



Five Fords Wastewater Treatment Works

Great Crested Newt Survey Report

June 2016

Dŵr Cymru Welsh Water Limited

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Tŷ Awen, Spooner Close, Celtic Springs Business Park, Newport, NP10 8FZ

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Executive Summary

Dŵr Cymru Welsh Water Limited (DCWW) is proposing to install an Advanced Anaerobic Digestion (AAD) system at Five Fords Wastewater Treatment Works (WwTW) near Wrexham

Mott MacDonald Bentley (MMB) has been commissioned to provide ecological services to support the development of the thermal hydrolysis plant and its associated processes. A number of previous ecological reports for the site were reviewed and a preliminary ecological appraisal (PEA) was conducted including a site visit in December 2014. The information obtained from the previous reports highlighted that great crested newts (GCN) have been confirmed present on site and the subsequent site visit identified the potential for GCN within 250m of the proposed construction area. In line with wildlife legislation, MMB advised that a GCN Development Licence is sought to carry out the works within 250m of the identified breeding ponds. Works that are deemed to have a lower risk to GCN are to be carried out under a non-licensed Method Statement as a precautionary approach to reduce the risk of injuring GCN.

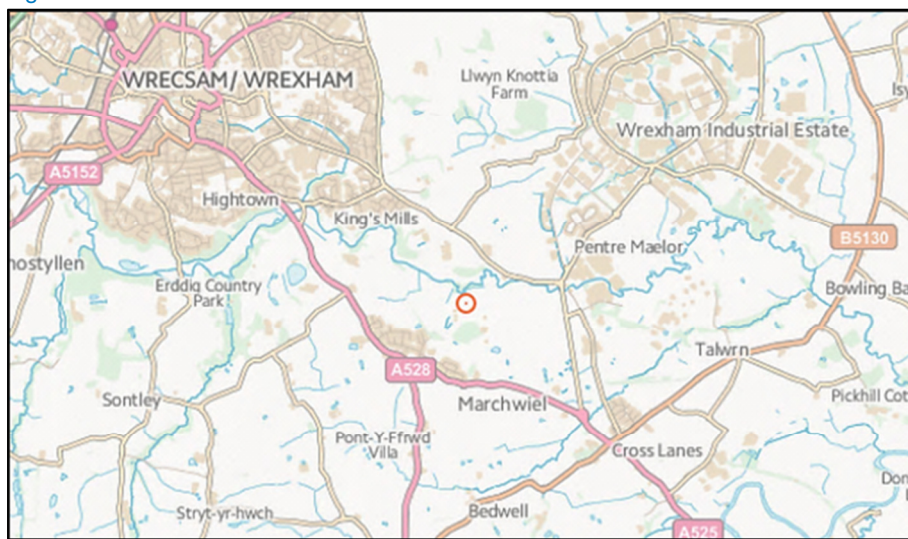
This report details the methodology and results of surveys conducted to support the licence application.

1 Introduction

1.1 Project Background

Mott MacDonald Bentley (MMB) was commissioned by Dŵr Cymru Welsh Water Limited (DCWW) in December 2014 to provide ecological services to support proposals to install a thermal hydrolysis plant at Five Fords Wastewater Treatment Works (WwTW). The site lies to the south east of Wrexham between Wrexham Industrial Estate and the town of Marchwiell as shown in Figure 1.1 below.

Figure 1.1: Site Location Plan



Source: Ordnance Survey Crown Copyright data @ Crown copyright and database 2014

The proposed thermal hydrolysis plant and associated development will be located within the existing site boundary.

1.2 Potential Impacts to Great Crested Newt

The proposed works involve the provision of several new buildings and units as well as the conversion or modification of existing equipment and general site improvements to increase sludge storage capacity and improve sludge treatment.

To facilitate these works, vegetation clearance and earthworks will be required, which have the potential to disturb, kill or injure great crested newts (GCN) as well as impact GCN habitat.

1.3 Legislative Context

GCN are fully protected under the Conservation of Habitat and Species Regulations 2010 (as amended) and the Wildlife and Countryside Act 1981 (as amended). These enactments decree that is an offence to intentionally or recklessly kill, injure or take GCN. In addition the following are also classified as a breach of the legislation: To possess or control any live or dead specimen or anything derived from a GCN; To intentionally or recklessly damage, destroy or obstruct access to any structure or place used as shelter or

protection by a GCN; and To intentionally or recklessly disturb a GCN while it is occupying a structure or place, which it uses for that purpose. The legislation applies to all life stages of great crested newts.

To undertake an activity which is prohibited under wildlife legislation, a protected species development licence may be applied for from the Statutory Regulator; in this instance the Statutory Regulator is Natural Resources Wales (NRW). The Development Licence allows works, which otherwise may constitute an offence, to be conducted in accordance with an agreed method statement.

1.4 Scope of the Report

To obtain a GCN licence, a baseline of the GCN population class size is required, in order to fully assess the potential impacts on the GCN, and this is obtained by undertaking GCN surveys. This report documents the findings of the GCN habitat suitability assessments (undertaken on ponds within 500m of the site) and the results of the GCN presence / absence surveys (undertaken on selected ponds following the habitat suitability assessment).

The objectives of the surveys and of this report are to:

- Determine presence of GCN within 500m of the works footprint;
- Identify any GCN suitable ponds within the development footprint and assess if these ponds will be impacted by the proposed works;
- Assess the population of GCN in the local area;
- Identify key habitat features and corridors present within the site; and
- Develop appropriate site-specific recommendations and mitigation.

1.5 Limitations

It was not possible to access some areas within the survey extent; this was largely due to limited and/or irregular land access (i.e. where a land owner, tenant or agent has refused entry). Several ponds also dried out during the survey period which resulted in bottle trapping and sweep netting not being possible. Further details of limitations during surveys can be found in Section 3.2.2.

Biological records obtained from third parties and presented in the desk study do not represent a full and complete species list for the area. They are mostly given by individuals on an ad hoc basis, often meaning there are areas of deficiency in the data.

2 Methodology

2.1 Desk Study

A data search was undertaken in order to determine the presence of records of great crested newts. The data search was conducted over a 2km radius from the centre of the site. Waterbodies within 500m of the site were also searched for, in order to assess which waterbodies may be suitable for great crested newts. The consultees for the desk study were:

- Multi Agency Geographical Information for the Countryside (MAGIC) website for statutory conservation sites; and
- Cofnod; the North Wales Environment Information Service.

2.2 Habitat Suitability Index Assessment

As part of the initial site assessment, ponds within 500m of the proposed works were identified and assessed using the Habitat Suitability Index (HSI) assessment (Oldham *et al.* 2000).

The HSI assessment is a standard approach adopted by ecological consultants for assessing a ponds potential to support GCN. The HSI is essentially a measure of habitat suitability and incorporates ten indices (all of which are environmental variables), which are thought to affect GCN:

- Geographic location (SI1);
- Pond area (SI2);
- Pond permanence (SI3);
- Pond quality (SI4);
- Pond shading (SI5);
- Number of waterfowl (SI6);
- Occurrence of fish (SI7);
- Pond density (SI8);
- Proportion of suitable habitat in the study area (SI9); and
- Macrophyte cover (SI10).

The HSI score is the geometric mean of the ten habitat variables listed above, obtained by multiplying each of the variable scores together, and then taking the 10th root of the product.

The resulting HSI scores were cross-referenced with the National Amphibian and Reptile Recording Scheme (NARRS) (2008) guidance (as shown in Table 2.1) to estimate the suitability of each pond to support a breeding population of great crested newts.

Table 2.1: HSI and Pond Suitability for GCN

HSI Score	Pond Suitability for GCN
0.00 – 0.49	Poor
0.50 – 0.59	Below average
0.60 – 0.69	Good
0.80 – 1.00	Excellent

Source: NARRS, 2008

The index produces a score of between 0 and 1 (in increments of 0.1), with 0 being unsuitable habitat and 1 representing optimal habitat. In general, ponds with high HSI scores (>0.6) are more likely to support GCN than those with low scores (<0.5) but the method is not sufficiently precise to allow the conclusion that any particular pond with a high score will support newts, or that any pond with a low score will not do so. However, the HSI score can be used as an aid in the decision whether to undertake GCN presence/absence surveys on a pond.

As a cautious approach, water bodies with a HSI score of 0.5 and above were scoped in for further surveys. An exception to this was where the water body qualified for further surveys due to overriding suitability reasons e.g. reports of GCN within a water body.

2.3 Presence / Absence Surveys

In order to accurately establish the presence of GCN, a minimum of four survey visits must be undertaken during the GCN breeding season between mid-March and mid-June, with half of these surveys required to take place during the peak breeding phase between mid-April and mid-May. If GCN are found during these visits and it is likely that a GCN Derogation Licence will be required for the works to proceed, then an estimate of the GCN population size class is required. This is calculated by undertaking two further visits (six surveys in total). In the event that no GCN are identified during the first four visits, no further surveys are required as GCN are assumed absent.

Survey work was undertaken by suitably qualified ecologists with possession of a GCN Survey Licence, or by ecologists accredited on another licence holder's GCN Survey Licence.

Survey work only took place if the average night time air temperatures were greater than 5 °C.

There are six different types of survey techniques, as detailed below. Five of these are recognised in the best practice guidance 'Great Crested Newt Mitigation Guidelines, 2001'. A total of three methods must be employed on each survey visit to determine the presence or absence of GCN. The five recognised survey techniques include:

1. Torching

GCN are nocturnal and actively court at night, in open water during the breeding season where they can be observed and counted using million candle watt torches. After night fall, surveyors move slowly along the bank sweeping with the torch to identify newts in the water, on emergent vegetation, or moving on land between water bodies. For this method to be effective there must be a certain amount of visibility through the water. This method cannot be effectively carried out in heavy rain.

2. Bottle Trapping

Specially designed bottle traps (1.5 to 2.0 litre inverted bottles) are submerged in the water body on stakes at intervals of one trap per 2m length of shoreline. The bottle traps are designed and installed by experienced surveyors to ensure sufficient air pockets for captured newts, which will provide ample oxygen for at least 12 hours. Bottle traps are placed in the water at dusk. After night fall active newts enter the traps, from which they cannot escape, and the surveyors return in the morning soon after dawn to record the species, gender and number of newts captured. They are then returned to the water. In order to ensure that newts are not harmed during the trapping, newt traps are not left in situ for more than 12 hours.

3. Egg Searching

Newts lay jelly capsule eggs singly on aquatic plants, folding the leaf around the egg. If aquatic plants are absent, newts will lay on dead leaves and litter. GCN eggs can be distinguished readily from those of the smaller newt species by their larger size, shape and colour. It is not possible to distinguish smooth newt *Lissotriton vulgaris* from palmate newt *Lissotriton helveticus* eggs.

Surveyors search for folded leaves and gently open them to check for eggs. Once unfolded, leaves will not re-adhere to eggs, and these unwrapped eggs may suffer a higher predation rate. The presence of great crested newts can be confirmed by a single GCN laid egg. It is not possible to get any measure of population size or viability from egg counts, therefore once one GCN egg is found within a water body, this method is discontinued at that location. Egg searching is best carried out from April to June, although eggs can sometimes be found in March and July in smaller numbers.

4. Netting

This technique is not as efficient at identifying the presence of newts as egg searching, bottle trapping or torching. The technique involves using a sturdy net, with 2 - 4mm holes to sweep-net the pond. This method can cause a great deal of disturbance to a pond and its inhabitants and should be employed with care to minimise this impact. If invasive exotic plants, particularly New Zealand stonecrop *Crassula helmsii* and water fern *Azolla filiculoides* are present within a pond, this method should not be employed as it can transfer these species between ponds via the nets.

The optimum time for netting is generally from March to May, when most adults are in the pond, and mid-July to August when larvae are bigger and easier to identify. By standardising the netting to fifteen minutes of netting per 50m of pond shoreline, a relative abundance score can be produced.

5. Terrestrial Searches

Between March and October, juvenile and adult newts may be found under refuges such as piles of logs and rocks. However, as a technique to detect the presence of newts, it is not very reliable and newts may be present at a site but not found under searched refuges.

6. eDNA Testing

There is a sixth technique (eDNA testing) however NRW has only recently begun to accept eDNA test results as evidence of presence or absence of GCN. The accepted process of DNA testing is quantitative Polymerase Chain Reaction (qPCR) which detects nuclear or mitochondrial DNA that is released from the GCN into the environment. Sources of eDNA include secreted faeces, mucous, and gametes, shed skin, and carcasses. This technique cannot be used for population size class assessment but providing that samples were taken between 15th April to 30th June and in strict accordance with the published technical advice note (Defra, 2014) NRW will accept the results for a licence application.

Each technique has a number of advantages and disadvantages that may make them more suitable for use according to the nature of the water bodies and habitat. Due to the inability of the eDNA technique to provide population size class assessments, the level of disturbance caused by netting and the limited results from terrestrial searches, torching, bottle trapping and egg searching (provided there is suitable emergent vegetation for egg laying) are considered to be the preferred survey techniques.

The species, gender and abundance of all captured specimens should be accurately recorded and records of GCN passed to the Licensing Body NRW.

By following these survey methods, the data collected is considered sufficient to apply for a derogation licence from NRW, should one be required for the works to be undertaken.

3 Results

3.1 Species Records

There are 12 Cofnod records of GCN within a 2km radius of the site within the past 10 years with the closest record being 280m at Marchwiel Marsh Nature Reserve. These records include larva, juveniles and adult individuals.

3.2 Field Surveys

3.2.1 Habitat Suitability Index Assessment

All HSI assessment surveys were carried out in December 2014. Appendix A provides tables of all HSI scores. 18 water bodies had a HSI assessment. Of these water bodies 2 were scoped out for suitability for GCN – i.e. their HSI score was less than 0.5, or varying factors resulted in unsuitable conditions. Access was also prohibited to a further 2 ponds and therefore no further surveys were completed at these sites.

A total of 13 water bodies were identified that achieved a HSI score of 0.5 or greater, or qualified for further surveys due to overriding suitability features. Presence / absence surveys were recommended for all these ponds as detailed in the following section of this report.

3.2.2 Further GCN Surveys

Presence / absence surveys were recommended for the following ponds:

- | | |
|-------|-------|
| ■ P2 | ■ SL1 |
| ■ P3 | ■ P1 |
| ■ P4b | ■ P4 |
| ■ C1 | ■ P4a |
| ■ C2 | ■ P5 |
| ■ C3 | ■ P6 |
| ■ C5 | ■ P6a |
| ■ C6 | ■ C4 |

Table 3.1 below outlines the details of these surveys. Raw data from the surveys detailing the species, gender and abundance of newts found in each pond are provided in appendix B and a plan of the pond locations can be found in appendix C of this document.

Table 3.1: Summary of results of great crested newt presence / absence surveys

Water Body Reference	Water Body Type	Summary of survey findings	Limitations of surveys
P2	Pond	GCN eggs	Only two survey techniques were undertaken as night time access was refused. Due to the levels of disturbance associated with the possible techniques (egg searching and sweep netting), surveys were terminated once a positive result was obtained to prevent unnecessary disturbance.
P3	Pond	GCN eggs 2 smooth newts 1 common newt	Only two survey techniques were undertaken as night time access was refused. Due to the levels of disturbance associated with the possible techniques (egg searching and sweep netting), surveys were terminated once a positive result was obtained to prevent unnecessary disturbance.
P4b	Pond	13 GCN 2 palmate newts 1 smooth newt 1 common newt.	No limitations, 6 surveys conducted using three survey techniques.
C1	Pond	2 GCN 4 smooth newts 1 palmate newt	4 surveys completed; pond dried out and further surveys were not possible.
C2	Pond	14 GCN 4 palmate newt 5 smooth newt 2 common newt	No limitations, 6 surveys conducted using three survey techniques.
C5	Pond	1 GCN 2 smooth newts 8 common newts Tadpoles present in pond	4 surveys completed: Pond dried out and therefore bottle trapping was not possible.
C6	Pond	21 GCN 40 common newts 35 smooth newts 3 palmate newts	No limitations, 6 surveys conducted using three survey techniques.
N1	Puddle	4 GCN.	A puddle appeared after rainfall, despite being seemingly unsuitable, on the 4 occasions the puddle contained water it was surveyed by torchlight as a precaution.
C3	Pond	No newts found	4 surveys completed: Pond dried out and further surveys were not possible.
SL1	Pond	No GCN eggs found. eDNA results negative.	Only two survey techniques were undertaken as night time access was refused. eDNA testing was undertaken to support findings.
P1	Pond	No GCN eggs found. eDNA results negative.	Only two survey techniques were undertaken as night time access was refused. eDNA testing was undertaken to support findings.
P4	Pond	No GCN eggs found.	Only two survey techniques were undertaken as night time access was refused. Pond had dried out by the second survey.
P4a	Pond	No GCN eggs found. Pond dried out.	Only two survey techniques were undertaken as night time access was refused. Pond had dried out by the third survey.

Water Body Reference	Water Body Type	Summary of survey findings	Limitations of surveys
P4c	Pond	N/A	Unsuitable (newly created)
P5	Pond	N/A	No access.
P6	Pond	N/A	No access.
P6a	Pond	N/A	No access.
C4	Pond	N/A	No surveys completed: Pond dried out.

4 Recommendations

4.1 Further GCN Surveys

Access to some of the ponds was denied, and this is unlikely to change in the near future, therefore no further surveys are planned on these ponds.

The ponds that dried out were very shallow at the start of the survey season, and had dried out by May. It is considered that these ponds regularly dry out, although great crested newts were shown to be using some of them. Due to drying out it was not possible to get a population size class for great crested newt using these ponds.

4.2 GCN Derogation Licence

It has been identified that the local GCN population would be potentially adversely affected by the proposed works within any suitable habitat located within 250m of any identified breeding ponds. A GCN Derogation Licence will be required for the proposed works within this area.

The licence will require that mitigation is undertaken prior to works commencing to ensure that GCN are removed from the works site before works commence. This is normally undertaken by fencing the works site, and using methods to translocate the GCN out from within this area. Translocating GCN can only be done in Spring and Autumn.

Due to the lack of data for some of the survey ponds, it would be advisable to contact Natural Resources Wales before submitting the licence, in order to discuss the extent of the surveys and rational for our proposals. Evidence of the refusal of access for ponds is likely to be required to be submitted with the licence application.

The licence application can be prepared by a suitably experienced ecologist, who would also act as the named ecologist on the licence. The licence holder however is usually a person from the developer – in this case MMB. MMBs input will be required to complete some of the information in the documents, and MMB will also need to read the documents, agree to the mitigation proposed, and sign to confirm they will abide by the conditions of the licence.

A GCN Derogation Licence application can take about 3 weeks to prepare. Natural Resources Wales, have a statutory period of 6 weeks to consider the licence application.

Works that are deemed to have a lower risk to GCN are to be carried out under a non-licensed Method Statement as a precautionary approach to reduce the risk of injuring GCN.

5 References

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Appendix A. Habitat Suitability Index Scores

Table A.1: Water body assessment details - HSI scores

Water Body Reference	Water Body type	Survey Buffer 250 m/500 m (distance from A5025)	HSI Score
SL1	Pond	500 m	No HSI completed – eDNA undertaken
P1	Pond	250 m	0.0
P2	Pond	250 m	0.60
P3	Pond	250 m	0.68
P4	Pond	250 m	0.40
P4a	Pond	250 m	0.37
P4b	Pond	250 m	No HSI completed – known to be suitable
P4c	Pond	250 m	Scoped out – unsuitable for GCN – no HSI
P5	Pond	500 m	No access – no HSI
P6	Pond	250 m	Scoped out – unsuitable for GCN – no HSI
P6a	Pond	500 m	No access – no HSI
C1	Pond	250 m	0.70
C2	Pond	250 m	0.76
C3	Pond	250 m	0.64
C4	Pond	250 m	0.52
C5	Pond	250 m	0.38
C6	Pond	250 m	0.37
N1	Puddle	250 m	Not present on initial survey - no HSI undertaken

Appendix B. Raw Data

Insert Table which details species, gender and abundance of newts found in each pond.

Table B.1: Survey Visit 1 Results

Survey Visit 1 05/05/2015						
Weather: PM 9°C dry, 5% cloud, light wind. AM 8°C light showers, light wind						
Water body reference	No. of bottles	Torchlight survey	Bottle trapping	Sweep netting	Egg Search	Comments
P4b	8	-	1 palmate ♂	N/A	N/A	No vegetation to egg search
C1	5	-	-	N/A	-	-
C2	8	1 palmate ♂	1 smooth ♂ 1 palmate ♂	N/A	-	-
C3	0	-	N/A	N/A	-	Too shallow to bottle trap or net and currently unsuitable for GCN
C4	0	-	N/A	N/A	N/A	Too shallow to undertake any survey technique other than bottle trapping
C5	0	4 common newts	N/A	-	-	Frog and tadpoles present
C6	6	6 ♂ GCN, 1 ♀ GCN, 4 ♂ smooth, 6 ♀ smooth	-	N/A	-	Egg search undertaken, but very shallow
SL1	0	N/A	N/A	-	-	No night-time access
P1	0	N/A	N/A	-	-	No night-time access
P4	0	N/A	N/A	-	-	No night-time access Very shallow
PN	0	N/A	N/A	-	-	No night-time access
P4A	0	N/A	N/A	-	-	No night-time access. Very shallow.
P2	0	N/A	N/A	1 ♂ smooth newt	1 GCN egg	No night-time access
P3	0	N/A	N/A	-	1 GCN egg	No night-time access

Footnote: - denotes that nothing was found by the survey technique. N/A denotes that this survey technique was not undertaken.

Table B.2: Survey Visit 2 Results

Survey Visit 2 11/05/2015						
Weather: PM 15°C dry, sunny and windy. AM clear, 40% cloud, light wind						
Water body reference	No. of bottles	Torchlight survey	Bottle trapping	Sweep netting	Egg Search	Comments
P4b	10	1 ♂ GCN, 1 ♀ smooth, 1 ♀ palmate	2 ♀ GCN	N/A	-	-
C1	5	-	2 ♀ GCN	N/A	-	-
C2	10	1 ♀ smooth, 1 ♀	4 ♀ GCN, 3 ♂	N/A	-	-

Survey Visit 2 11/05/2015						
Weather: PM 15°C dry, sunny and windy. AM clear, 40% cloud, light wind						
Water body reference	No. of bottles	Torchlight survey	Bottle trapping	Sweep netting	Egg Search	Comments
		palmate	smooth, 1 ♀ palmate			
C3	0	N/A	N/A	N/A	N/A	Dried up- not surveyed
C4	0	N/A	N/A	N/A	N/A	Dried up – not surveyed
C5	0	2 ♀ smooth	N/A	N/A	-	Frog and tadpoles present
C6	8	2 ♂ GCN, 13 ♂ smooth, 2 ♀ smooth	1 ♂ GCN, 2 ♂ smooth, 1 ♀ palmate	N/A	-	-
SL1	0	N/A	N/A	-	-	No night-time access
P1	0	N/A	N/A	-	-	No night-time access
P4	0	N/A	N/A	-	-	No night-time access Very shallow
PN	0	N/A	N/A	-	-	No night-time access
P4A	0	N/A	N/A	-	-	No night-time access. Very shallow.
P2	0	N/A	N/A	-	N/A	No night-time access
P3	0	N/A	N/A	1 ♂ palmate	N/A	No night-time access

Footnote: - denotes that nothing was found by the survey technique. N/A denotes that this survey technique was not undertaken.

Table B.3: Survey Visit 3 Results

Survey Visit 3 21/05/2015						
Weather: PM 13°C dry, light wind. AM 11°C, light wind						
Water body reference	No. of bottles	Torchlight survey	Bottle trapping	Sweep netting	Egg Search	Comments
P4b	10	-	1 ♂ GCN, 3 ♀ GCN	N/A	-	-
C1	0	-	N/A	N/A	-	A lot less water than previous surveys
C2	10	2 ♀ GCN, 1 ♂ palmate	1 ♀ GCN, 1 ♂ GCN	N/A	-	-
C3	0	N/A	N/A	N/A	N/A	Dried up- not surveyed
C4	0	N/A	N/A	N/A	N/A	Dried up – not surveyed
C5	0	2 ♀ unidentified common newts	N/A	N/A	-	Too shallow to survey other than by torchlight
C6	8	3 ♂ GCN, 2 ♀ GCN, 11 unidentified common newts	2 ♀ GCN, 8 ♂ smooth, 2 ♀ palmate	N/A	-	-
SL1	0	N/A	N/A	-	-	No night-time access
P1	0	N/A	N/A	-	-	No night-time access
P4	0	N/A	N/A	N/A	-	No night-time access, too

Survey Visit 3 21/05/2015						
Weather: PM 13°C dry, light wind. AM 11°C, light wind						
Water body reference	No. of bottles	Torchlight survey	Bottle trapping	Sweep netting	Egg Search	Comments
						shallow to be suitable or to survey
PN	0	N/A	N/A	N/A	N/A	No night-time access, Too shallow to survey
P4A	0	N/A	N/A	N/A	N/A	No night-time access, Too shallow to survey
P2	0	N/A	N/A	-	-	No night-time access
P3	0	N/A	N/A	-	-	No night-time access

Footnote: - denotes that nothing was found by the survey technique. N/A denotes that this survey technique was not undertaken.

Table B.4: Survey Visit 4 Results

Survey Visit 4 28/05/2015						
Weather: PM 13°C dry, light wind. AM 11°C, light wind						
Water body reference	No. of bottles	Torchlight survey	Bottle trapping	Sweep netting	Egg Search	Comments
P4b	5	-	3 ♂ GCN, 3 ♀ GCN	N/A	-	Almost completely dried up
C1	0	N/A	N/A	N/A	N/A	Completely dried out. Could not survey
C2	8	-	2 ♀ GCN, 3 ♂ GCN, 1 juvenile GCN	N/A	-	-
C3	0	N/A	N/A	N/A	N/A	Dried up- not surveyed
C4	0	N/A	N/A	N/A	N/A	Dried up – not surveyed
C5	0	N/A	N/A	N/A	-	Dried up – not surveyed
C6	6	1 ♀ GCN, 18 unidentified common newts	3 ♂ GCN	N/A	-	-
SL1	0	N/A	N/A	-	-	No night-time access
P1	0	N/A	N/A	-	-	No night-time access
P4	0	N/A	N/A	N/A	N/A	No night-time access, too shallow to be suitable or to survey
PN	0	N/A	N/A	N/A	N/A	No night-time access, Too shallow to survey
P4A	0	N/A	N/A	N/A	N/A	No night-time access, Too shallow to survey
P2	0	N/A	N/A	N/A	N/A	No night-time access
P3	0	N/A	N/A	N/A	N/A	No night-time access

Footnote: - denotes that nothing was found by the survey technique. N/A denotes that this survey technique was not undertaken.

Table B.5: Survey Visit 5 Results

Survey Visit 5 02/06/2015						
Weather: PM 11°C patchy rain showers. AM 10°C, dry.						
Water body reference	No. of bottles	Torchlight survey	Bottle trapping	Sweep netting	Egg Search	Comments
P4b	8	1 ♂ smooth newt	1 ♀ GCN	N/A	-	Almost completely dried up
C1	5	N/A	N/A	N/A	N/A	
C2	10	1 ♀ GCN	1 ♀ GCN, 1 ♂ GCN, 1 ♂ palmate newt	N/A	-	-
C3	0	N/A	N/A	-	-	Could not bottle trap or torch due to lack of water
C4	0	N/A	N/A	N/A	N/A	Dried up – not surveyed
C5	0	1 ♀ palmate newt, 1 juvenile palmate newt, 1 ♀ smooth newt	N/A	N/A	-	Too shallow to bottle trap
C6	5	1 ♀ GCN, 17 unidentified common newts	1 ♂ smooth newt	N/A	-	-

Footnote: - denotes that nothing was found by the survey technique. N/A denotes that this survey technique was not undertaken.

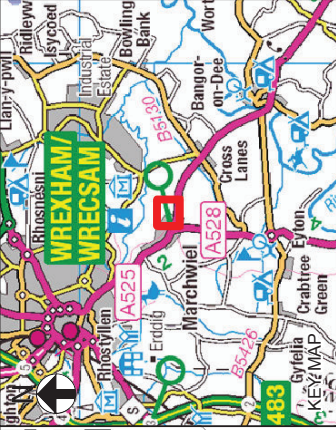
N.B 4 ♂ GCN were found in puddle adjacent to C2.

Table B.6: Survey Visit 6 Results

Survey Visit 6 19/06/2015						
Weather: PM 11°C patchy rain showers. AM 10°C, dry.						
Water body reference	No. of bottles	Torchlight survey	Bottle trapping	Sweep netting	Egg Search	Comments
P4b	3	-	-	N/A	-	Almost completely dried up
C1	0	N/A	N/A	N/A	N/A	Dried up – not surveyed
C2	0	2 ♀ GCN	-	N/A	-	-
C3	0	N/A	N/A	N/A	N/A	Dried up – not surveyed
C4	0	N/A	N/A	N/A	N/A	Dried up – not surveyed
C5	0	-	N/A	-	-	Too shallow to bottle trap
C6	5	-	1 ♀ GCN	N/A	-	-

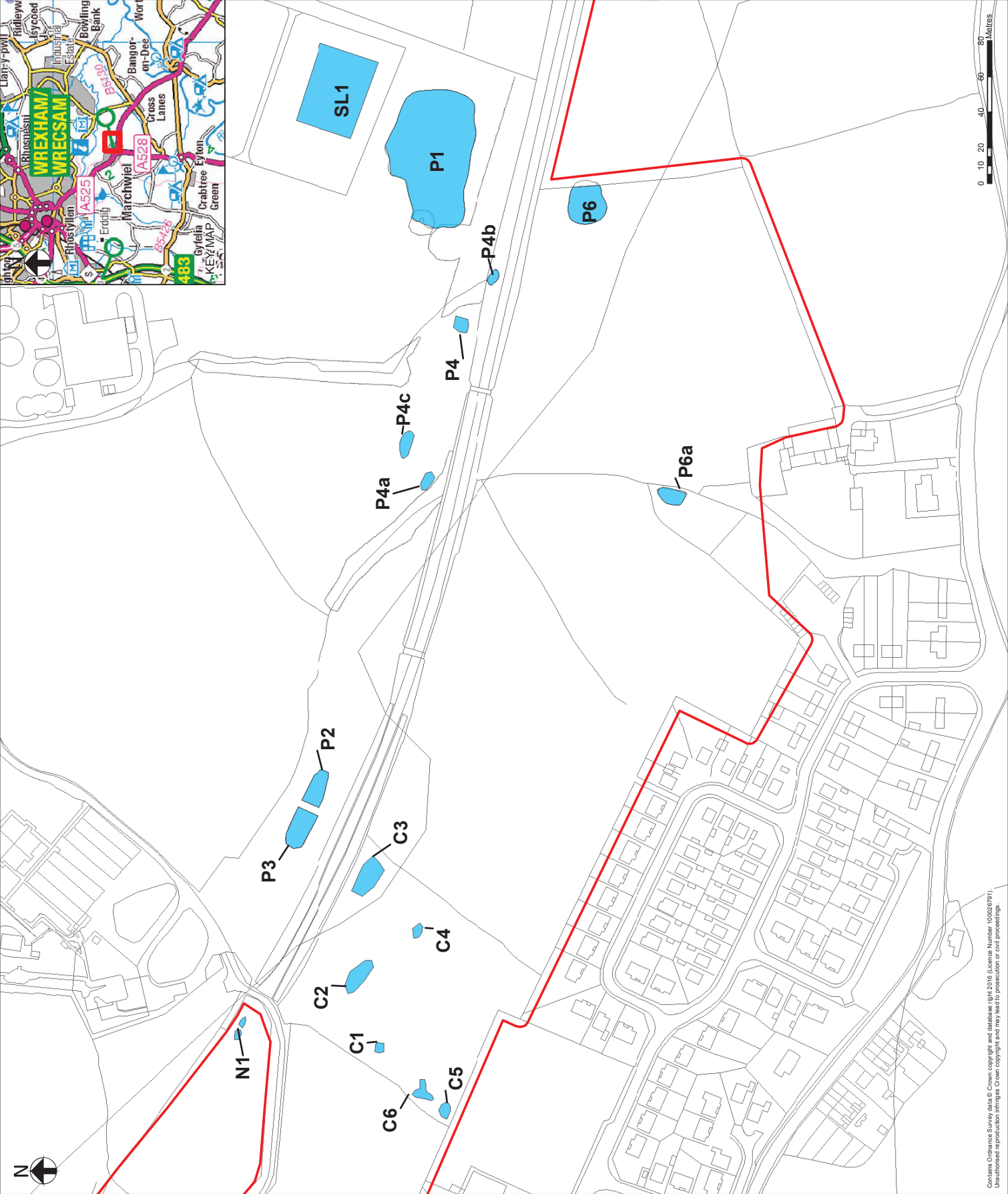
Footnote: - denotes that nothing was found by the survey technique. N/A denotes that this survey technique was not undertaken.

Appendix C. Pond Location Plan



Survey date: 10/12/2015

Legend
Site extent
G1 - Standing water



P1	11/02/16	GW	For information	TC	11/02/16
Rev.	Date	Drawn	Description	Chkd	Appd
					Date

MIMB
Mott MacDonald Bentley
Capital Delivery Alliance
Cynghair Cyflawni Cyfalaf
Ty Awen, Spooner Close, Coed Ynnew, Newport, NP10 8FZ

Project Name: Five Fords Enhanced Digestion Facility

Drawing Title: Great Crested Newt Survey - Pond Scoping	
Subsidiary: Preliminary	Stability Code: PRE
Originator: GW	Designer: PB
Date: 11/02/16	Rev: P1
Version: 366660N26	Scale: 1:2,000
Drawing Number: DOWW-4791-S-20-MMB-00-XX-DR-N-06007	