0              | 0         | 0  | 0                                |
| Intermediate        | 3.11           | 0         | 3.11   | 0                                |
| Distant             | 12.83          | 0         | 12.84  | 0                                |
| <b>Totals</b>       | 15.94          | 0         | 15.95  | 0                                |

### E3.2 Terrestrial Habitat Measures

|                                     | Number/area (ha)/length** |                                  |
|-------------------------------------|---------------------------|----------------------------------|
|                                     | Created                   | Reinstated / Restored / Enhanced |
| Hedgerow planting                   | 0                         | 0                                |
| Grassland re-seeding                | 6.68                      | 0                                |
| Grassland management (just for GCN) | 0                         | 0                                |
| Scrub planting                      | 0                         | 0                                |
| Woodland planting                   | 9.27                      | 0                                |
| Tall ruderal and fern               | 0                         | 0                                |
| Arable                              | 0                         | 0                                |
| Hibernacula creation*               | 0                         | 0                                |
| Refuge creation                     | 0                         | 0                                |

## Additional Sheet E - Mitigation and Compensation

The project will result in the permanent loss of 15.94ha of habitat, the majority of which is arable. This will be replaced with higher value semi-natural woodland and grassland, which although not bespoke mitigation for GCN, is considered of higher suitability. There is no temporary habitat loss within metapopulation N26.

# WML-A14-E6a&E6b – WORK SCHEDULE FOR GREAT CRESTED NEWT

## ANNEXED LICENCES



**Site name and address (as stated on the application form or licence granted): Lower Thames Crossing**

Please ensure that the work schedules E6a and E6b are S.M.A.R.T and appropriate timescales are provided for each activity, to fit with order of events. Complete these schedules to show timings for all major categories of work (mitigation and compensation measures), and to show the main construction period. The most common activities are listed here, and you can add up to 6 more if needed. Leave blank if not applicable. Enter timing by stating **start and end dates, to nearest month and year** (see first line for example). Enter comments if you need to clarify timings. For very complex schemes (e.g. high impact or phased development schemes) if additional lines are needed please do add in. This work schedule will form part of any annexed licence.

| <b>PLEASE INCLUDE DATE OF SUBMISSION (e.g. 1 January 2016).</b> This will be referenced in the licence → |                         | <b>June 2023</b>  |
|--|-------------------------|---|
| <b>E6a) Pre, mid and post-development (other than monitoring, management and maintenance)</b>            |                         |   |
| Activity   | Timing                  | Comments  |
| <i>Example: Receptor site pond creation</i>  | <i>Nov-15 to Dec-15</i> | <i>Also plant pond up with native species in January 2016</i>   |
| Receptor site pond creation  | 2025-2028               | GCN ponds will be created in receptor sites prior to translocation and prior to loss of existing GCN ponds under the licence.<br><br>Creation will be a minimum of 6 months prior to translocation if no existing GCN ponds are present within the receptor sites.<br><br>Refined timings for each metapopulation will be incorporated into the licence application post DCO once the |

|  |             |   |
|--|-------------|---|
|  |             | construction programme is known.  |
| Receptor site pond enhancement or restoration  | N/A         | N/A   |
| Receptor site terrestrial hab works - general e.g. reseedling, hedge planting            | 2025-2028   | <p>Terrestrial habitat creation to be undertaken prior to translocation to receptor sites/habitat creation areas where translocation is proposed.</p> <p>Refined timings for each metapopulation will be incorporated into the licence application post DCO once the construction programme is known.</p> |
| Receptor site terrestrial hab works - features e.g. hibernacula, refuges                 | 2025-2028   | <p>Terrestrial habitat creation to be undertaken prior to translocation to receptor sites/habitat creation areas where translocation is proposed.</p> <p>Refined timings for each metapopulation will be incorporated into the licence application post DCO once the construction programme is known.</p> |
| Construction of permanent fences/walls   | N/A         | N/A   |
| Construction of underpass/tunnel/culvert (and installation of 'guide' fencing)           | N/A         | N/A   |
| Newt fence installation (to include drift or ring fencing if applicable – specify which) | 2026-2029   | <p>Fencing proposals as discussed in Additional sheet E and as shown on Figure E4a.</p> <p>Fencing installation timings will vary depending on the construction programme and will vary between metapopulations. Revised timings to be incorporated post-DCO.</p>   |
| Newt capture (pitfall trapping etc - outside hibernation/dormancy periods only)          | 2026 - 2029 | Newt capture to be undertaken during the active season only.  |

|   |             |  |
|---|-------------|--|
|   |             | Timings will vary depending on the construction programme and will vary between metapopulations. Revised timings to be incorporated post-DCO.  |
| Pond draining and pond destruction (please indicate when each will occur) | 2026 - 2029 | <p>Pond draining and destruction to only be carried out once all capture effort has been concluded within the relevant waterbodies.</p> <p>Timings will vary depending on the construction programme and will vary between metapopulations. Revised timings to be incorporated post-DCO.</p>   |
| Hand searches   | 2026 - 2029 | <p>Includes all habitat manipulation works during construction and during installation and removal of fences (hence extends to 2027).</p> <p>Timings will vary depending on the construction programme and will vary between metapopulations. Revised timings to be incorporated post-DCO.</p> |
| Destructive searches (following completion of all other capture efforts)  | 2026 - 2029 | <p>To be undertaken only following completion of all other methods.</p> <p>Timings will vary depending on the construction programme and will vary between metapopulations. Revised timings to be incorporated post-DCO.</p>   |
| Construction period (start and end dates)                                 | 2026 - 2032 | Preliminary works proposed once DCO granted (assumed 2024) with Main Construction starting in 2025. Road opening programmed for 2030.  |

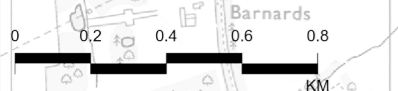
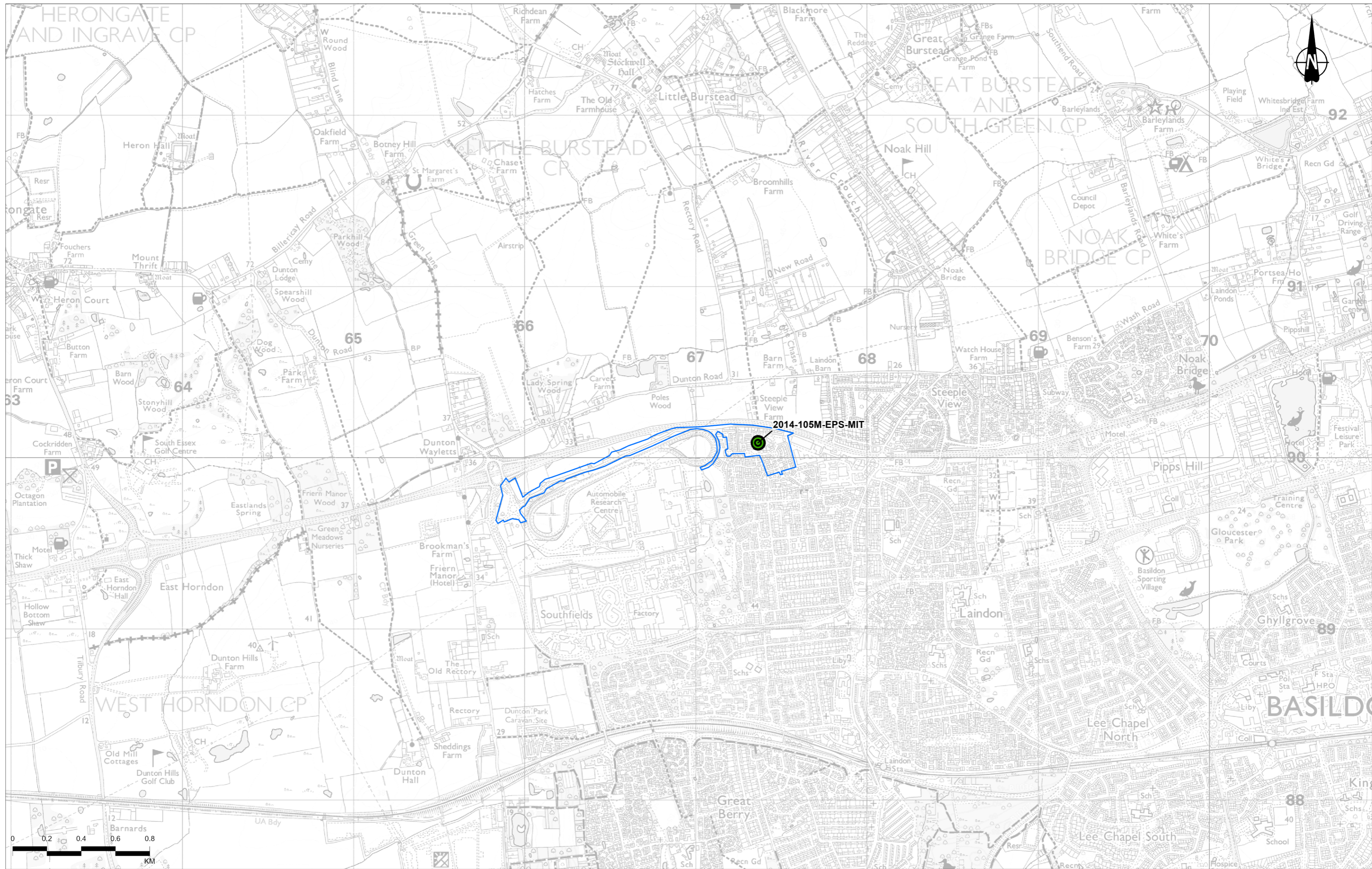


|  |                |   |
|--|----------------|---|
| Site checks & maintenance during construction                                      | 2026 - 2032    | Daily during construction works   |
| Drift fence removal (not to be undertaken during hibernation/dormancy periods)     | 2027 - 2029    | Following completion of capture in each relevant metapopulation as discussed in Additional Sheet E and as shown on Figure E4a<br><br>Timings will vary depending on the construction programme and will vary between metapopulations. Revised timings to be incorporated post-DCO.  |
| Newt fence removal (not to be undertaken during hibernation/dormancy periods)      | 2027 - 2032    | Once all works have been completed in each relevant metapopulation.   |
| Ring fence removal (not to be undertaken during the hibernation/dormancy periods)  | 2027 - 2029    | Once capture works have been completed at relevant ponds.   |
| Habitat reinstatement (for temporary impact schemes only)                          | 2030 - 2032    | Once construction compounds and areas have been decommissioned. Landscaping works to be undertaken as soon as practicable within the construction programme.  |
| Post construction mitigation/compensation on dev't site or other (provide details) | 2026 - ongoing | Landscaping associated with the scheme (i.e. not reinstated habitats or habitat creation areas) to be implemented as early as practicable within the construction programme. National Highways will secure all GCN mitigation provision for long-term management and maintenance. Terrestrial and aquatic habitats will be managed to meet success criteria under the supervision of a steering group which includes Natural England and relevant local authorities. This provision is secured through the grant of DCO via the outline Landscape and Ecology |

|  |  |  |
|--|--|--|
|  |  | Management Plan document (Application Document 6.7). Habitat management will be an ongoing process from the point that they are created. |
| Due to the number of metapopulations and uncertainty over programme it is not possible to provide an accurate work schedule for the GCN mitigation works at this time.           |  |  |
| Following the DCO process and once programme timings are known, it is proposed that a separate work schedule will be produced for each metapopulation with more refined timings. |  |  |
| This will also include a completed section E6b to include population monitoring proposals specific to each impacted metapopulation.  |  |  |
|  |  |  |
|  |  |  |
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|  |  |  |

**E6b) Post-development works - type a "Y" where each activity will occur for a given year and leave blank for no activity.**

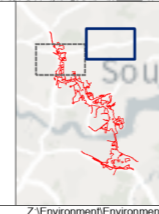
| Year:                 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 |
|-----------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Population monitoring |      |      |      |      |      |      |      |      | Y    | Y    | Y    | Y    |
| Habitat management    |      |      |      |      |      |      |      |      | Y    | Y    | Y    | Y    |
| Site maintenance      |      |      |      |      |      |      |      |      | Y    | Y    | Y    | Y    |
| Year:                 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 |
| Population monitoring | Y    | Y    | Y    | Y    | Y    | Y    | Y    | Y    | Y    | Y    |      |      |
| Habitat management    | Y    | Y    | Y    | Y    | Y    | Y    | Y    | Y    | Y    | Y    | Y    | Y    |
| Site maintenance      | Y    | Y    | Y    | Y    | Y    | Y    | Y    | Y    | Y    | Y    | Y    | Y    |



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| P02 | S8     | 30/08/2022 | DCO Application     | CD    | HT      | BF       |

- Legend**
- Existing GCN Mitigation Licence Site
  - Licence 2014-1051-EPS-MIT

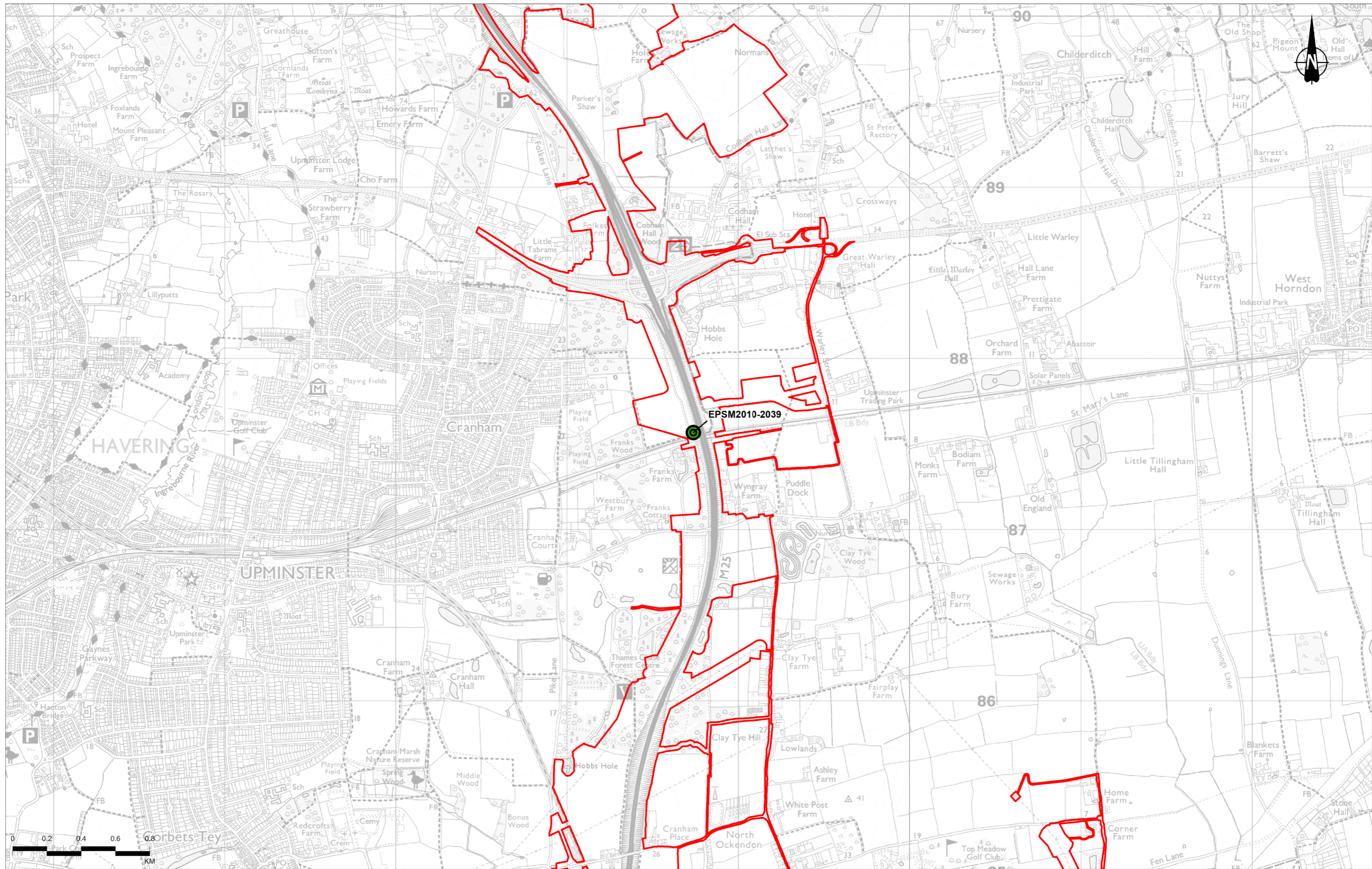


Client  
**national highways**

Project  
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|-----------------------------|---|---------------|----------|----------|-----|
| Status                      | DCO APPLICATION   | Original Size | A3       | Revision | P02 |
| Application Document Number | TR010032/APP/6.2  | Scale         | 1:20,000 |          |     |
| Drawing Title               | <b>Figure B1.2<br/>GCN Mitigation Sites<br/>Page 1 of 2</b> |               |          |          |     |
| Drawing Number              | HE540039-CJV-EBD-SZP_EGNE00000000-DR-LE-60030               |               |          |          |     |

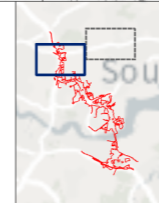
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| P02 | S8     | 30/08/2022 | DCO Application     | CD    | HT      | BF       |

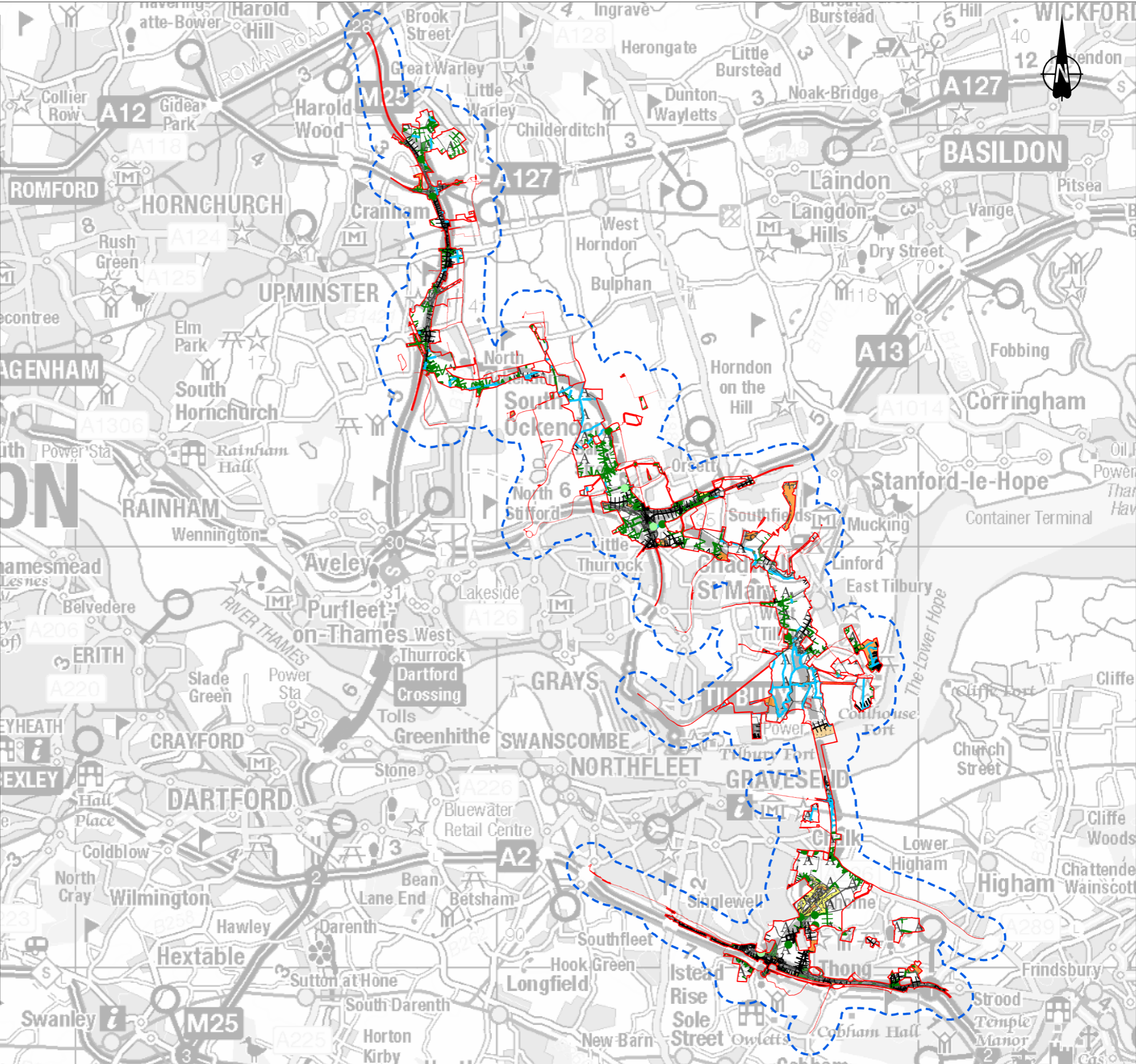
**Legend**  
 Order Limits  
● Existing GCN Mitigation Licence Site



Client  
  
 Project  
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| Application Document Number | TR010032/APP/6.2  | Scale         | 1:20,000 |          |     |
| Drawing Title               | <b>Figure B1.2<br/>         GCN Mitigation Sites<br/>         Page 2 of 2</b> |               |          |          |     |
| Drawing Number              | HE540039-CJV-EBD-SZP_EGNE0000000-DR-LE-60030                                  |               |          |          |     |

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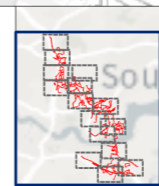


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**Legend**

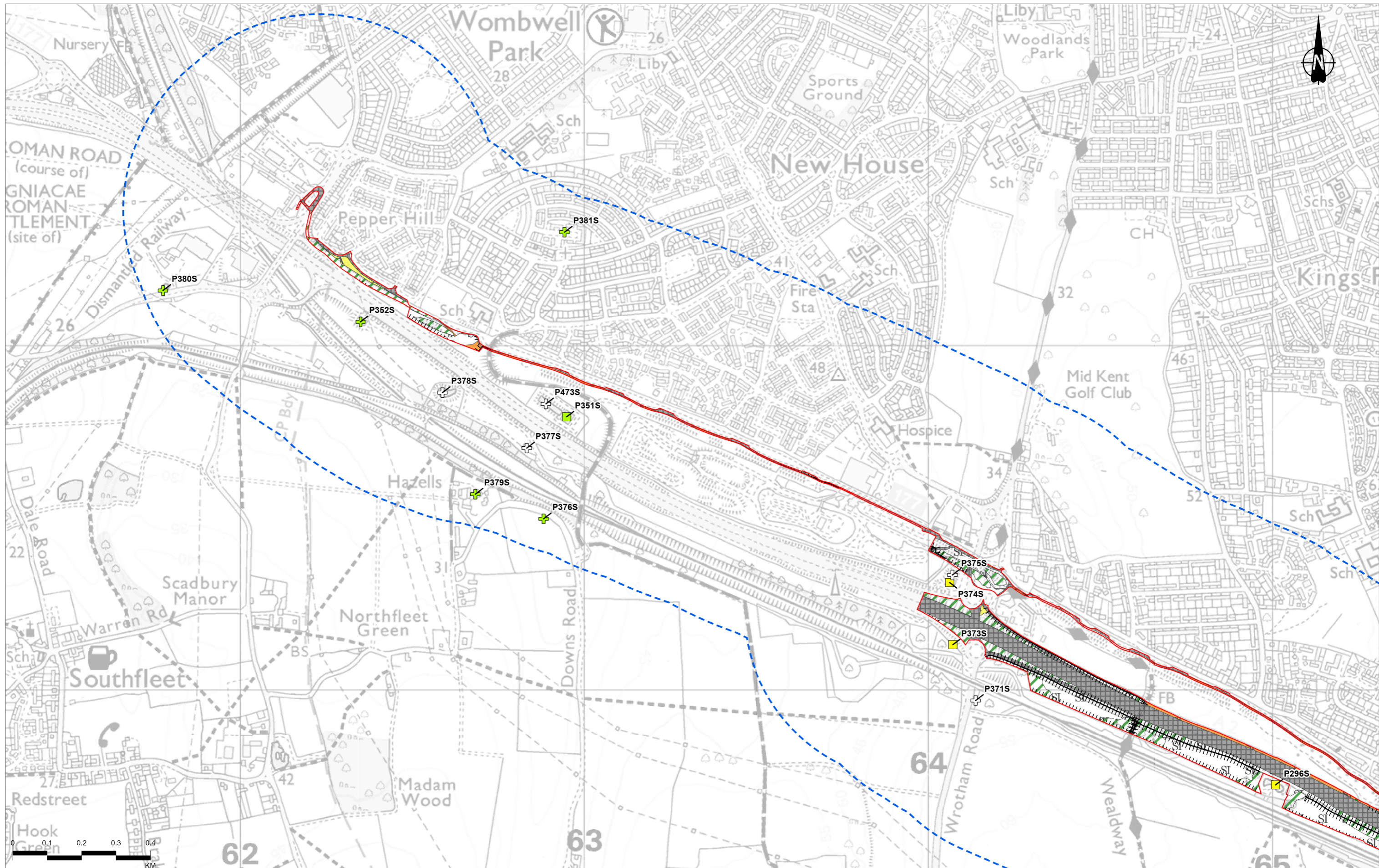
- Order Limits
- GCN Survey Area



Client  
**national highways**

Project  
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|-----------------------------|---|---------------|-----------|----------|-----|
| Status                      | DCO APPLICATION                               | Original Size | A3        | Revision | P02 |
| Application Document Number | TR010032/APP/6.2                              | Scale         | 1:100,000 |          |     |
| Drawing Title               | Figure C3.2a<br>Survey Map                    |               |           |          |     |
| Drawing Number              | HE540039-CJV-EBD-SZP_EGNE00000000-DR-LE-60032 |               |           |          |     |



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| P02 | S8     | 16/09/2022 | DCO Application     | CD    | HT      | BF       |

- Legend**
- Order Limits
  - GCN Survey Area
  - Assumed present - No access
  - Assumed present - Survey inconclusive (2020)
  - + Unknown - Scoped out
  - + Dry

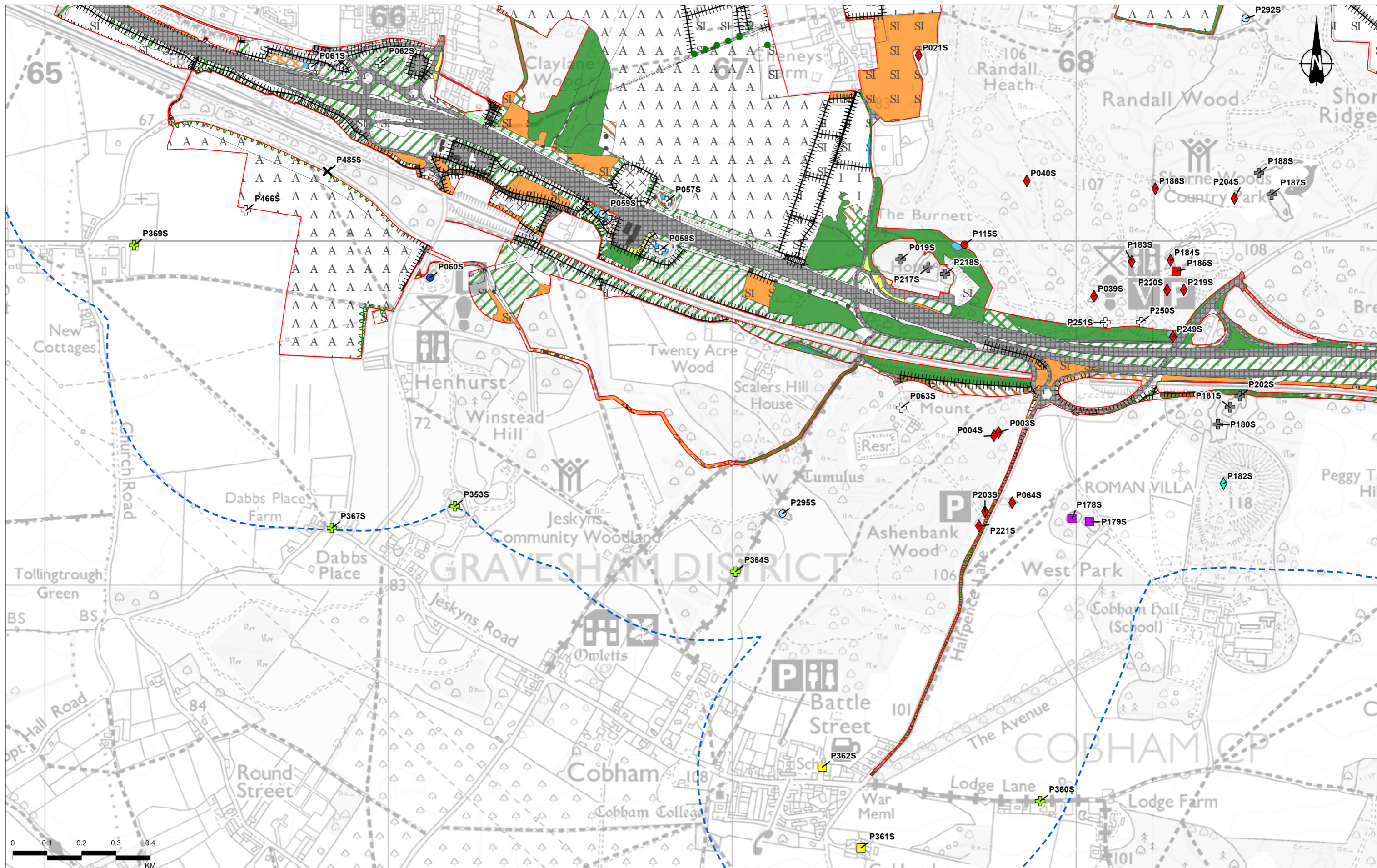
Client

Project

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| Status                      | DCO APPLICATION                               | Original Size | A3       | Revision | P02 |
| Application Document Number | TR010032/APP/6.2                              | Scale         | 1:10,000 |          |     |
| Drawing Title               | Figure C3.2a<br>Survey Map<br>Page 1 of 16    |               |          |          |     |
| Drawing Number              | HE540039-CJV-EBD-SZP_EGNE00000000-DR-LE-60032 |               |          |          |     |

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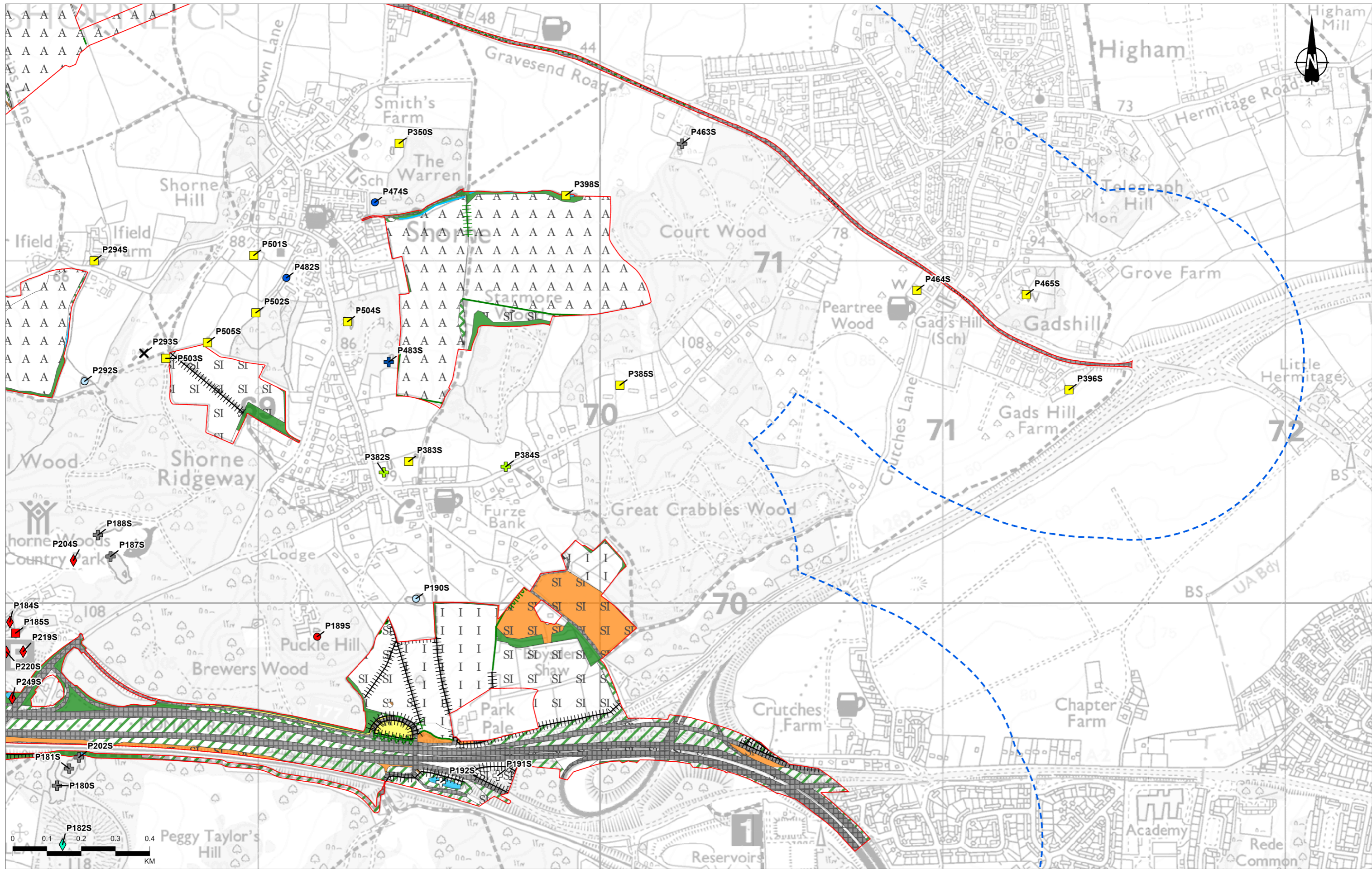
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| P02 | S8     | 16/09/2022 | DCO Application     | CD    | HT   | BF     |

| Legend                          |   |
|---------------------------------|---|
|                                 | Order Limits                                    |
|                                 | GCN Survey Area                                 |
| <b>Pond Status, Survey Year</b> |   |
|                                 | Present - Conventional (2018)                   |
|                                 | Present - eDNA (2020)                           |
|                                 | Assumed present - Conventional (2018)           |
|                                 | Assumed present - Desk Study (No access) (2014) |
|                                 | Assumed present - No access                     |
|                                 | Absent - Conventional (2018)                    |
|                                 | Absent - eDNA (2018)                            |
|                                 | Absent - eDNA (2019)                            |
|                                 | Absent - eDNA (2022)                            |
|                                 | Unknown - Scoped out                            |
|                                 | Dry   |
|                                 | No pond   |
|                                 | Unsuitable                                      |

|  |         |                             |  |               |          |          |     |
|--|---------|-----------------------------|--|---------------|----------|----------|-----|
|  | Client  | Status                      | DCO APPLICATION                              | Original Size | A3       | Revision | P02 |
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|  |         | Drawing Title               | Figure C3.2a<br>Survey Map<br>Page 2 of 16   |               |          |          |     |
|  |         | Drawing Number              | HE540039-CJV-EBD-SZP_EGNE0000000-DR-LE-60032 |               |          |          |     |

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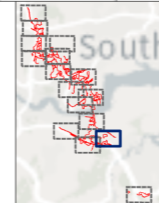


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| Rev | Status | Rev. Date  | Purpose of revision | Drawn | Checked | Approved |

**Legend**

- Order Limits
- GCN Survey Area
- Pond Status, Survey Year**
- ◆ Present - Conventional (2018)
- ◆ Present - eDNA (2020)
- Assumed present - Conventional (2018)
- Assumed present - No access
- Absent - Conventional (2018)
- Absent - eDNA (2019)
- Absent - eDNA (2022)
- + Positive - eDNA (2022)
- + Unknown - Scoped out
- + Dry
- ✕ No pond
- + Unsuitable



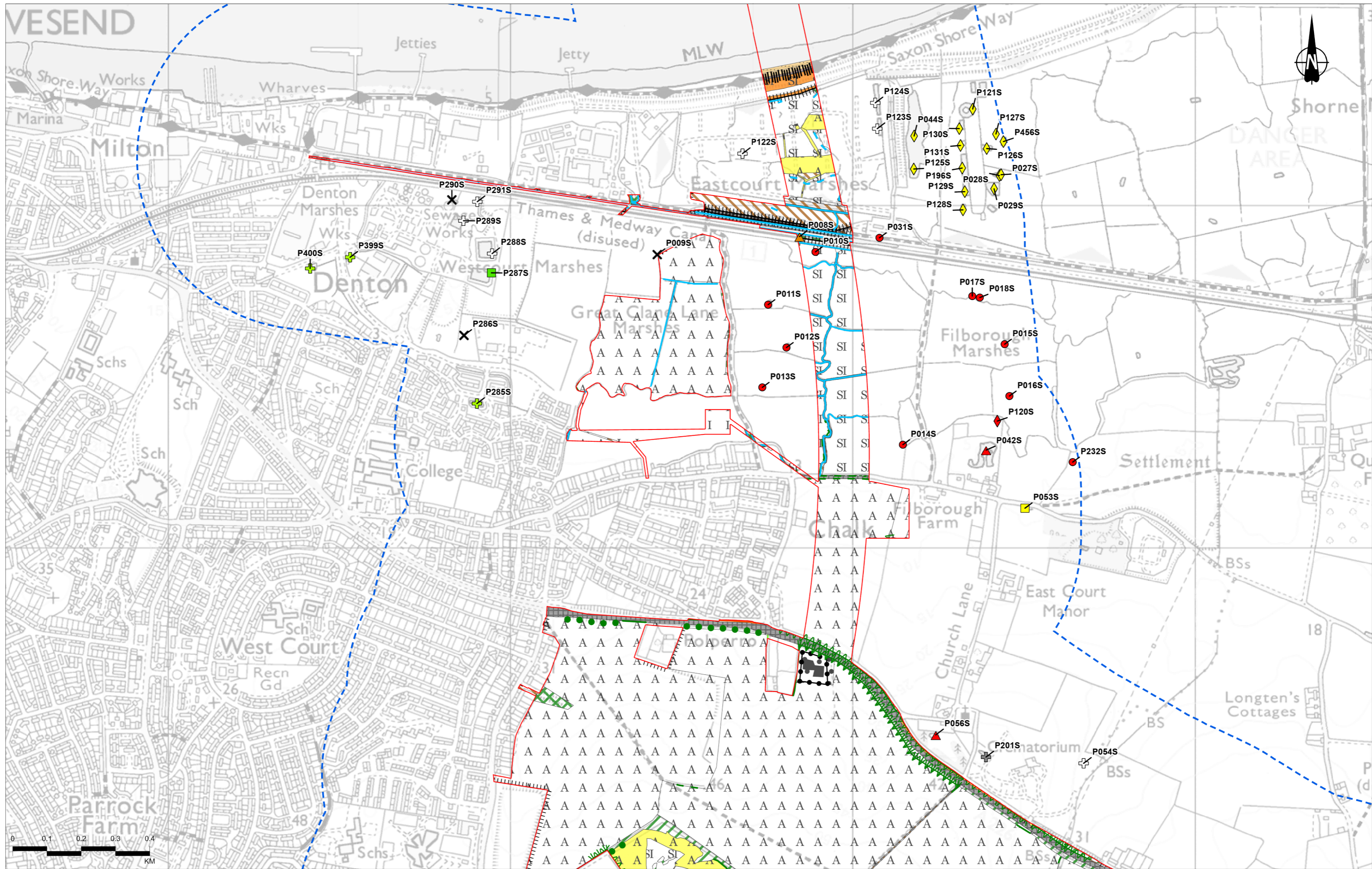
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| Status                      | DCO APPLICATION                               | Original Size | A3       | Revision | P02 |
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| Drawing Title               | Figure C3.2a<br>Survey Map<br>Page 3 of 16    |               |          |          |     |
| Drawing Number              | HE540039-CJV-EBD-SZP_EGNE00000000-DR-LE-60032 |               |          |          |     |

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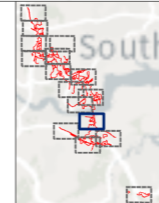


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| P02 | S8     | 16/09/2022 | DCO Application     | CD    | HT      | BF       |

**Legend**

|   |   |                      |
|---|---|----------------------|
| Order Limits                                | Assumed present - No access                 | Unknown - Scoped out |
| GCN Survey Area                             | Assumed present - Unsafe to survey          | Dry                  |
| <b>Pond Status, Survey Year</b>             |   |                      |
| Present - Conventional (2018)               | Absent - Conventional (2018)                | No pond              |
| Present - Incidental sighting (2017 & 2018) | Assumed absent - Conventional (2018)        | Unsuitable           |
|   | Assumed absent - Conventional & eDNA (2018) |                      |

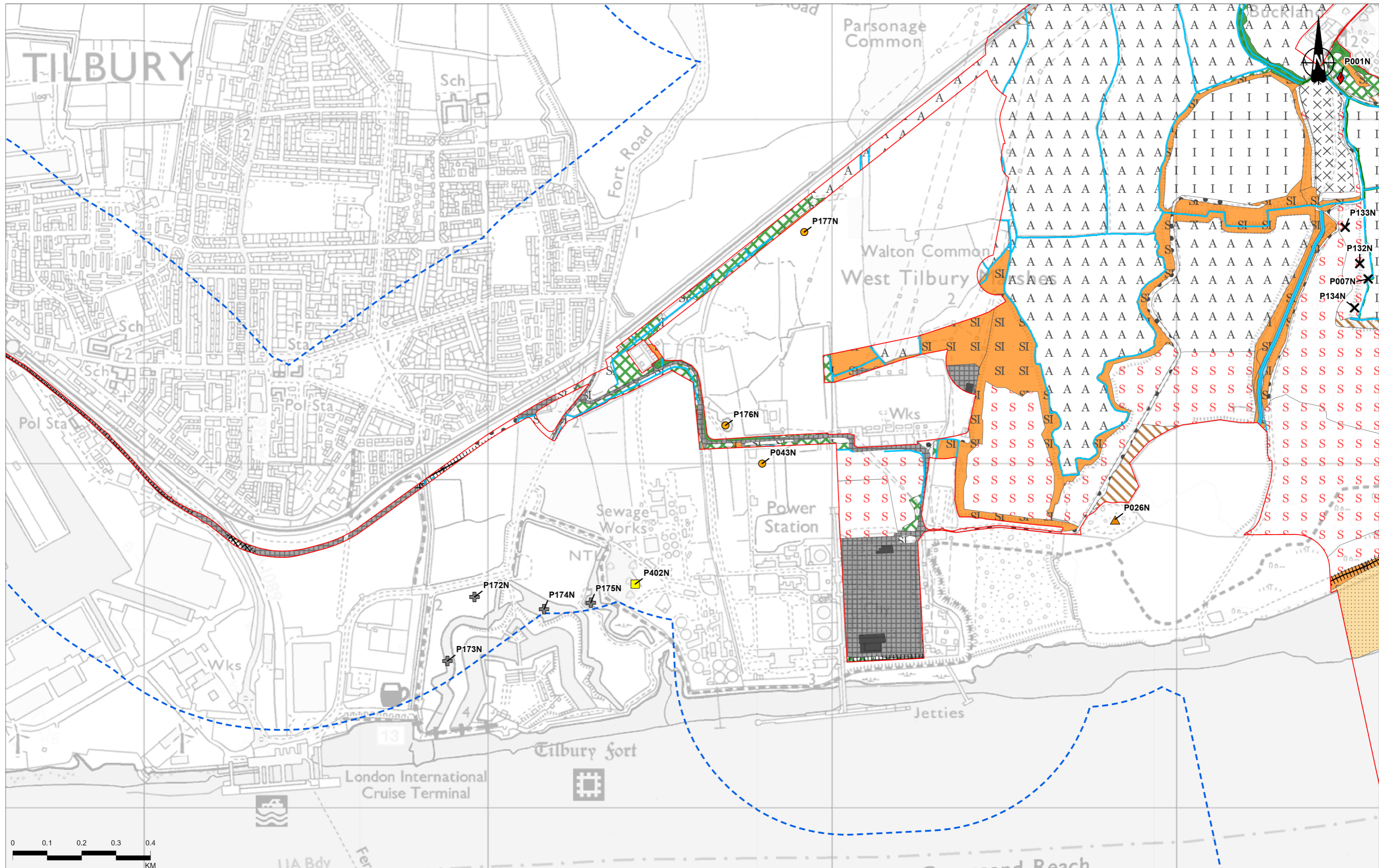


Client: national highways

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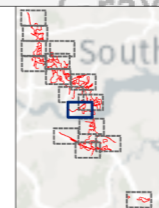


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**Legend**

|                                 |   |
|---------------------------------|---|
| Order Limits                    | Absent - Desk Study (No access) (2016 & 2017) |
| GCN Survey Area                 | Assumed absent - Conventional & eDNA (2018)   |
| <b>Pond Status, Survey Year</b> |   |
| Present - Conventional (2018)   | No pond                                       |
| Assumed present - No access     | Unsuitable                                    |

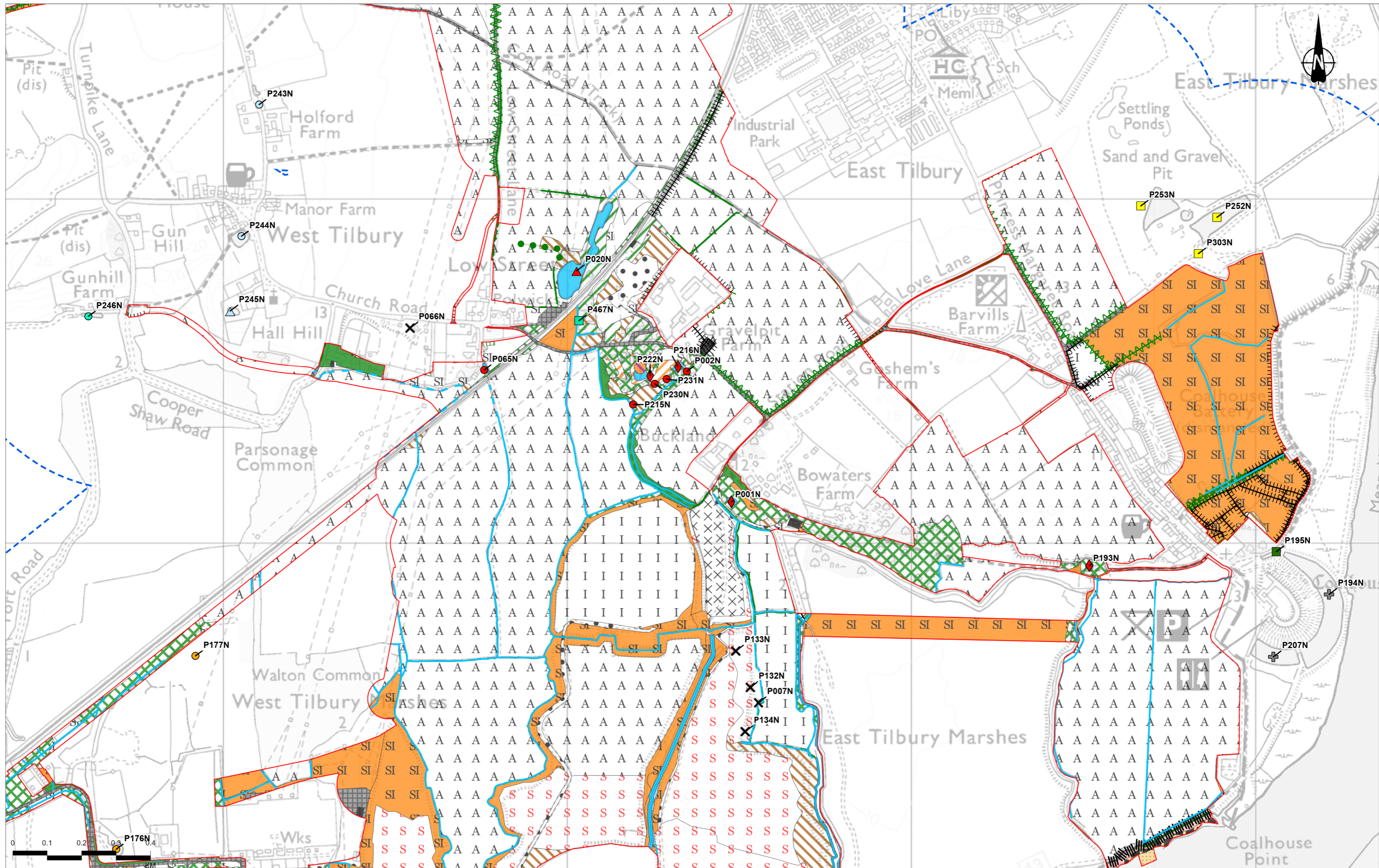


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Project: LOWER THAMES CROSSING

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| Drawing Title               | Figure C3.2a<br>Survey Map<br>Page 5 of 16    |               |          |          |     |
| Drawing Number              | HE540039-CJV-EBD-SZP_EGNE00000000-DR-LE-60032 |               |          |          |     |

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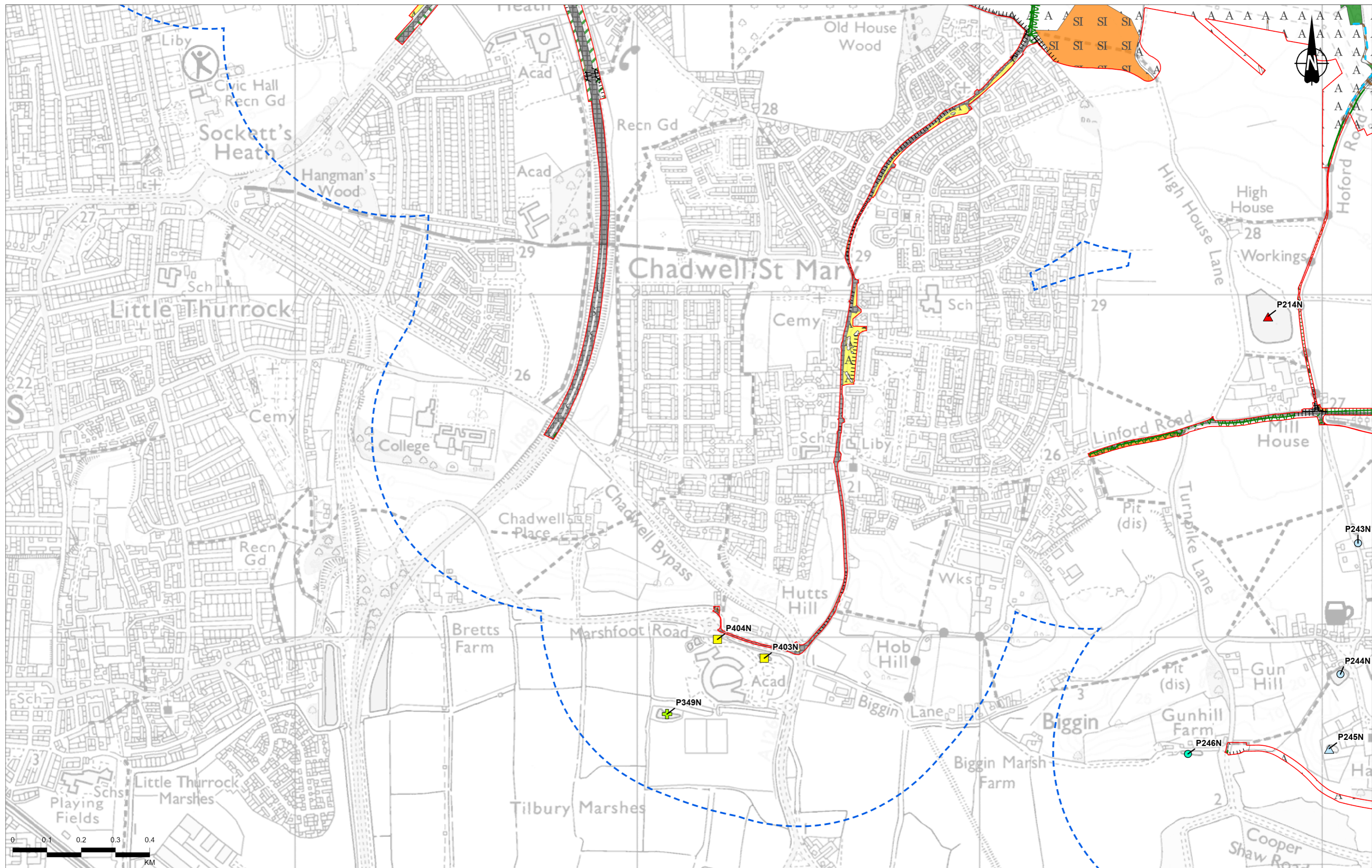
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| Legend                   |   |
|--------------------------|---|
|                          | Order Limits                                  |
|                          | GCN Survey Area                               |
| Pond Status, Survey Year |   |
|                          | Present - Conventional (2018)                 |
|                          | Assumed present - eDNA (2020)                 |
|                          | Assumed present - No access                   |
|                          | Assumed present - Unsurveyed (No access)      |
|                          | Absent - Conventional (2018)                  |
|                          | Absent - Desk Study (No access) (2016 & 2017) |
|                          | Absent - eDNA (2019)                          |
|                          | Assumed absent - Conventional (2018)          |
|                          | Assumed absent - eDNA (2019)                  |
|                          | No pond                                       |
|                          | Unsuitable                                    |

|                       |         |                             |   |               |          |          |     |
|-----------------------|---------|-----------------------------|---|---------------|----------|----------|-----|
|                       | Client  | Status                      | DCO APPLICATION                               | Original Size | A3       | Revision | P02 |
|                       | Project | Application Document Number | TR010032/APP/6.2                              | Scale         | 1:10,000 |          |     |
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|                       |         | Drawing Number              | HE540039-CJV-EBD-SZP_EGNE00000000-DR-LE-60032 |               |          |          |     |

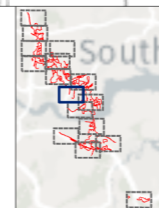
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| P02 | S8     | 16/09/2022 | DCO Application     | CD    | HT      | BF       |

| Legend |                             |  |                                      |  |                              |
|--------|-----------------------------|--|--------------------------------------|--|------------------------------|
|        | Order Limits                |  | Absent - eDNA (2019)                 |  | Assumed absent - eDNA (2019) |
|        | GCN Survey Area             |  | Absent - eDNA (2020)                 |  | Unknown - Scoped out         |
|        | Assumed present - No access |  | Assumed absent - Conventional (2018) |  |                              |

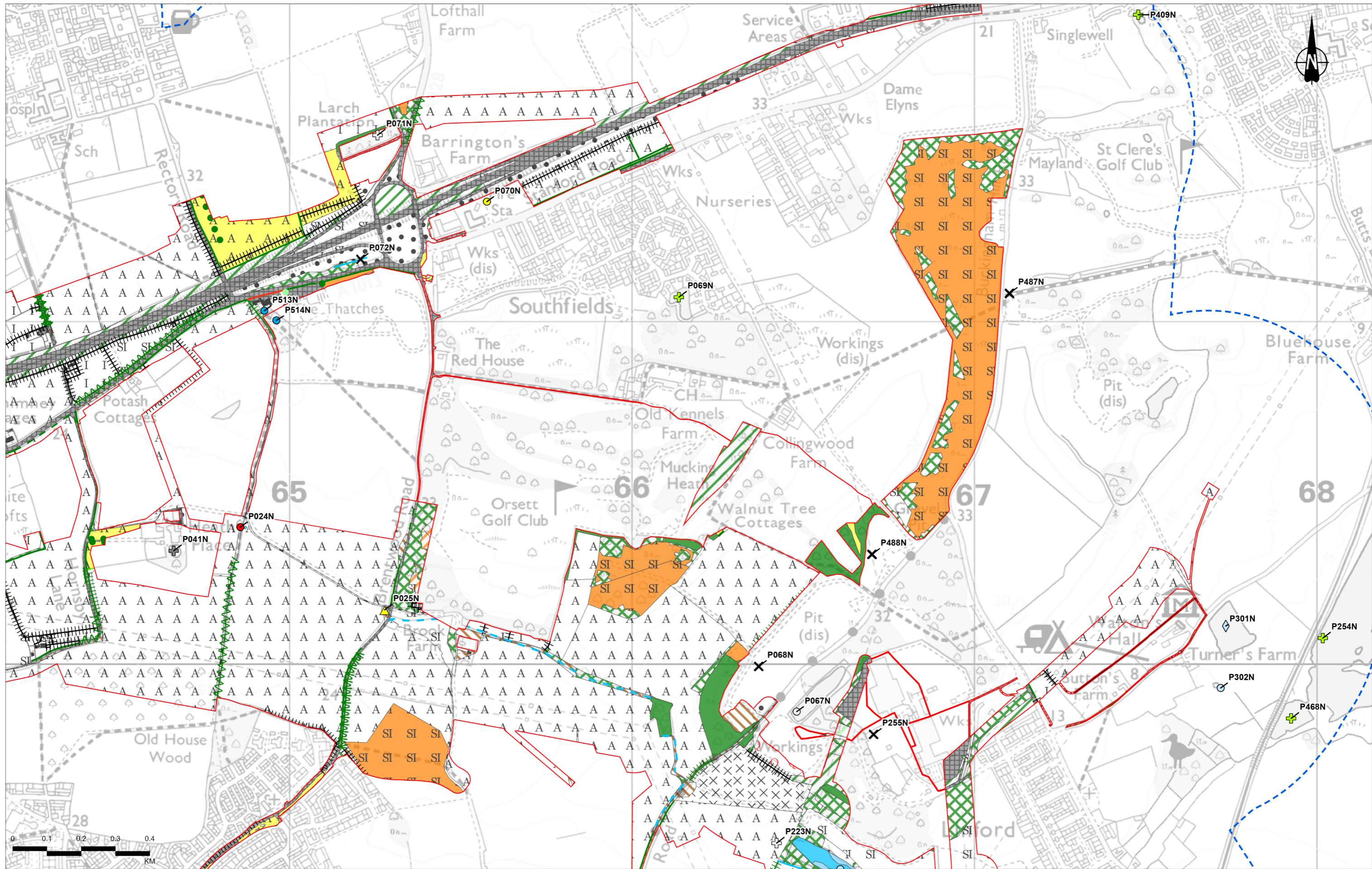


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| Drawing Title               | Figure C3.2a<br>Survey Map<br>Page 7 of 16   |               |          |          |     |
| Drawing Number              | HE540039-CJV-EBD-SZP_EGNE0000000-DR-LE-60032 |               |          |          |     |

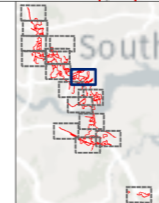
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| P02 | S8     | 16/09/2022 | DCO Application     | CD    | HT      | BF       |
| Rev | Status | Rev. Date  | Purpose of revision | Drawn | Checked | Approved |

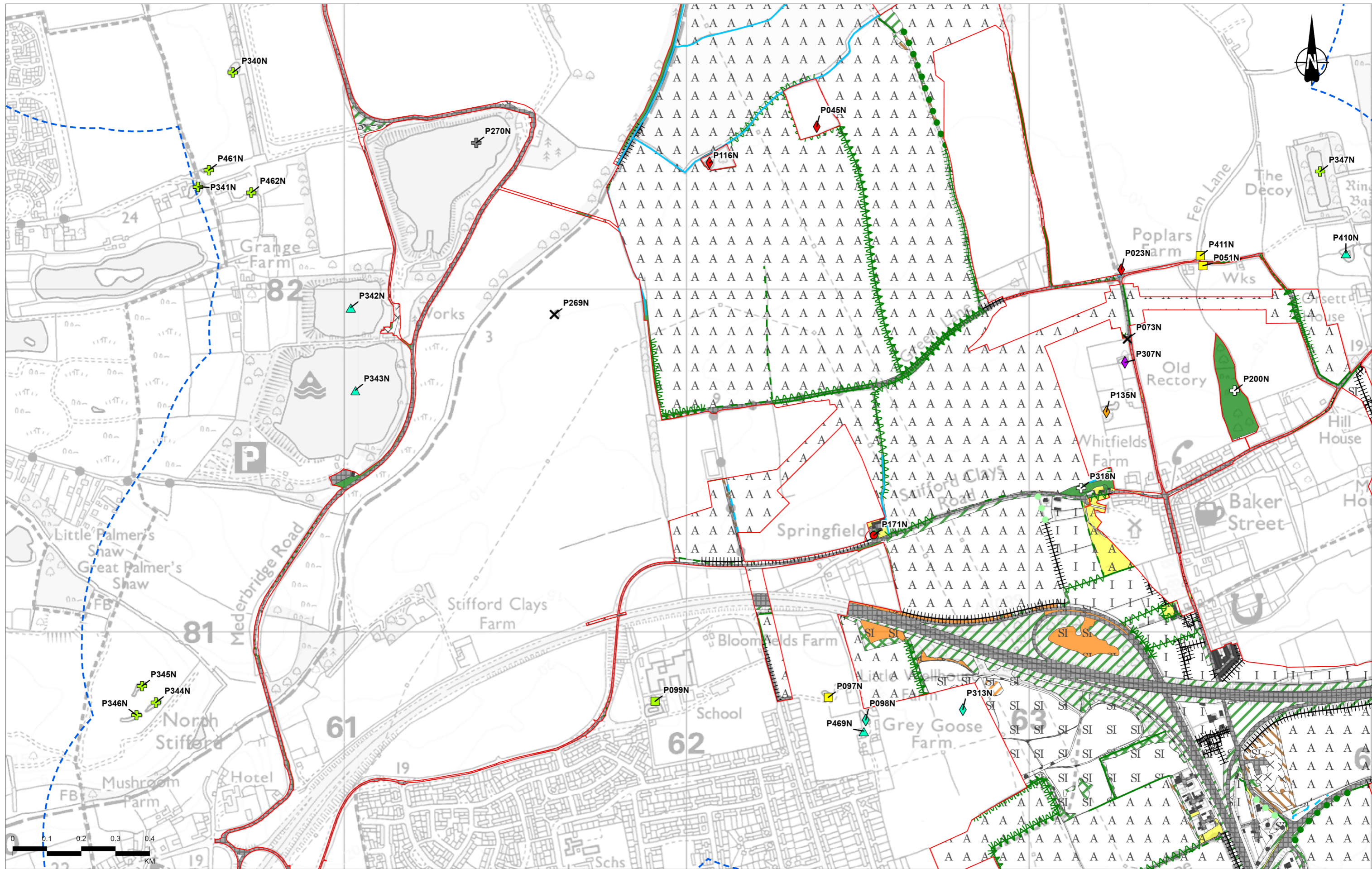
| Legend                   |  |
|--------------------------|--|
|                          | Order Limits                                       |
|                          | GCN Survey Area                                    |
| Pond Status, Survey Year |  |
|                          | Present - eDNA (2019)                              |
|                          | Absent - Conventional (2018)                       |
|                          | Absent - Desk Study (No access) (2015 & 2016)      |
|                          | Absent - eDNA (2018)                               |
|                          | Absent - eDNA (2019)                               |
|                          | Absent - eDNA (2021)                               |
|                          | Assumed absent - Conventional & eDNA (2018 & 2020) |
|                          | Unknown - Scoped out                               |
|                          | Dry  |
|                          | No pond  |
|                          | No pond  |
|                          | Unsuitable   |



Client  
 national highways  
 Project  
**LOWER THAMES CROSSING**

|                             |   |               |          |          |     |
|-----------------------------|---|---------------|----------|----------|-----|
| Status                      | DCO APPLICATION                               | Original Size | A3       | Revision | P02 |
| Application Document Number | TR010032/APP/6.2                              | Scale         | 1:10,000 |          |     |
| Drawing Title               | Figure C3.2a<br>Survey Map<br>Page 8 of 16    |               |          |          |     |
| Drawing Number              | HE540039-CJV-EBD-SZP_EGNE00000000-DR-LE-60032 |               |          |          |     |

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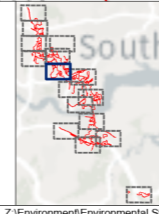


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| Rev | Status | Rev. Date  | Purpose of revision | Drawn | Checkd | Apprvd |
|-----|--------|------------|---------------------|-------|--------|--------|
| P02 | S8     | 16/09/2022 | DCO Application     | CD    | HT     | BF     |

**Legend**

- Order Limits
- GCN Survey Area
- Pond Status, Survey Year**
- ◆ Present - Conventional (2018)
- ◆ Present - Desk Study (2018)
- ◆ Present - Incidental sighting (2019)
- ◆ Present - eDNA (2020)
- ◆ Assumed present - No access
- ◆ Assumed present - Survey inconclusive (2020)
- Absent - Conventional (2018)
- ▲ Assumed absent - eDNA (2020)
- + Unknown - Scoped out
- + Dry
- X No pond
- + Unsuitable

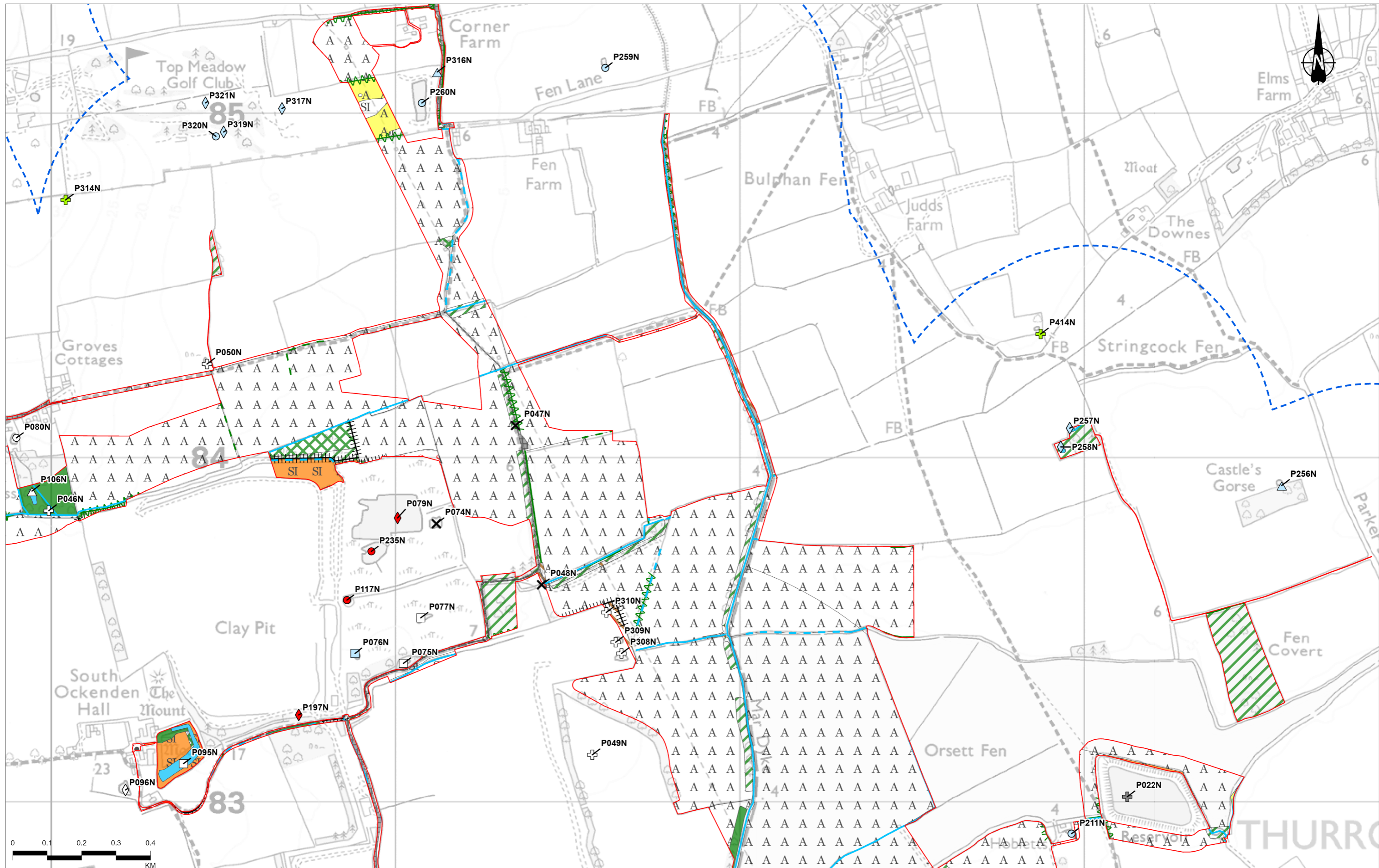


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|-----------------------------|---|---------------|----------|----------|-----|
| Status                      | DCO APPLICATION                               | Original Size | A3       | Revision | P02 |
| Application Document Number | TR010032/APP/6.2                              | Scale         | 1:10,000 |          |     |
| Drawing Title               | Figure C3.2a<br>Survey Map<br>Page 9 of 16    |               |          |          |     |
| Drawing Number              | HE540039-CJV-EBD-SZP_EGNE00000000-DR-LE-60032 |               |          |          |     |

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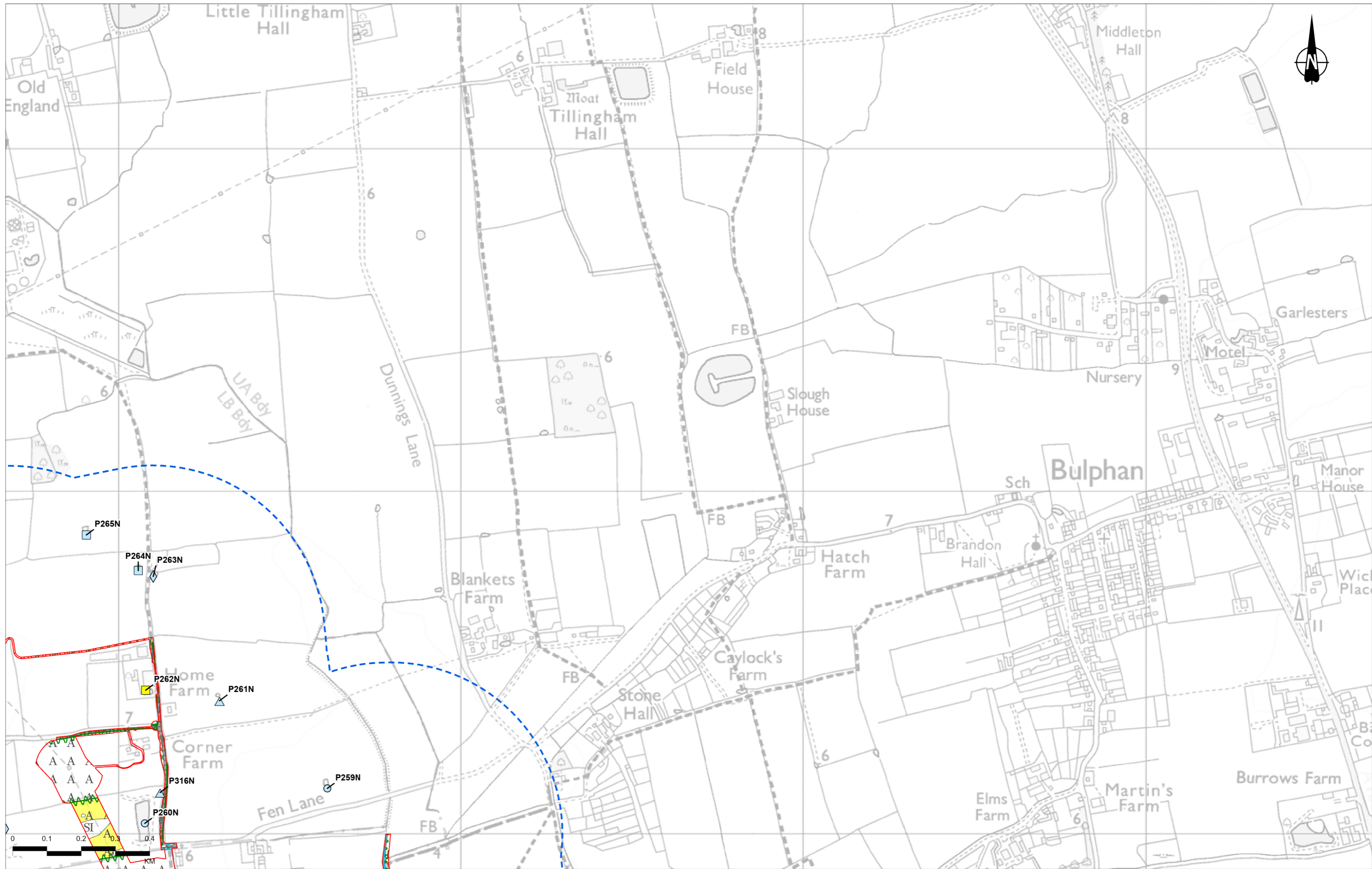
| Rev | Status | Rev. Date  | Purpose of revision | Drawn | Checked | Approved |
|-----|--------|------------|---------------------|-------|---------|----------|
| P02 | S8     | 16/09/2022 | DCO Application     | CD    | HT      | BF       |

| Legend                   |                               |
|--------------------------|-------------------------------|
|                          | Order Limits                  |
|                          | GCN Survey Area               |
| Pond Status, Survey Year |                               |
|                          | Present - Conventional (2018) |
|                          | Absent - Conventional (2018)  |
|                          | Present - eDNA (2018)         |
|                          | Present - eDNA (2019)         |
|                          | Assumed present - eDNA (2018) |
|                          | Assumed present - eDNA (2019) |
|                          | Absent - eDNA (2018)          |
|                          | Absent - eDNA (2019)          |
|                          | Assumed absent - eDNA (2018)  |
|                          | Assumed absent - eDNA (2019)  |
|                          | Unknown - Scoped out          |
|                          | Dry                           |
|                          | No pond                       |
|                          | Unsuitable                    |

|  |         |                             |   |               |          |          |     |
|--|---------|-----------------------------|---|---------------|----------|----------|-----|
|  | Client  | Status                      | DCO APPLICATION                               | Original Size | A3       | Revision | P02 |
|  | Project | Application Document Number | TR010032/APP/6.2                              | Scale         | 1:10,000 |          |     |
|  |         | Drawing Title               | Figure C3.2a<br>Survey Map<br>Page 10 of 16   |               |          |          |     |
|  |         | Drawing Number              | HE540039-CJV-EBD-SZP_EGNE00000000-DR-LE-60032 |               |          |          |     |

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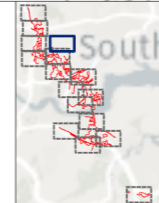
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| P02 | S8     | 16/09/2022 | DCO Application     | CD    | HT      | BF       |

| Legend                   |                              |
|--------------------------|------------------------------|
|                          | Order Limits                 |
|                          | GCN Survey Area              |
| Pond Status, Survey Year |                              |
|                          | Present - eDNA (2019)        |
|                          | Absent - eDNA (2019)         |
|                          | Assumed present - No access  |
|                          | Assumed absent - eDNA (2019) |



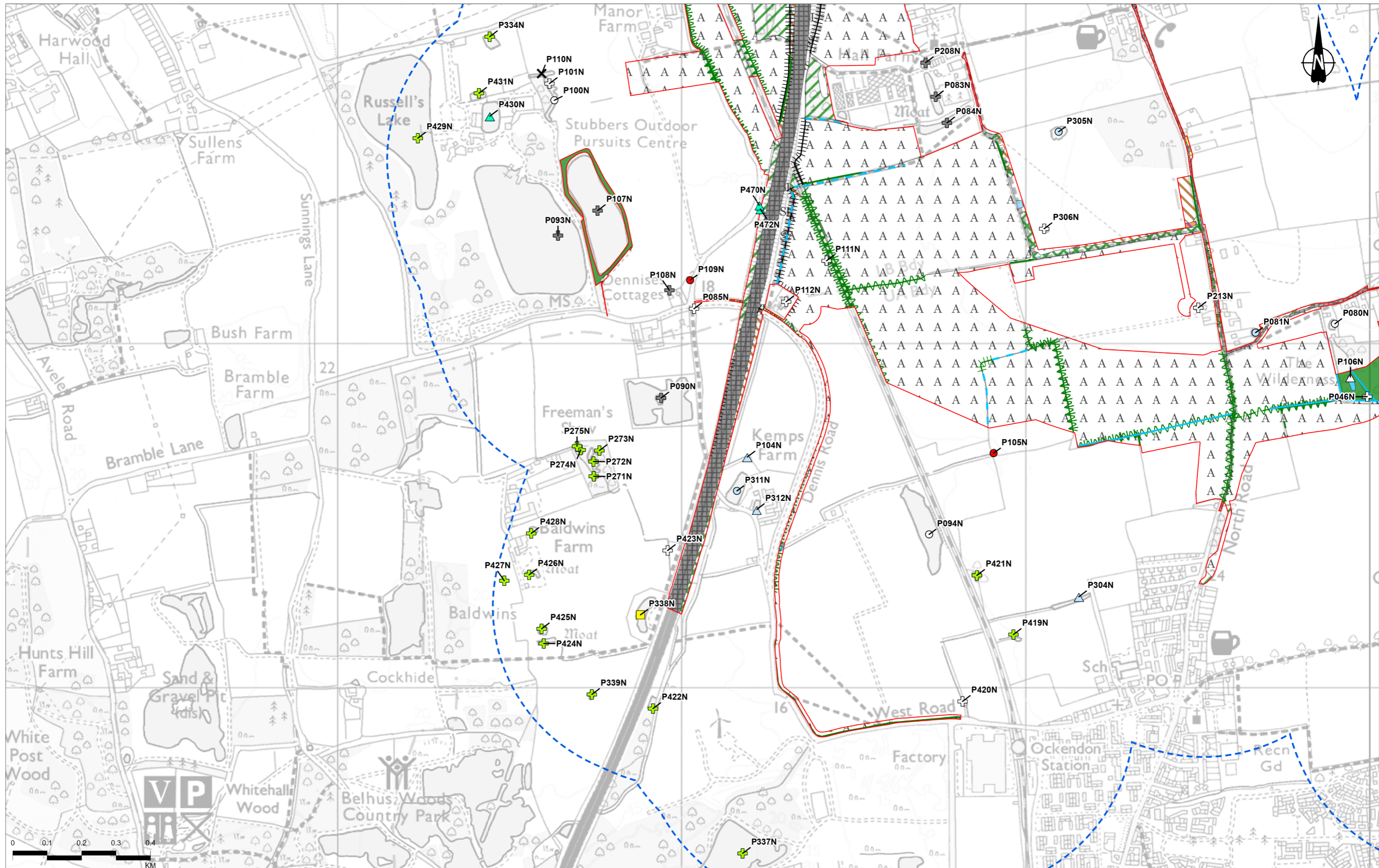
Client  
**national highways**

Project  
**LOWER THAMES CROSSING**

|                             |   |               |          |          |     |
|-----------------------------|---|---------------|----------|----------|-----|
| Status                      | DCO APPLICATION                               | Original Size | A3       | Revision | P02 |
| Application Document Number | TR010032/APP/6.2                              | Scale         | 1:10,000 |          |     |
| Drawing Title               | Figure C3.2a<br>Survey Map<br>Page 11 of 16   |               |          |          |     |
| Drawing Number              | HE540039-CJV-EBD-SZP_EGNE00000000-DR-LE-60032 |               |          |          |     |

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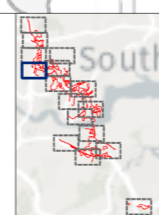




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| P02 | S8     | 16/09/2022 | DCO Application     | CD    | HT      | BF       |

| Legend                   |                              |
|--------------------------|------------------------------|
|                          | Order Limits                 |
|                          | GCN Survey Area              |
| Pond Status, Survey Year |                              |
|                          | Assumed present - No access  |
|                          | Absent - Conventional (2018) |
|                          | Absent - eDNA (2018)         |
|                          | Absent - eDNA (2019)         |
|                          | Assumed absent - eDNA (2018) |
|                          | Assumed absent - eDNA (2019) |
|                          | Assumed absent - eDNA (2020) |
|                          | Unknown - Scoped out         |
|                          | Dry                          |
|                          | No pond                      |
|                          | Unsuitable                   |

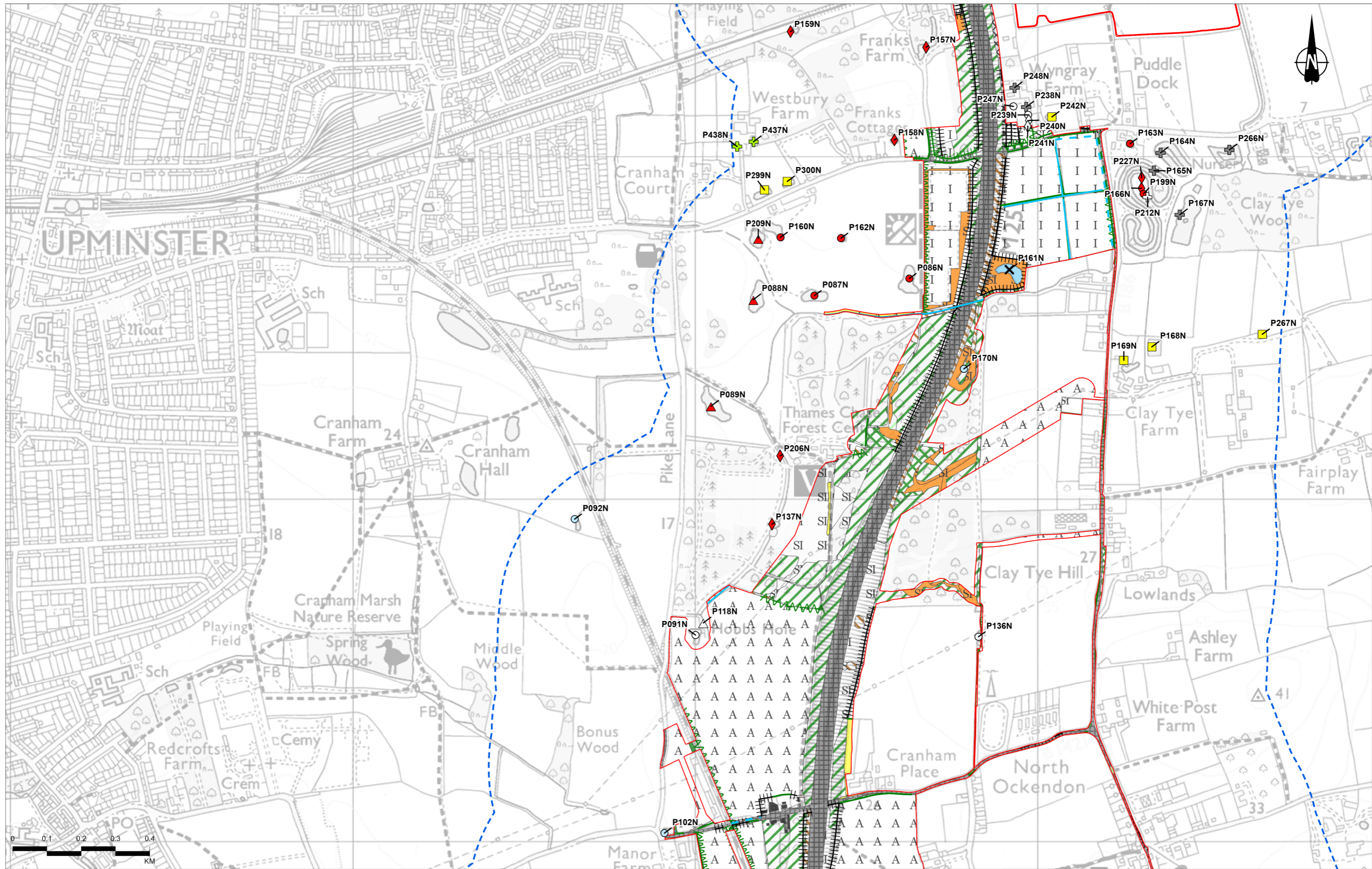


Client  
national highways

Project  
**LOWER THAMES CROSSING**

|                             |   |               |          |          |     |
|-----------------------------|---|---------------|----------|----------|-----|
| Status                      | DCO APPLICATION                               | Original Size | A3       | Revision | P02 |
| Application Document Number | TR010032/APP/6.2                              | Scale         | 1:10,000 |          |     |
| Drawing Title               | Figure C3.2a<br>Survey Map<br>Page 12 of 16   |               |          |          |     |
| Drawing Number              | HE540039-CJV-EBD-SZP_EGNE00000000-DR-LE-60032 |               |          |          |     |

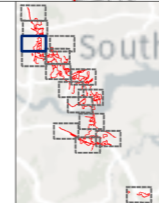
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| P02 | S8     | 16/09/2022 | DCO Application     | CD    | HT      | BF       |

| Legend                          |                               |  |                                      |                      |                              |     |
|---------------------------------|-------------------------------|--|--------------------------------------|----------------------|------------------------------|-----|
|                                 | Order Limits                  |  | Assumed present - No access          |                      | Assumed absent - eDNA (2018) |     |
|                                 | GCN Survey Area               |  | Absent - Conventional (2018)         |                      | Unknown - Scoped out         |     |
| <b>Pond Status, Survey Year</b> |                               |  |                                      | Absent - eDNA (2018) |                              | Dry |
|                                 | Present - Conventional (2018) |  | Absent - eDNA (2019)                 |                      | No pond                      |     |
|                                 | Present - eDNA (2018)         |  | Assumed absent - Conventional (2018) |                      | Unsuitable                   |     |

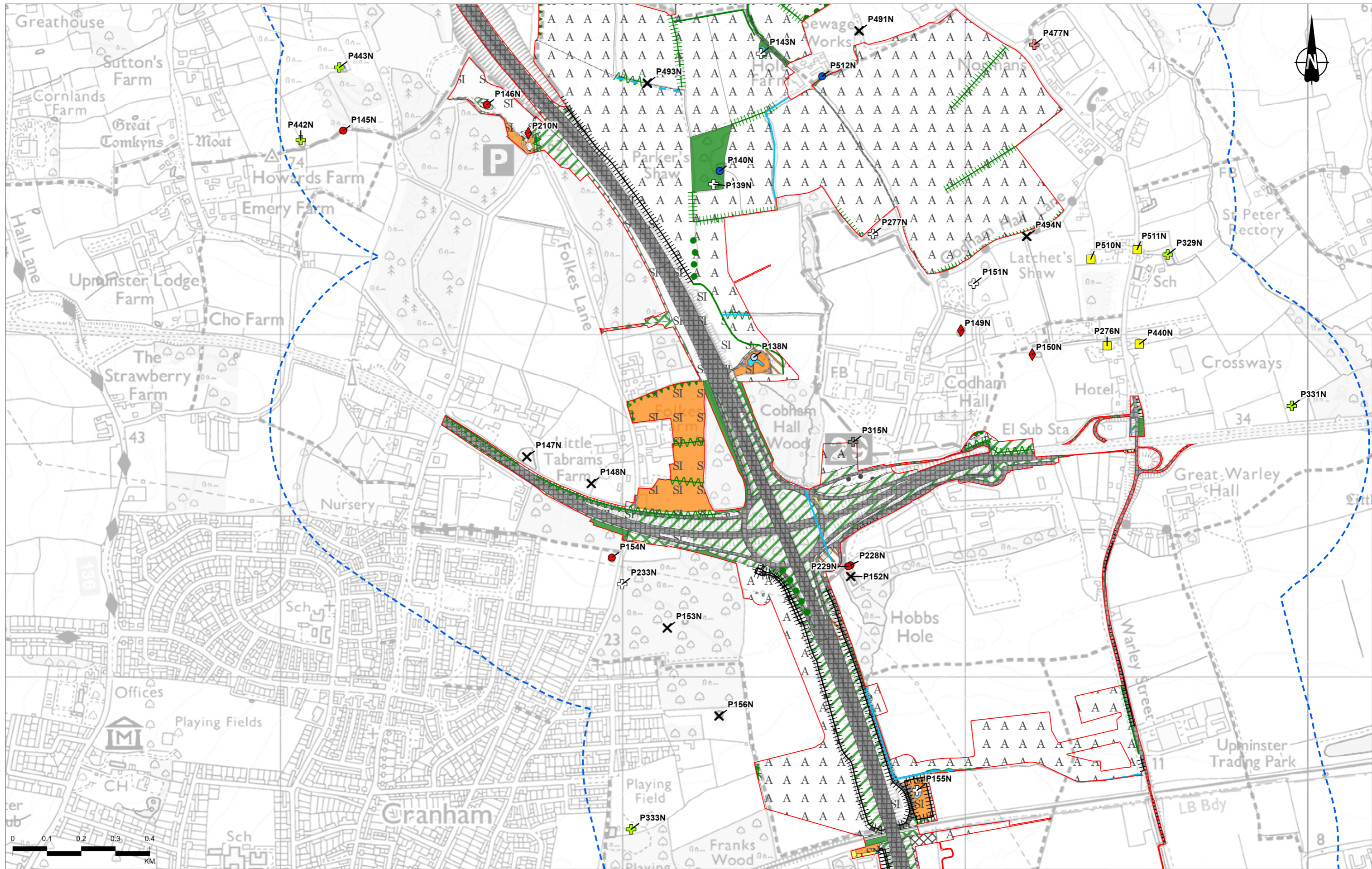


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Project: LOWER THAMES CROSSING

|                             |  |               |          |          |     |
|-----------------------------|--|---------------|----------|----------|-----|
| Status                      | DCO APPLICATION                              | Original Size | A3       | Revision | P02 |
| Application Document Number | TR010032/APP/6.2                             | Scale         | 1:10,000 |          |     |
| Drawing Title               | Figure C3.2a<br>Survey Map<br>Page 13 of 16  |               |          |          |     |
| Drawing Number              | HE540039-CJV-EBD-SZP_EGNE0000000-DR-LE-60032 |               |          |          |     |

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| P02 | S8     | 16/09/2022 | DCO Application     | CD    | HT   | BF     |

**Legend**

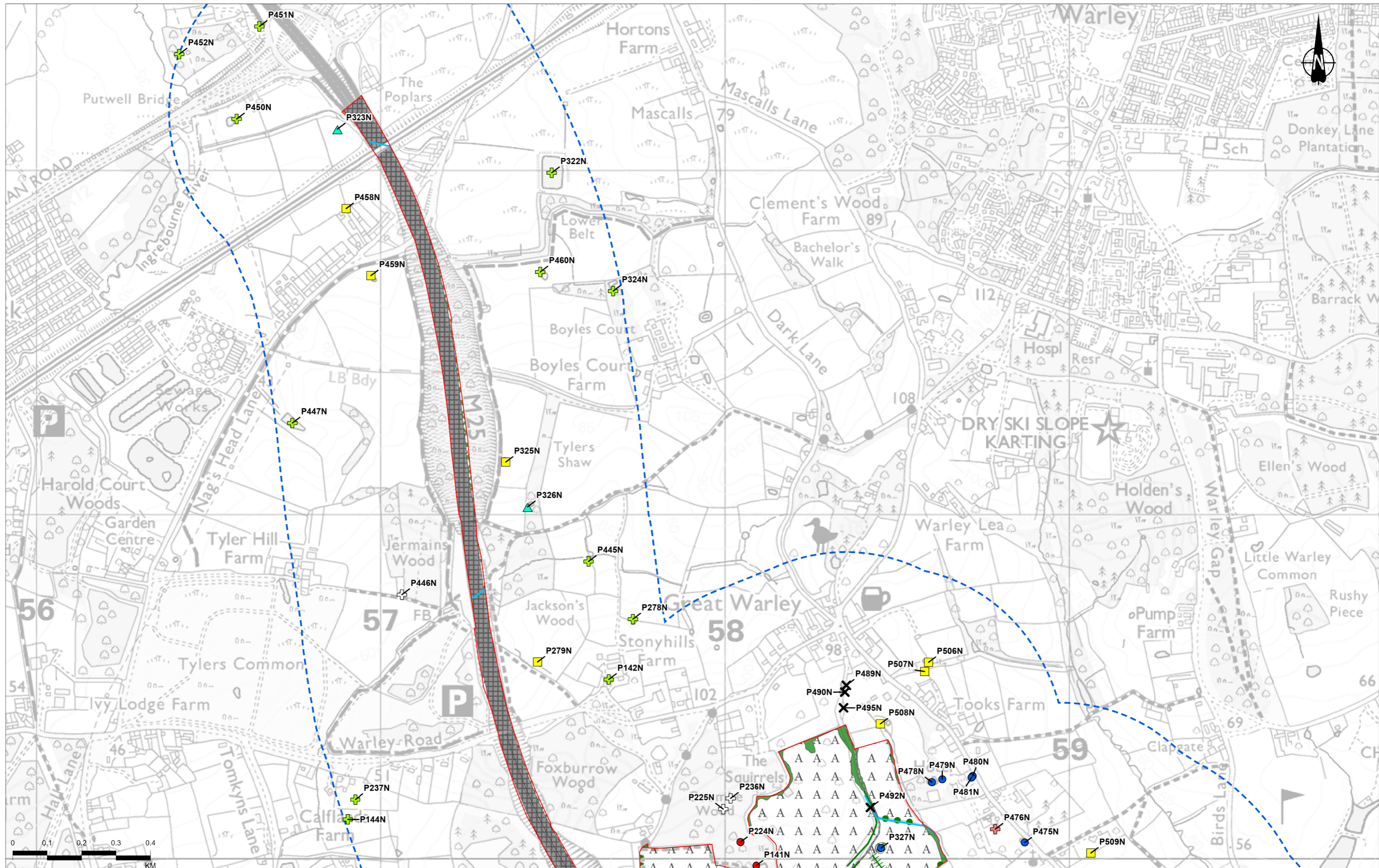
|                                 |                              |                      |                                |
|---------------------------------|------------------------------|----------------------|--------------------------------|
| Order Limits                    | Assumed present - No access  | Unknown - Scoped out | Scoped out - unsuitable (2022) |
| GCN Survey Area                 | Absent - Conventional (2018) | Dry                  | Unsuitable                     |
| <b>Pond Status, Survey Year</b> | Absent - eDNA (2019)         | No pond              | No pond                        |
| Present - Conventional (2018)   | Absent - eDNA (2022)         | No pond              |                                |

Client: national highways

Project: LOWER THAMES CROSSING

|                             |  |               |          |          |     |
|-----------------------------|--|---------------|----------|----------|-----|
| Status                      | DCO APPLICATION                              | Original Size | A3       | Revision | P02 |
| Application Document Number | TR010032/APP/6.2                             | Scale         | 1:10,000 |          |     |
| Drawing Title               | Figure C3.2a<br>Survey Map<br>Page 14 of 16  |               |          |          |     |
| Drawing Number              | HE540039-CJV-EBD-SZP_EGNE0000000-DR-LE-60032 |               |          |          |     |

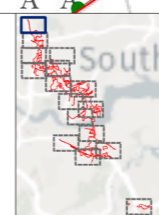
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| P02 | S8     | 16/09/2022 | DCO Application     | CD    | HT      | BF       |

| Legend                   |                                |
|--------------------------|--------------------------------|
|                          | Order Limits                   |
|                          | GCN Survey Area                |
| Pond Status, Survey Year |                                |
|                          | Assumed present - No access    |
|                          | Absent - Conventional (2018)   |
|                          | Absent - eDNA (2022)           |
|                          | Assumed absent - eDNA (2020)   |
|                          | Unknown - Scoped out           |
|                          | Dry                            |
|                          | No pond                        |
|                          | Scoped out - unsuitable (2022) |

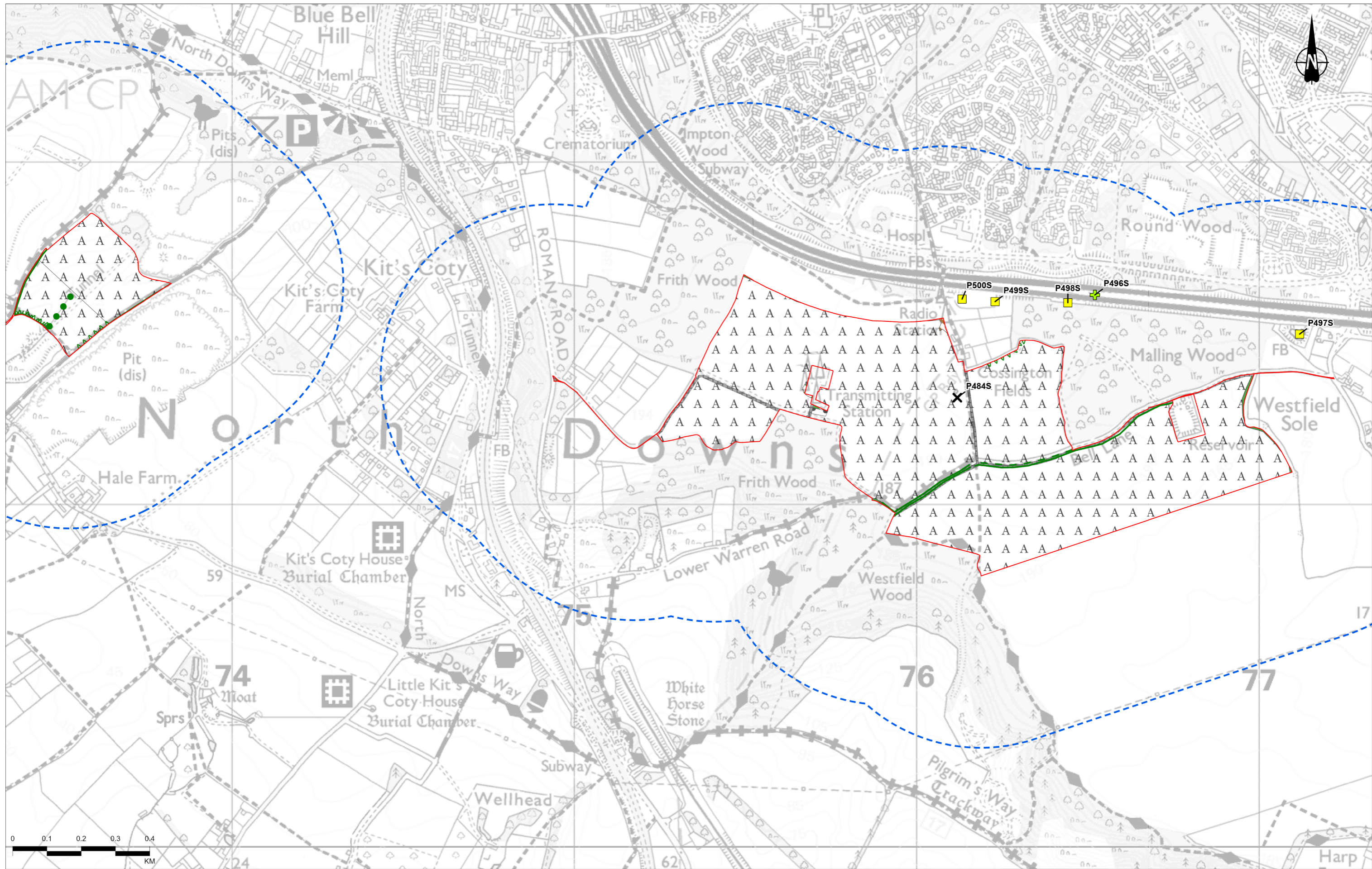


Client: national highways

Project: LOWER THAMES CROSSING

|                             |  |               |          |          |     |
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| Status                      | DCO APPLICATION                              | Original Size | A3       | Revision | P02 |
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| Drawing Title               | Figure C3.2a<br>Survey Map<br>Page 15 of 16  |               |          |          |     |
| Drawing Number              | HE540039-CJV-EBD-SZP_EGNE0000000-DR-LE-60032 |               |          |          |     |

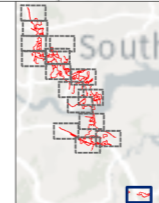
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| P02 | S8     | 16/09/2022 | DCO Application     | CD    | HT      | BF       |

- Legend**
- Order Limits
  - GCN Survey Area
  - Pond Status, Survey Year**
  - Assumed present - No access
  - + Unknown - Scoped out
  - x No pond



Client: national highways

Project: LOWER THAMES CROSSING

|                             |   |               |          |          |     |
|-----------------------------|---|---------------|----------|----------|-----|
| Status                      | DCO APPLICATION                               | Original Size | A3       | Revision | P02 |
| Application Document Number | TR010032/APP/6.2                              | Scale         | 1:10,000 |          |     |
| Drawing Title               | Figure C3.2a<br>Survey Map<br>Page 16 of 16   |               |          |          |     |
| Drawing Number              | HE540039-CJV-EBD-SZP_EGNE00000000-DR-LE-60032 |               |          |          |     |

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