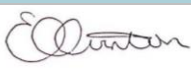

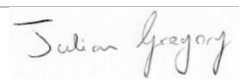


# Great Crested Newt Mitigation Strategy

Crownhill Topsoil  
Ltd

	Name	Role	Signature
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Version Number	Issue Date	Issue Description	Rev Approved
0	24/08/16	For Review	

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### Glossary of Terms:

GCN	Great Crested Newt
NRW	Natural Resources Wales

# 1. Executive Summary

The Crownhill Topsoil site lies within the Caerwent Army Training Camp at Grid Ref ST 46399 92086. The site location and extents is shown on Drawing No EV/13/0901/101.(Appendix A).

Crownhill Topsoil is a small business employing 5 people, with a turnover of circa £300,000/annum.

Great crested newts have been identified within ponds at the army camp, it is believed that they have developed from a population released to monitor water quality during the period when the base was used as a munitions facility.

Surveys have been undertaken for great crested newts by RPS and Landmarc of 18 ponds around the extents of the site in 2002, 2006, 2007 and 2008. These surveys revealed a 'small' population of great crested newts being present on site, with the exception of Pond 16, which yielded a 'Medium' population. It was noted that the site offers good terrestrial habitat with very few barriers to newt migration.

The report also notes that the population of great crested newts at the site would not be indigenous, as all of the ponds available are man-made and there would have been considerable ground disturbance during the construction of the base. Therefore, the newt population would have had to be introduced or would have come from a source off site and spread across the base through migration. Many of the ponds are considerable distances apart and hence it is likely that great crested newts migrate over large distances across the base.

The report concludes that the population at the base is a meta population of great crested newts around the site.

The Crownhill Topsoil Ltd site processes soils and aggregates into topsoil. The site has regular soil deliveries and exports resulting in vehicle and plant movements around much of the site. As part of these works a programme of measures is to be implemented to ensure Great Crested Newt are not injured or killed during the company's activities.

The Crownhill Topsoil site is located in the North section of the Caerwent Army Training Camp. There is woodland along the North and East boundaries of the site which is likely to be used by GCN for hibernation. To the West of the site between buildings is an area of grassland with some scrub, which at present looks unused. In the center of the site on the southern boundary are two ponds. The first is a raised concrete pond currently housing enclosed ducks and geese. The second is a small pond where run off from the site is channeled resulting in no aquatic submerged vegetation and silt. No further clearance of land or vegetation is currently proposed at the site.

It is proposed that great crested newt mitigation will take the form of surveying the area to identify if the site is being used by GCN. Ongoing monitoring will be dependent on the results of the surveying process. Surveys will comprise of torchlight and refugia surveys between mid-March and June.

These surveys will be undertaken by an authorised and licensed ecologist. The number of GCN will be recorded and monitoring reports will be provided to NRW and South East Wales Biodiversity Records Centre (SEWBRc). Crownhill Topsoil Ltd, will fund the monitoring works.

## 2.0 Introduction

### 2.1 Background to activity/development, summary of why the activity is necessary.

Crownhill Topsoil Ltd is a recycling company specialising in the production of soils and aggregates from inert wastes.

The Crownhill Topsoil site lies within the Caerwent Army Training Camp at Grid Ref ST 46399 92086. The site location is shown on Drawing No EV/13/0901/101 (Appendix A).

Crownhill Topsoil accepts inert construction waste, predominantly topsoil and sub soil and process it into topsoil for use within the domestic and construction sectors. Inert wastes are bought to the site from construction sites across the South Wales area. They are then visually sorted into stockpiles before being screened and blended to form the required grade of soil. The finished product i.e. varying grades of topsoil is then stockpiled awaiting consignment to the customer.

The key aspects of the activities undertaken are:

- Sourcing and collecting aggregates;
- Assessment of sourced material;
- Inspection of sourced material for possible contaminants;
- Grading the soil and aggregate using a screen;
- Testing soils and aggregates produced;
- Storage of graded aggregates and soil;
- Loading and delivery of processed material to customers.

Crownhill Topsoil is a small business employing 5 people, with a turnover of circa £300,000/annum.

This type of business is vital to the construction economy and diverts considerable volumes of inert waste from landfill as well as supplying an important recycled commodity to the market.

This facility is located within the Caerwent Army Training Camp as this facility offers good access to the trunk road and motorway network and is remote from residential properties.

## 2.2 Site Description / Habitats:

The site measures approximately 408m x 143m with an area of approximately 58,235m<sup>2</sup> and is used for the storage of soil, with regular soil deliveries and exports. This results in vehicle and plant movements around much of the site. There are two entrances leading into the site but act as a one-way system with a hard surfaced road running through the site.

The remainder of the site is hard surfaced which is predominantly crushed compacted aggregates.

The Crownhill Topsoil site is located in the North section of the Caerwent Army Training Camp. There is woodland along the North and East boundaries of the site which is likely to be used by GCN for hibernation. Between this woodland and the site buildings there are stock piles of soil which have been there 4+ years and have vegetation growing on the North sides. To the West of the site between buildings is an area of grassland with some scrub, which at present looks unused. In the center of the site on the southern boundary are two ponds. The first is a raised concrete pond currently housing enclosed ducks and geese. The second is a small pond where run off from the site is channeled resulting in no aquatic submerged vegetation and silt. To the South where you enter the site is an area of grassland and some scrub over to the South East.

The site consists of large buildings with stockpiles of soils and aggregates both inside and outside of these buildings.

No further clearance of land or vegetation is proposed. The stock piles between the woodland and the site buildings which have been there 4+ years have not been included in this mitigation strategy as there is no immediate plan for them to be used.



Southern entrance to Crownhill Topsoil Site looking North



Looking east before entering site



Looking east after entering site



Raised concrete pond at the entrance to the site



Second pond at the entrance to the site



Looking East from road running through site



Stockpile on the Northern edge of the site showing vegetation growth



Stockpile of scrap wood on site



Stockpile inside one of the buildings on site



Stockpile of wood chip



Stockpile of soil on the Northern edge of the site



Stockpile on the Northern edge of the site showing vegetation growth



View East from Western boundary showing meadow/scrub area which appears unused

### **2.3 Details of proposed works on site:**

There is no intention to expand the current footprint of the site or the current areas of operations.

## 3.0 Survey and site assessment

### 3.1 Existing information on the species at the survey site.

Great crested newts have been identified within ponds at the army camp, it is believed that they have developed from a population released to monitor water quality during the period when the base was used as a munitions facility.

Surveys have been undertaken for great crested newts by RPS and Landmarc of 18 ponds around the extents of the site in 2002, 2006, 2007 and 2008. These surveys revealed a 'small' population of great crested newts being present on site, with the exception of Pond 16, which yielded a 'Medium' population. However, pond 7 in this report is the raised pond present on site and it is reported in this survey that no Great Crested Newts were found in this pond. However, pond 6, which is the closest pond to the pond on site (number 7) had GCN present each year. It was noted that the site offers good terrestrial habitat with very few barriers to newt migration.

The report also notes that the population of great crested newts at the site would not be indigenous, as all of the ponds available are man-made and there would have been considerable ground disturbance during the construction of the base. Therefore, the newt population would have had to be introduced or would have come from a source off site and spread across the base through migration. Many of the ponds are considerable distances apart and hence it is likely that great crested newts migrate over large distances across the base.

The report concludes that the population at the base is a meta population of great crested newts around the site.

Please refer to Appendix B for a copy of the Landmarc Support Services DTE Wales Great Crested Newt Survey.

### 3.2 Statutory sites notified for the species (SSSIs or SACs) within 10km:

The Dinham Meadows Site of Special Scientific Interest Lies next to the site sharing the western boundary and is designated for a diverse range of grass and herb species. Notable species of the hay meadows include adder's tongue *Ophioglossum vulgatum*, pepper saxifrage *Silaum silaus*, cross wort *Cruciata laevipes*, grass vetchling *Lathyrus nissolia*, greater knapweed *Centaurea scabiosa* and rockrose *Helianthemum nummularium*, whilst the limestone grassland areas have abundant quaking grass *Briza media*, heath grass *Danthonia decumbens*, bee orchid *Ophrys apifera* and autumn lady's tresses *Spiranthes spiralis*.

These areas are also important for the diverse assemblage of invertebrate's characteristic of grassland habitats. Species of Diptera and Lepidoptera are particularly well represented including the rare and notable dingy skipper *Erynnis tages*, grizzled skipper *Pyrgus malvae* and forester moth *Adscita statices*.

This site is not notified for GCNs

## 4.0 Great crested newt and amphibian ecology

Six native amphibian species occur in Britain: the common frog (*Rana temporaria*), the common toad (*Bufo bufo*), the natterjack toad (*Epidalea* [prev. *Bufo*] *calamita*), the smooth newt (*Lissotriton* [prev. *Triturus*] *vulgaris*), the palmate newt (*Lissotriton* [prev. *Triturus*] *helveticus*) and the great crested newt (*Triturus cristatus*).

All of these amphibians have aquatic egg and larval stages, and are therefore dependent on water for breeding. Eggs are laid in suitable ponds during the early spring, and the larvae (tadpoles) remain in the water for several weeks or months. Adults of each of these species typically spend 6 to 9 months on land, in invertebrate-rich feeding areas and over-winter in hibernacula, which often include granular material containing crevices in which the animals can hide.

The great crested newt is the largest of the newt species native to the UK. As many great crested newts occur in metapopulations, i.e. utilising a number of different ponds, a cluster of ponds within a locality can be essential to newt survival. As fish are the major predators of newt larvae and eggs, ephemeral ponds that are unable to sustain a fish population, can be important newt breeding sites.

In winter, when temperatures fall below 5°C, great crested newt activity falls, with most animals dormant by November.

### 4.1 Legislation:

The great crested newt is afforded full protection under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2010 (as amended). In summary, it is an offence to:

- Kill, injure or take a great crested newt;
- Disturb great crested newt(s) (defined as reduce their ability to survive or reproduce);
- Damage or destroy a breeding site or resting place; or damage, destroy or obstruct access to a place used by great crested newt for shelter or protection.

## 5.0 Impact assessment

The site is currently a working soil storage facility.

Potential impacts on GCNs would be injury or mortality if animals were to utilize stockpiled materials as hibernacula or should individuals venture onto the site foraging for food or commuting across the site. There is a risk of animals being crushed by plant or deposited soils / aggregates.

Mitigation will involve a survey of the site using torchlight and refugia surveys to determine whether GCN are using the site. Due to the large area of surrounding, more suitable habitat the impact of this has been assessed as negligible. The large stockpiles around the outside of the site adjacent to the woodland could have been favorable for GCN but are not included in any future plans to be used or removed. The other stockpiles on site are either inside buildings or on hard surfaced well used areas making GCN presence unlikely. The area of grassland and scrub to the west of the site has some potential for GCN.

The layout of the existing ponds within the site where GCN have been identified can be seen in the Pond Location Plan on the final page of the Landmarc Support Services GCN Survey Report in Appendix B. Although GCN were not found in pond 7 of this report (the raised pond present on site) this survey was done in 2008 and the pond South of this (number 6) had GCN present every year it was surveyed. GCN may not be using the pond due to ducks and geese which are fenced in. GCN could be using the site for foraging, hibernation and movement across site potentially to migrate to the woodland North of the site however this has been assessed as unlikely.

## 6.0 Mitigation Proposed:

### Stage 1

EcoVigour proposes to survey the site including the ponds using refuge checks (March to October), torching and bottle trapping (February to September). This will identify whether the site is being used by GCN and to what extent.

### Stage 2

If no GCN are observed to be using the site, then the following method will be employed; Majority of regularly used soil heaps are located within buildings and are therefore unlikely to be used by GCN and works can continue. However, if the grassland and scrub to the west of the site which has some potential is to be developed or used for stockpiles then further surveys will need to be undertaken with appropriate mitigation procedures employed.

### Stage 3

If GCN are observed to be using the site extensively then the following method will be employed;

Exclusion fencing to be installed with plan dependant on GCN use of the site and future plans for stockpiles and land. The ponds would be available to GCN as no need to exclude them. Once exclusion fencing is in place GCN will need to be captured and removed from inside the exclusion area. This would be done with pit fall traps, refugia checks and torching.

Mitigation proposed:

- Survey to access the extent GCN are using the site
- Any future work involving large stockpiles on the northern boundary or the grassland would require further survey and mitigation.
- Full exclusion fencing around the site;
  - Exclude great crested newts from the site;
  - Translocate any newts within the site to more favorable habitat.

## 6.1 Exclusion of Great Crested Newts:

Newts will be excluded from the site through the use of a permanent newt fence around the perimeter of the site. There are two hard surfaced access roads into the site. It will not be possible to fence across these as they are in constant use throughout the day. It is therefore proposed to install newt exclusion channels as illustrated on the GCN fence location plan in Appendix D.

Herptile exclusion fences will be installed at the site between the 1<sup>st</sup> March and end of October, during appropriate climatic and seasonal conditions (i.e. when it is judged that the occurrence of overnight frosts is no longer likely over periods of more than about 3-4 days).

### 6.1.1 *Installation of Permanent Amphibian Fencing around the perimeter of the site:*

In the design of this fencing we have considered a ten year design life. We have two options for the fencing:

1. Herpetosure type solid panels – This is comprised of a 4mm thick preformed HDPE sheet, supplied in lengths of 3m. The base of the sheet is buried and the sheets jointed with a screwed / bolted joint. This type of fencing only requires minimal support as it is largely self-supporting particularly when installed on a radius. Longer straight runs will require some form of bracing, generally in the form of wooden stakes. Our Ecologist has concerns with this type of fence regarding the number of joints required i.e. one every 3m which over time due to the deformation of the panels through expansion / contraction and wind loading could give rise to gaps large enough to allow GCN to enter the site.
2. 2mm thick pre-formed HDPE UV stabilised sheet supplied in 50m long rolls mounted on heavy duty 150mm x 150mm pressure treated timber stakes. This has the benefit of being installed in continuous lengths with few joints. Over time this means there is less opportunity for joints to open up allowing access for GCN. The limiting factor in terms of life span for this type of fence is the wooden stakes. These have a minimum lifespan of ten years and hence a maintenance programme would be required to replace the stakes at this point.

From a maintenance perspective, it is likely that whichever fence is used, it would need to be replaced within ten years. Our preferred option over most of the site is therefore Option 2 as this offers ease of installation and removes issues with joints opening up. Over sections where the fence could be subject to being impacted by stones or loose materials rolling from stockpiles, herpetosure fencing will be erected.

The following methodology would be used for the installation of the fencing.

- Vegetation along the fence line will be assessed, and if required, a 2m wide strip of vegetation will be cleared down to 100mm by means of hand clearance, under the supervision of a qualified ecologist. Finger-tip searching will be undertaken along the line of the fence. This process may require material stockpiled against the boundary to be pulled back to give a clear strip on which to construct the fence.
- Herptile exclusion fences will be installed between the 1<sup>st</sup> March and end of October, during appropriate climatic and seasonal conditions (i.e. when it is judged that the occurrence of overnight frosts is no longer likely over periods of more than about 3-4 days).
- The specification for the fences will be in accordance with the advice provided by English Nature (EN 2001) and the Design manual for Roads & Bridges (DMRB 2005; 2001). Please refer to the Drawings in Appendix C
- Fencing will be installed using a mini skid with trenching attachment or a 2.7 tonne rubber tracked mini digger fitter with a 6inch toothless bucket, dependent on ground conditions.
- The ecologist will work ahead of the operation to ensure no animals are sheltering in the grass. A 2m wide strip of vegetation will be cleared down to 100mm by means of hand clearance for ease of fence installation.
- Any machinery such as mini diggers that are likely to be used for fence installation will access the fence line across predefined routes.

- Any animals found will be moved out of the working area to an agreed receptor location. A furrow/trench will be excavated to a depth of 200mm for the base of the fence. Any large stones or boulders will be removed. Stakes will be driven in to the ground adjacent to the trench/furrow on the site side. 1mm thick UV Stabilised HDPE (semi-permanent) amphibian fencing will be inserted into the trench with a 100mm return away from the site. The trench furrow will be backfilled using well graded material and the earth compacted. The plastic fencing will be screwed or nailed to the posts with a large plastic washer to prevent the plastic tearing. Posts will be spaced at 1.5m to 2m dependant on ground conditions and terrain (due to the grade of polythene used this has no detrimental effect on the stability of fence but greatly reduces the volume of wood used).
- Slots will be cut into the tarmac access roads and 100mm x 100mm steel box section with a 70mm wide slot cut into the top of it will be sunk into the carriageway construction as illustrated on the GCN Exclusion Fencing Plan in Appendix D. This will be mounted into the road using either cold mix tarmac or concrete. A ramp will be formed at either end of the channel which will allow newts and other amphibians which fall into the channel to climb out.

### **6.1.2 Trapping and Translocation of great crested newts:**

Trapping effort has been designed to reflect the current status and use of the site. The site currently has stockpiles in some locations particularly the North of the site, right up to the boundary. The site is currently used for the storage of soils and aggregate with soil and aggregate constantly being delivered sorted and removed from site. However, along the northern and eastern edge of the site are some stockpiles that have been inert for at least 4 years, most of which are on the edge of the site bordering with woodland.

We feel that the stockpiles that have been standing for 4+ years, the grassland area in center of the site and the two ponds have potential habitat value for great crested newts. The rest of the site being roads and buildings offers little in terms of habitat value for great crested newts. Proposed trapping effort reflects this. This methodology will be reviewed if initial trapping reveals use of the site by GCN.

The site will initially be surveyed to determine site use by GCN. This will be done using refuge checks (March to October), torching and bottle trapping (February to September).

If GCN are not found then further mitigation will only be undertaken for the grassland/scub area on the west of the site.

However, if GCN are using the site extensively then stage 3 will be implemented with full exclusion fencing around the site and stockpiles. An Ecologist will complete fingertip searches as part of the fencing installation. Great crested newts will be excluded from the site and translocated to more favorable habitat.

Trapping will be undertaken using a combination of pitfall traps and refugia. Pitfall traps will be installed at 10m intervals along the fence line where possible. Pitfall traps will comprise plastic buckets buried so that the top lip is flush with the surface or slightly prone. A hole will be drilled in the base of the bucket to allow water to drain. A mammal ladder, float and some vegetation will also be placed in each bucket.

Sections of the fence line will cross hard surfaced areas where it would be difficult to break ground. In these areas, refugia will be used at a density of one per 5m. Refugia will comprise 60cm square carpet tiles and/or squares of roofing felt.

Refugia will also be placed in areas which are un-disturbed by regular vehicle and plant movements i.e. between buildings.

It is expected that the population will be classed as 'small' on site and will therefore result in pitfall traps and refugia being surveyed for thirty days or until ten clear trapping visits are achieved, in suitable weather conditions. However, the population will be assessed from the surveys completed in stage 1 and conclude the correct population size using the class assessment in GCN Mitigation guidelines. Refugia will be surveyed in the morning before ten o'clock. Any animals found will be moved to suitable surrounding areas.

Additional to the refugia checks, 5 torching surveys will be undertaken in suitable weather conditions. We have found this to be a very effective method of detecting newts moving along and adjacent to GCN fencing.

Surveys will be undertaken by an Ecologist holding a NRW Great Crested Newt Survey License or by an Ecologist working as an accredited agent under a NRW Great Crested Newt Survey License.

All herptile fences will be maintained in herptile proof condition throughout the trapping period and in perpetuity following this. Vegetation growing alongside the fence will be cut back or sprayed off to prevent it breaching the fenceline.

## **6.2 Mechanisms for ensuring delivery of mitigation and compliance with Mitigation Strategy:**

The named ecologist on the European Protected Species Development License will be retained to oversee the implementation and will supervise on site as required.

All contractors will receive a 'tool box' talk at the outset of works, to inform them of the presence of GCN, their protected status and the conditions and requirements of this Mitigation Strategy and any NRW EPS license which may be required for the works.

## **6.3 Mitigation contingencies:**

Contingency measures will be set out in a 'tool box talk' at the outset of works by the named ecologist. It will be clearly understood that in the event of any GCN being found during works, all works will cease in the affected area and a licensed ecologist contacted to provide further advice.

Contact details for the licensed ecologist will be made available to contractors working on site, on the understanding that the ecologist should be contacted immediately if any concerns are raised or if GCN are encountered.

## **6.4 Biosecurity risk assessment to consider presence and prevent spread of non-native species and disease on site:**

To prevent the spread of pathogens and invasive species during the works, all equipment including footwear and clothing that has come into contact with amphibians or fresh water will be disinfected, and disinfection procedures will be repeated between sites. All debris, plant fragments and mud will first be scrubbed off and rinsed with water. Disinfection will comprise soaking in a bleach solution (1 measure of household bleach to 9 measures water) for 15 minutes; or Virkon solution (1 mg/ml) for 1 minute, or fabrics can be washed on a 40 C cycle (with detergent, ensuring sufficient rinsing). Nets (if used) will be boiled for

10 minutes, or disinfected with spray bleach and rinsed thoroughly with clean water. Field gear (traps, net frames, etc) will be kept inside plastic bags during transit and storage to reduce the likelihood of transmitting disease. All used disinfectant will be disposed of appropriately.

## **7.0 Post-development site safeguard**

It is known that the Caerwent Army Training Camp supports a population of great crested newts. If stage 2 is implemented with the site not being completely excluded, then monitoring of the GCN population on the site will need to be monitored to ensure that if numbers of GCN using the site increase this is dealt with appropriately.

### **7.1 Monitoring and Maintenance of Great Crested Newt Exclusion Fencing:**

Twice weekly inspections will be undertaken of the great crested newt exclusion fencing with the results recorded. The inspection and recording process will be overseen by Simon Stone.

Vegetation along the fence line will be cut or treated with herbicide twice per year, during the growing season in May and July. Care will be taken to ensure that vegetation does not bridge the fence. If vegetation is cut, this will be undertaken using a brush cutter fitted with a steel blade or a low ground pressure self-propelled flail. If herbicide is to be used, it will be a Glyphosate based product.

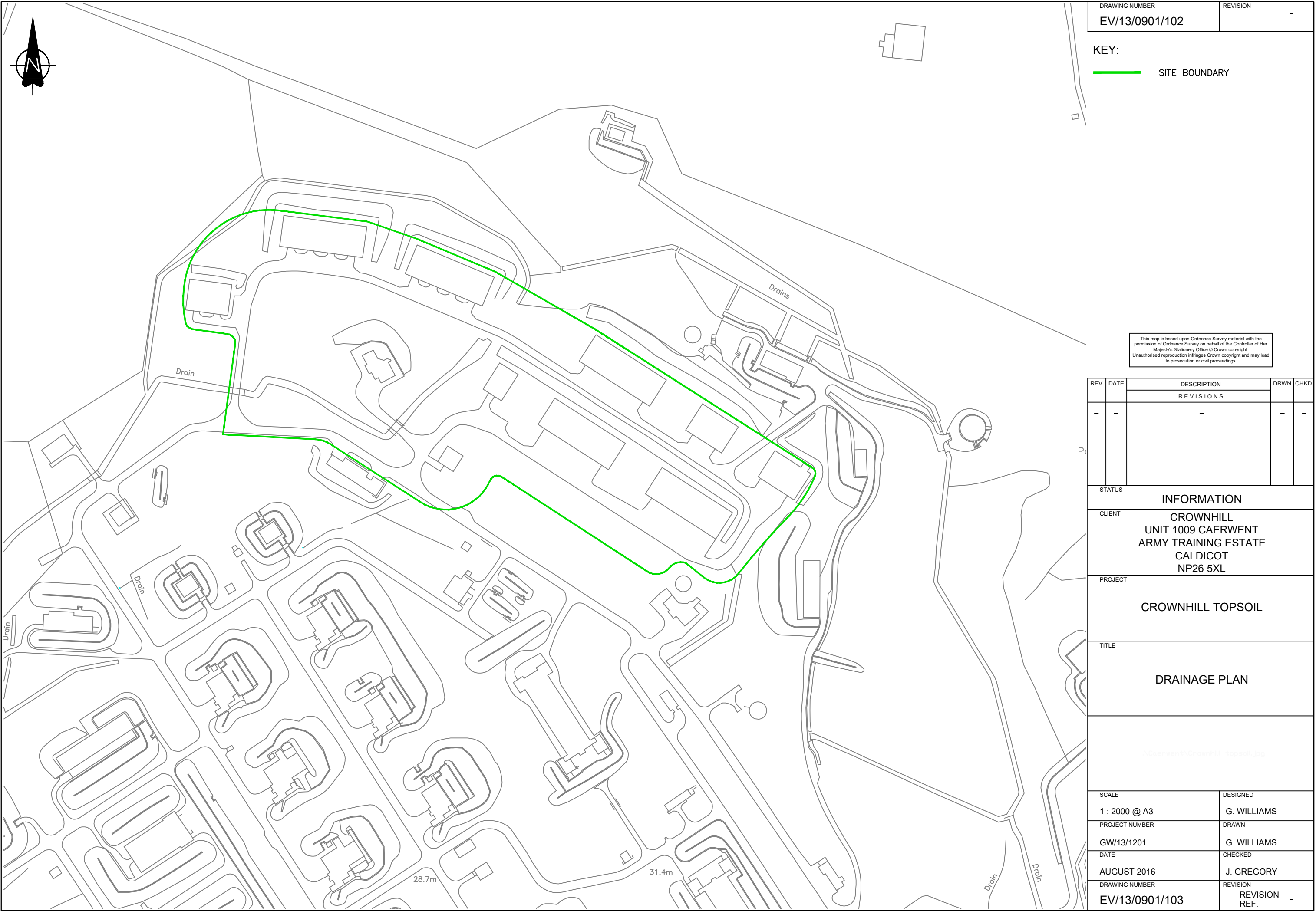
Stockpiled material will be maintained at a minimum of 1m from the fence. Any loose material which rolls onto the fence will be removed using a toothless bucket on an excavator (Crownhill have several excavators located permanently on site)

The presence of the fence and the reasons for maintaining it intact will be included within future site inductions, to ensure all personnel are aware of the imperative to maintain it intact.

#### **1.1 Contingencies in the event of a breach of the fence:**

If a breach in the fence is discovered, operations which may impact stockpiles will cease. A Licensed Great Crested Newt Ecologist will be consulted for advice as to the most appropriate course of action. This course of action will be agreed with Natural Resources Wales.

## Appendix A – Crownhill Topsoil Ltd Site Location Plan and Site Boundary Plan:



DRAWING NUMBER	REVISION
EV/13/0901/102	-

KEY:

—— SITE BOUNDARY

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REV	DATE	DESCRIPTION	DRWN	CHKD
		REVISIONS		
-	-	-	-	-

STATUS	INFORMATION
CLIENT	CROWNHILL UNIT 1009 CAERWENT ARMY TRAINING ESTATE CALDICOT NP26 5XL
PROJECT	CROWNHILL TOPSOIL
TITLE	DRAINAGE PLAN



SCALE	DESIGNED
1 : 2000 @ A3	G. WILLIAMS
PROJECT NUMBER	DRAWN
GW/13/1201	G. WILLIAMS
DATE	CHECKED
AUGUST 2016	J. GREGORY
DRAWING NUMBER	REVISION
EV/13/0901/103	REVISION REF. -

## Appendix B – Landmarc Support Services – DTE Wales Great Crested Newt Survey Report:

**From:** DTE Landmarc WA - Range/Training Area Supervisor (Hoggins, Garry Mr)  
**Sent:** 11 December 2008 12:09  
**To:** 'DE Ops South-LMS7i10(Taylor Mark Mr'  
**Subject:** GCN Report

**Attachments:** image001.jpg; image074.emz

## **Landmarc Support Services**

### **DTE Wales**

*Triturus cristatus* (Great Crested Newts)  
Caerwent Training Area  
Licence Number OTH:SA:24:2008

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### Introduction

Various licences have been obtained from the Welsh Assembly Government for work on Caerwent Training Area. Part of these licences included the requirement that monitoring of the great crested newt population upon the site be monitored annually for five years and thereafter updated in years 7 and 10.

Previous great crested newt surveys by DE EST team and RPS (Contractors) had identified newts in a number of ponds.

The great crested newts were introduced to the site by a scientist, when the site was an active munitions factory, to test the water quality of the sewage pond (pond 2). The newts have now migrated throughout the site.

### Methodology

The Great Crested Newt survey methodology conformed to *Great Crested Newt Conservation Handbook* (Froglife, 2001).

The timings of each of the survey methodologies used were appropriate. All surveys were carried out between 13<sup>th</sup> May to 17<sup>th</sup> June 2008.

In general weather conditions encountered at the time of surveying were generally dry and temperatures were above the recommended minimum.

The licensed surveyor that carried out all surveys was:

- Kathryn Shaw - Licence Number OTH:SA:24:2008
- Garry Hoggins as a Accredited Agent
- Alistair Stevenson as an Assistant

The following field survey methods for detecting Great Crested Newts were carried out:

- Bottle Trapping Survey
- Torch Survey
- Netting Survey

The methods utilised in the survey differed to previous years due to problems with visibility in some of the ponds; this mixture of methods were however effective in producing results which show great crested newt presence and some guidance on population numbers. Confidence in the results is therefore high.

**Results**

For Great Crested Newts only

Date	13/05	14/05	20/05	21/05	03/06	04/06	17/06	22/06	Best Result	Pop. Range
1	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0
3	0	1	3	3	0	3	0	0	3	10 - 150
4	0	1	0	1	2	0	0	1	2	7 - 100
5	0	0	0	0	0	0	0	0	0	0
6	0	1	0	0	2	2	0	1	2	7 - 100
7	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	4	4	0	1	4	13 - 200
9	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	1	0	0	1	3 - 50
11	0	0	1	1	0	2	6	3	6	20 - 300
12	0	0	0	0	1	1	0	0	1	3 - 50
13	0	0	0	0	0	2	5	4	5	17 - 250
14	0	2	0	0	0	9	5	2	9	30 - 450
15	0	0	0	0	3	1	1	1	3	10 - 150
16	5	1	12	16	20	32	16	21	32	107-1600
17	0	0	0	0	1	0	0	0	1	3 - 50
18	0	0	0	0	0	0	0	0	0	0
Total	5	6	16	21	33	57	33	34	69	

For Smooth/Palmate Newts only

Date	13/05	14/05	20/05	21/05	03/06	04/06	17/06	22/06	Best Result
1	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	1	0	1
3	0	14	12	20	23	26	0	14	26
4	10	20	50	75	59	4	20	20	75
5	12	11	8	0	2	3	0	1	12
6	0	12	0	0	29	10	0	12	29
7	0	0	0	0	0	0	0	0	0
8	3	0	3	1	0	1	0	1	3
9	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0
11	6	6	3	1	0	6	7	8	8
12	8	0	0	0	0	1	2	2	8
13	4	24	0	0	35	58	18	20	58
14	4	9	0	0	31	24	12	15	31
15	0	0	0	0	2	5	0	0	5
16	15	15	35	27	30	47	32	35	47
17	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0
Total	62	111	111	124	211	185	92	128	303

Evidence of egg laying (for all species of newt) — was seen in the following ponds:

6, 8, 11, 13, 14, 15, 16

## Conclusion

Population bands are based on current guidance, which suggests that survey results disclose 2-30% of the actual population present. This gives the very wide population bands shown.

The population bands indicated in the previous section above are rather broad, and suggest a very high potential population if the top-end estimates are considered. Given the reasonable levels of visibility, it is likely that the survey results offer somewhat better than 2% of the total population present. However, experience suggests that it is unlikely to be as high as 30%.

To provide a more useful measure of population, English Nature suggests using a series of population classes, based upon survey results. This is based upon best survey result using a single method (to avoid double-counting). Single counts between 1 & 10 are classed as "small", between 11 & 100 are "medium" and over 100 are "large".

Based on this population class assessment, individual populations would be classed as mainly small with only pond 16 having a medium population.

English Nature also state that it is acceptable to sum counts across ponds (on the same visit), where they occur within 250m of each other and there are no barriers to dispersal between them. However, at Caerwent, there are very few ponds occurring within 250m of each other. Ponds 1 and 2 are within 50m of each other and ponds 13 and 14 are at exactly 250m. However, there is good terrestrial habitat for great crested newts all across the Caerwent site, and very little which could be regarded as a meaningful barrier to migration around the site. Most of the hard-standing and roads are at grade, and the generally low levels of activity and traffic at the site would not present a constraint to newt migration.

It must also be considered that all of the water-bodies on the Caerwent site are all formed as a result of its former use as a munitions facility (or later activities). It is unlikely that a relict population survived across the site through its construction, with massive earthworks and building activity. The assumption must be that the current population has developed from an introduced or nearby existing population, which implies that the great crested newts on the site have tended to migrate over considerable distances (certainly in excess of 250m, and in some cases beyond 500m) in order to inhabit the ponds they are currently found in. As good terrestrial habitat at the site is plentiful, it is possible that the impetus for extended migration effort is the generally low quality of breeding ponds across the site (i.e. great crested newts migrate across the site in search of better breeding ponds).

Therefore, in considering the population at Caerwent, it must be viewed as an interconnected "metapopulation", an umbrella population with individual populations focused upon the individual breeding ponds. In looking at the metapopulation, the total numbers across the site from best results is 32, which falls into the medium population class.

Evidence of egg-laying was noted in various Ponds, with female great crested newts observed laying eggs in submerged leaves and fronds of bramble roots.

These figures are lower than previous years results; this mainly due to the declining visibility in the ponds and increased scrub.

The quantity of scrub surrounding the ponds has increased which makes getting to the ponds more difficult and restricts the viewing area for both torch survey and the sample area for bottle survey; however this does protect the ponds from interference by visitors to the training area. As the level of scrub increases the water clarity is declining; more green algae is growing within the pond thus the newts are only visible whilst on the surface.

Scrub clearance should reduce the amount of detritus falling into the ponds thus cutting the nutrient level and reducing the algae however this will have a detrimental effect on egg laying as the scrub over hang is the only substrate for the newts to lay on and provides in some cases the only access and egress from the pond.

Newts have been shown to lay eggs on man made substances such as plastics therefore torn plastic could be sunk to the bottom of the ponds to provide egg laying habitat and the scrub could be partially removed.

Full discussion on these suggestions will be carried out between Landmarc, defence estates, the local conservation group and any other interested parties before work is started.

Appendix 1 - Previous Years Results

2002

EWS	GCN
3	Present
4	Present
5	Present
6	Present
7	0
8	Present
9	Present
10	Present
11	Present
12	0
13	Present
14	0
15	0
16	Present

2006

Date	20/04	25/04	03/05	15/05	17/05	23/05	30/05	12/06	Best Result	Pop. Range
1	0	0	0	NS	0	0	NS	0	0	0
2	0	0	0	0	0	1	0	0	1	3-50
3	3	0	6	NS	2	NS	0	0	6	20-300
4	2	4	4	NS	0	NS	0	1	4	12-200
5	0	1	0	NS	0	NS	0	0	1	3-50
6	NS	1	0	0	0	NS	NS	1	1	3-50
7	0	0	0	0	NS	NS	NS	0	0	0
8	39	8	26	16	NS	52	NS	43	52	173-2600
9	0	0	NS	0	NS	0	0	0	0	0
10	2	5	2	3	NS	2	NS	0	5	15-250
11	12	7	NS	3	NS	10	3	1	12	40-600
12	0	0	0	0	NS	0	NS	1	1	3-50
13	0	2	NS	0	NS	1	5	1	5	15-250
14	9	8	NS	4	NS	10	6	1	10	30-500
15	0	0	NS	0	NS	0	2	0	2	6-100
16	41	29	36	14	NS	2	NS	6	41	136-2050
17	4	2	0	3	2	1	0	0	4	12-200
18	NS	0	0	0	0	0	NS	0	0	0
Total	112	67	73	43	4	79	16	55	N/A	N/A

2007

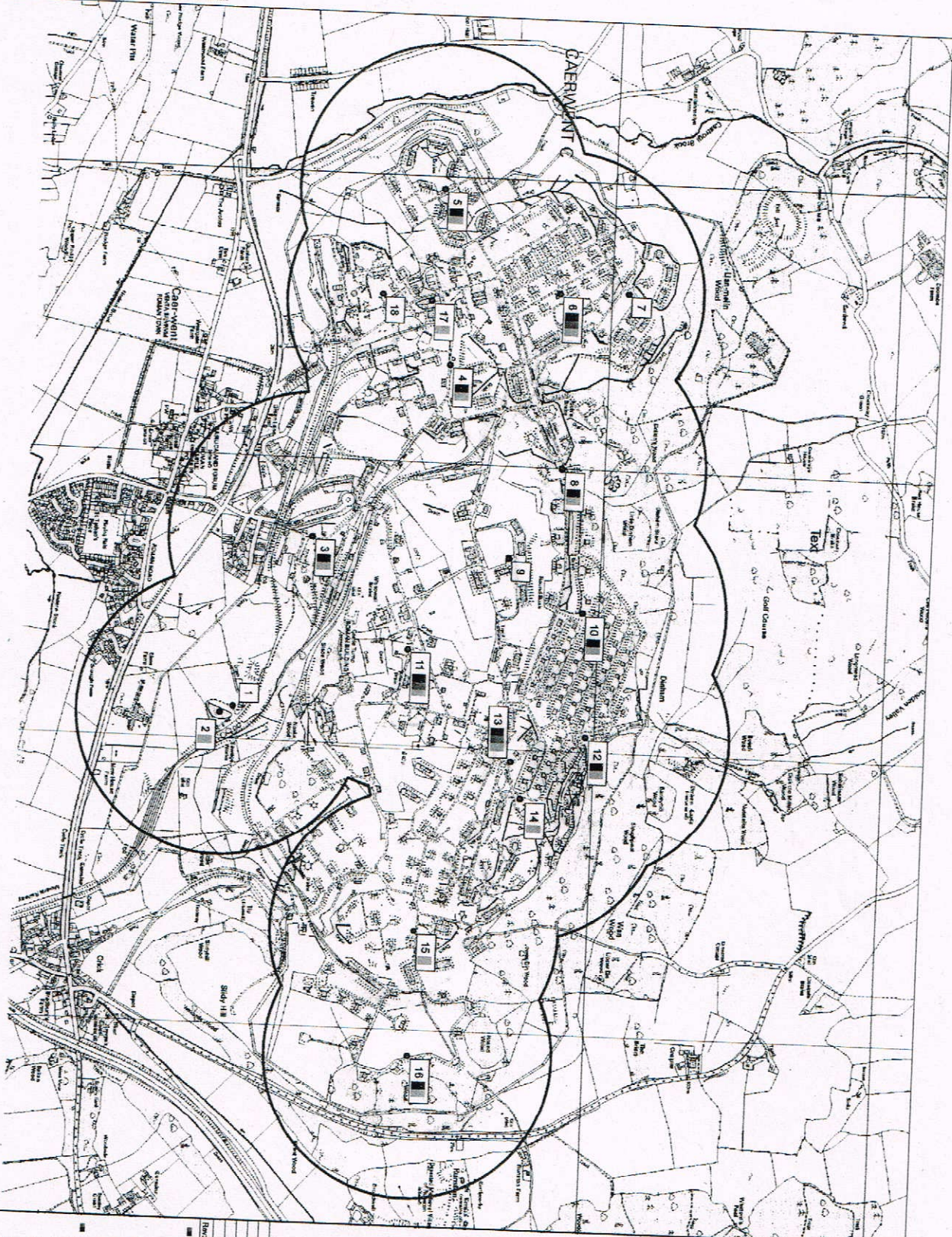
ID No	Method	14/05	15/05	21/05	22/05	29/05	30/05	16/08
1	-	-	-	-	-	-	-	-
2	B/N	0	0	0	0	0	0	0
3	T	1	1	2	4	2	5	0
4	T	5	5	5	8	2	2	0
5	T	0	0	0	0	5	0	0
6	T	43	5	1	3	2	3	0
7	T	0	0	0	0	0	0	0
8	T	2	4	3	7	11	4	0
9	T/N	0	2	0	0	0	0	0
10	T/N	0	0	-	-	5	6	2
11	T	3	0	9	2	4	3	0
12	T	0	0	2	0	0	0	0
13	T	0	0	1	4	0	0	0
14	T	7	11	5	7	3	0	0
15	T	0	0	0	0	0	0	0
16	T	16	7	3	0	5	15	0
17	B	0	0	1	0	3	0	0
18	N	0	0	0	0	0	0	0

**Appendix 2 – Descriptions of Ponds**

Pond No.	Description
1	A small over spilled pond/damp area along the access track to pond 2. Also surveyed under pond 1 were the collection tanks associated with the sewage works. Smooth newts and frogs were noted.
2	A large pond associated with the sewage works. This pond had natural earth banks and appeared to be clay-lined. Although aquatic vegetation was limited, this pond was much more natural in form than the EWS tanks across much of site.
3	Emergency Water Supply (EWS) tank. Some overhanging vegetation
4	Emergency Water Supply (EWS) tank. Some overhanging vegetation
5	Emergency Water Supply (EWS) tank. Some overhanging vegetation
6	Emergency Water Supply (EWS) tank. Some overhanging vegetation
7	Emergency Water Supply (EWS) tank. Some overhanging vegetation. Built at ground level, sides vertical and probably difficult to scale for amphibians.
8	Emergency Water Supply (EWS) tank. Some overhanging vegetation
9	Emergency Water Supply (EWS) tank. Some overhanging vegetation. Built at ground level, sides vertical and probably difficult to scale for amphibians.
10	Emergency Water Supply (EWS) tank. Some overhanging vegetation. Built at ground level, sides vertical and probably difficult to scale for amphibians.
11	Emergency Water Supply (EWS) tank. Some overhanging vegetation
12	Emergency Water Supply (EWS) tank. Some overhanging vegetation. Built at ground level, sides vertical and probably difficult to scale for amphibians.
13	Emergency Water Supply (EWS) tank. Some overhanging vegetation
14	Emergency Water Supply (EWS) tank. Some overhanging vegetation
15	Emergency Water Supply (EWS) tank. Some overhanging vegetation. Presence of sticklebacks noted
16	Emergency Water Supply (EWS) tank. Some overhanging vegetation
17	2 Former "Acid Tanks". Brick-lined bowl-shaped ponds. Substantial natural vegetation has developed which acts as a mat over the bricks, allowing bottle-traps to be inserted. One is so vegetated that it is effectively dry.
18	2 brick-built tanks of uncertain purpose. Very vegetated with Canadian Pondweed, vegetation, hard construction and depth make bottle-trapping and torchlight survey ineffective.

**Appendix 5 – Great Crested Newt Presence**

Pond	2002	2006	2007	2008
1	Not Checked	None	None	None
2	Not Checked	Present	None	None
3	Present	Present	Present	Present
4	Present	Present	Present	Present
5	Present	Present	Present	None
6	Present	Present	Present	Present
7	None	None	None	None
8	Present	Present	Present	Present
9	Present	None	Present	None
10	Present	Present	Present	Present
11	Present	Present	Present	Present
12	None	Present	Present	Present
13	Present	Present	Present	Present
14	None	Present	Present	Present
15	None	Present	None	Present
16	Present	Present	Present	Present
17	Not Checked	Present	Present	Present
18	Not Checked	None	None	None



# Legend

● Pond Location

500 Metre Buffer from Pond Locations

6

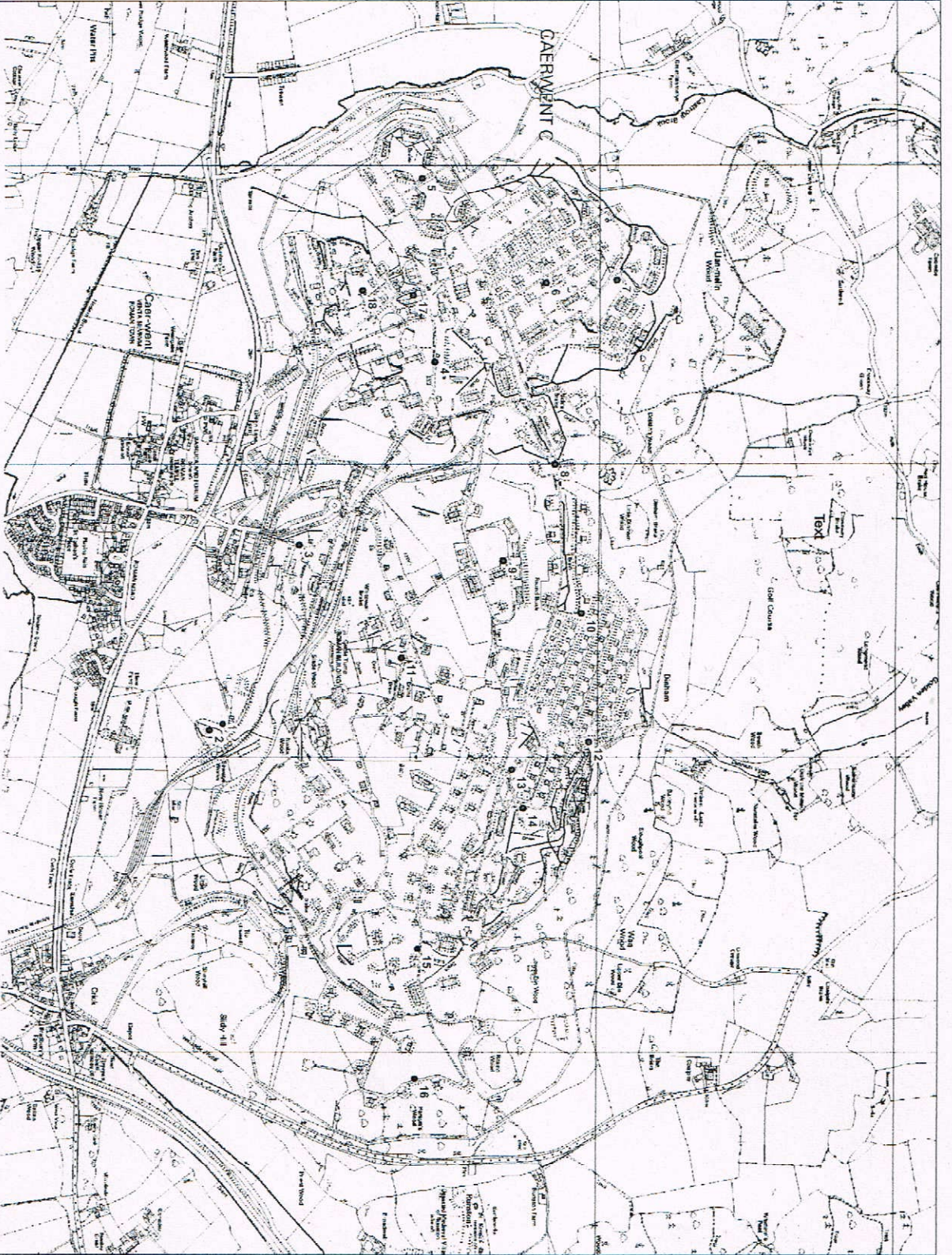
GCN Present 2002  
GCN Present 2005  
GCN Present 2008  
Pond Number

RPS

Client: RPS  
Project: Caerwent Ecology  
Title: Survey Results and Areas Likely to Contain Great Crested Newts  
Scale: A3 @ 1:15,000  
Date: 03/07/2006  
Drawn: MS  
Checked: JRS  
Job Ref: JRS133

Figure No: 2

Revision:



# Legend

- Pond Location

Rev:	Date:	Author:	Name:	Checked:
1	01/07/2006	DAWN OSGB36	JOB REF: JRS133	

State: PRELIMINARY

**RPS**

Map of Caerwent 1:13,500 Scale. Data Sources: 2006

Client:

Project: Caerwent Ecology

Title: Pond Locations

Scale: A3 @ 1:13,500

Date: 03/07/2006

Drawn: MS

Checked:

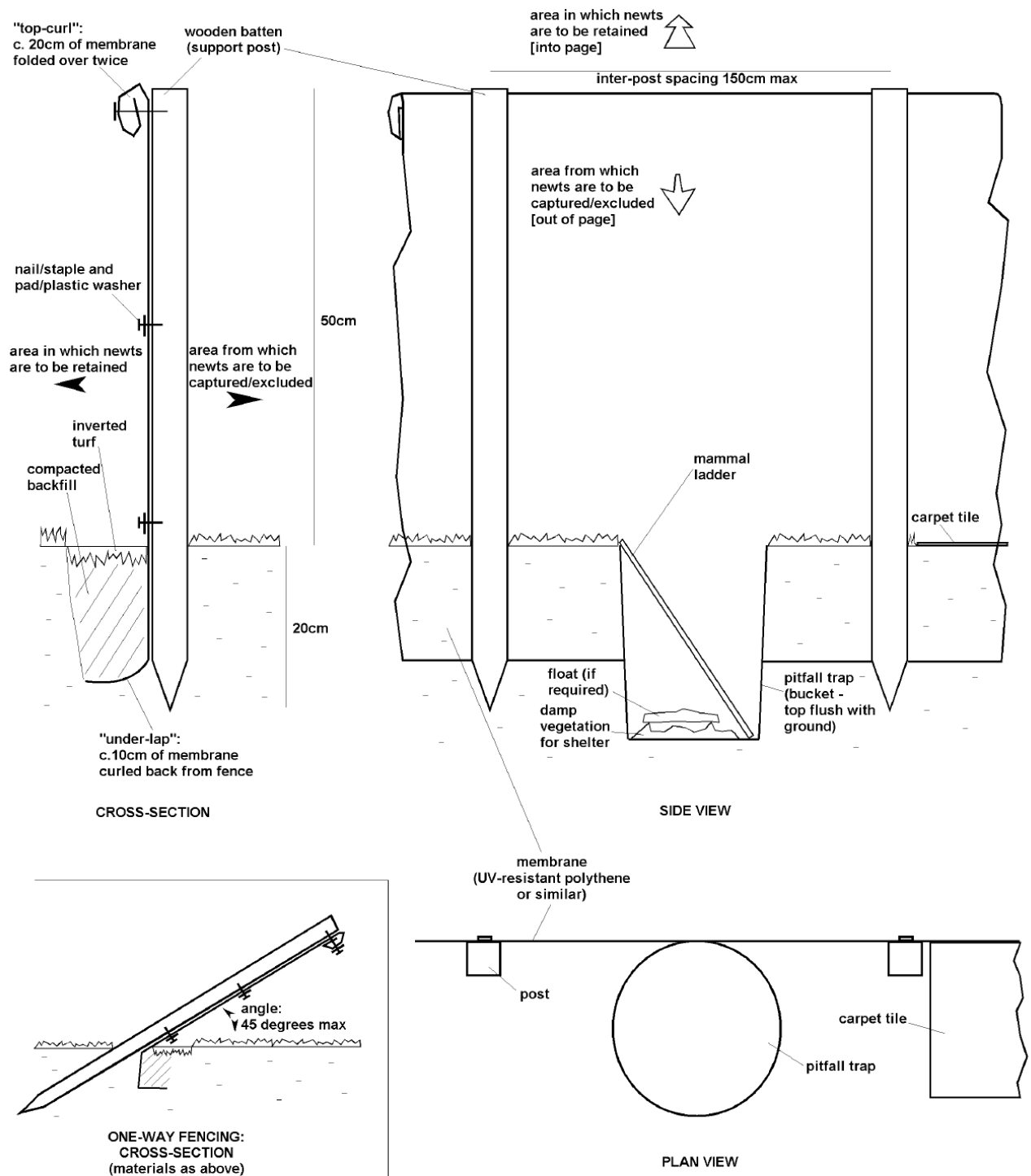
Figure No: 1

Revision:

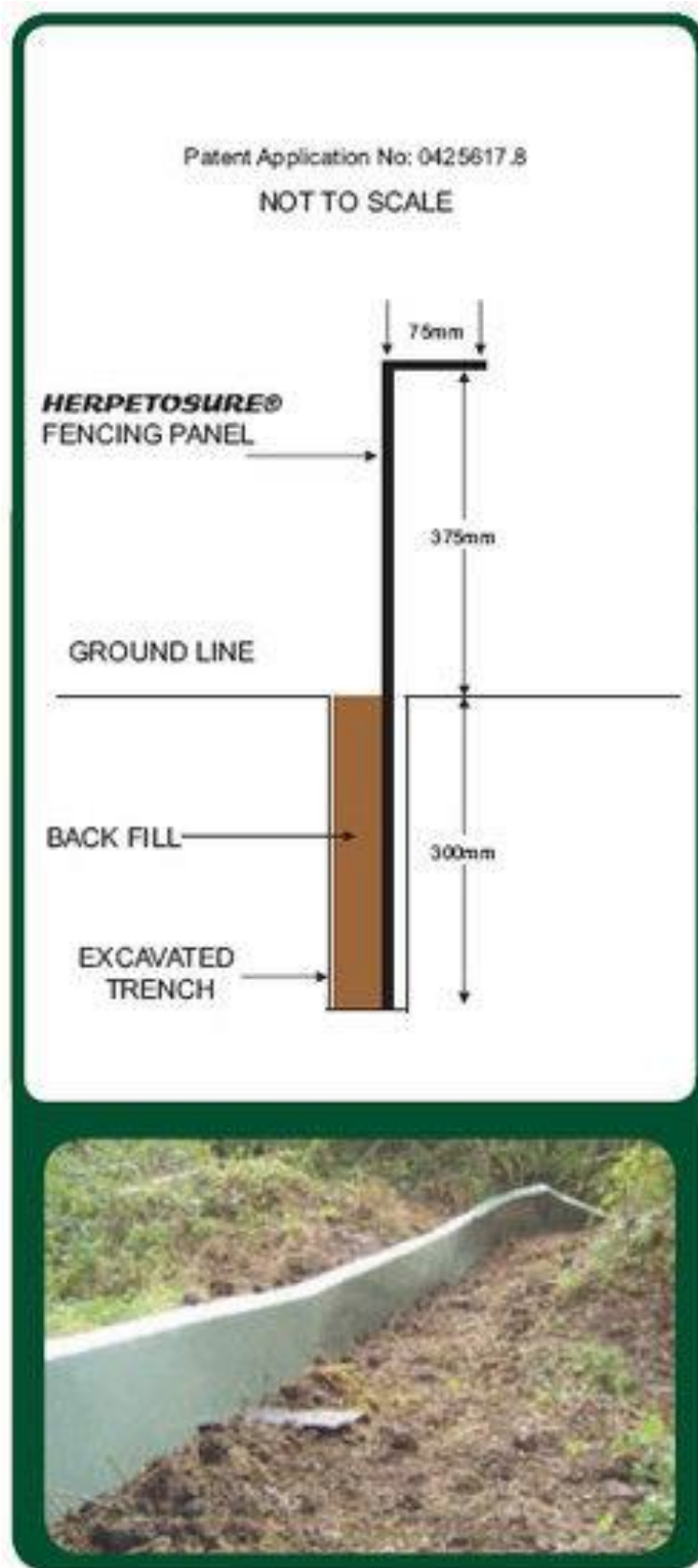


## Appendix C – Herptile Exclusion Fencing:

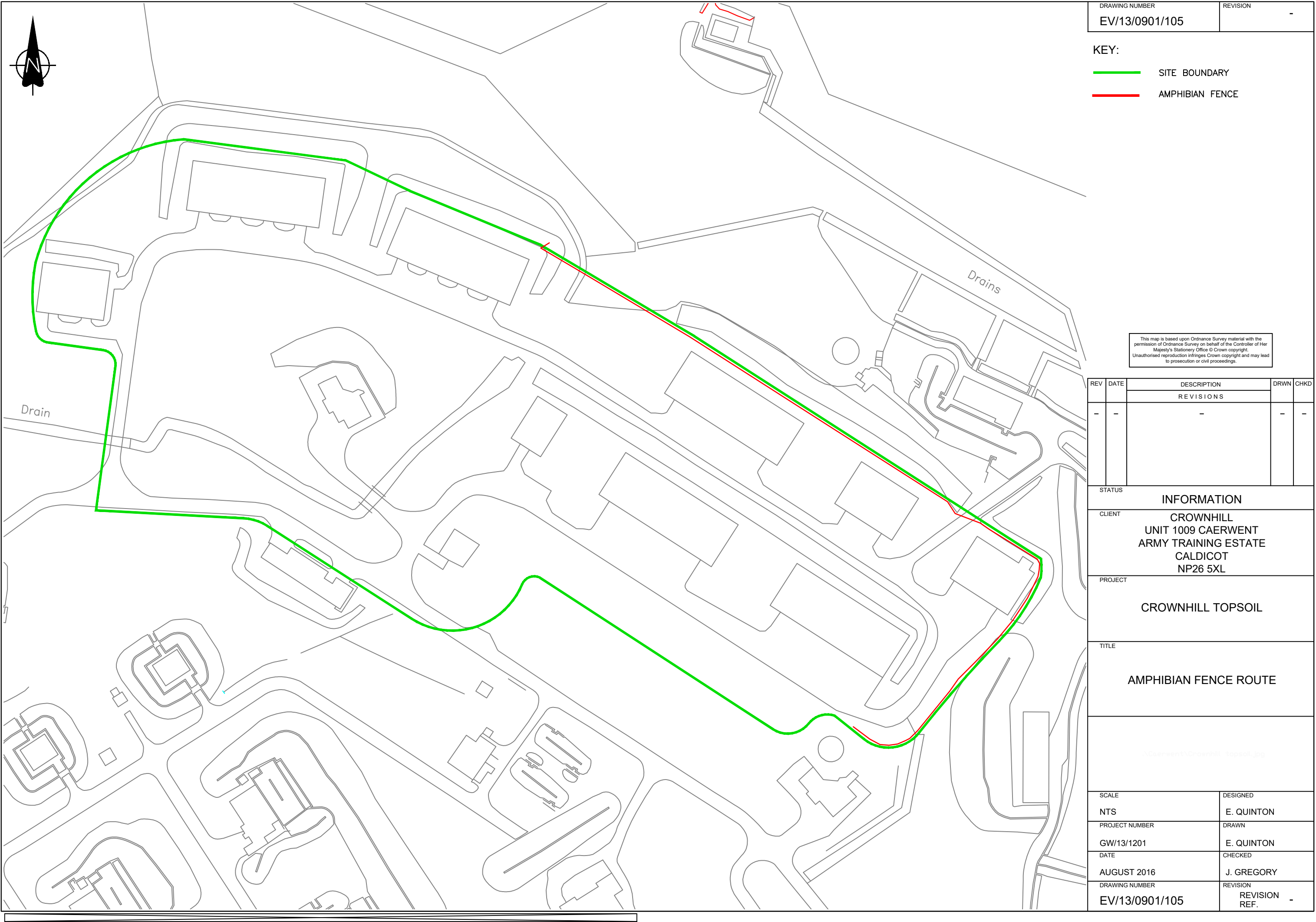
### Herptile Exclusion Fencing Detail:



## Herpetasure Exclusion Fencing Detail



## Appendix D – Location of Proposed Great Crested Newt Exclusion Fencing:



DRAWING NUMBER	REVISION
EV/13/0901/105	-

KEY:	
<div></div>	SITE BOUNDARY
<div></div>	AMPHIBIAN FENCE

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REV	DATE	DESCRIPTION	DRWN	CHKD
		REVISIONS		
-	-	-	-	-

STATUS	<b>INFORMATION</b>
CLIENT	
PROJECT	
TITLE	



SCALE	DESIGNED
NTS	E. QUINTON
PROJECT NUMBER	DRAWN
GW/13/1201	E. QUINTON
DATE	CHECKED
AUGUST 2016	J. GREGORY
DRAWING NUMBER	REVISION
EV/13/0901/105	REVISION REF. -