



**Black Rock Farm, Cross Lanes, Wrexham
Intensive Poultry Farm Permit Application**

Great Crested Newt Method Statement

October 2017

Control sheet

		2 York Street, Clitheroe, Lancashire BB7 2DL	Offices Level 1 Robert Owen's School New Lanark South Lanarkshire ML11 9DB
www.bowlandecology.co.uk		Tel: 01200 446777	Tel: 01555 438880
Job number:	BOW17/587		
Title:	Black Rock Farm, Cross Lanes, Wrexham		
Client:	N & K Elliott		
Prepared by:	Louise Redgrave, <i>Principal Ecologist</i>		
Checked by:	Claire Wilson, <i>Senior Ecologist</i>		
Date of Issue:	25.10.17		
Version:	1		
Revisions:	1 – updated in response to feedback from Wrexham Council		
Status:	Final		
This report is prepared by Bowland Ecology Ltd for the sole and exclusive use of N & K Elliott in response to their particular instructions. No liability is accepted for any costs, claims or losses arising from the use of this report or any part thereof for any purpose other than that for which it was specifically prepared or by any party other than N & K Elliott. This report has been prepared by an ecological specialist and does not purport to provide legal advice. You may wish to take separate legal advice. The information which we have prepared and provided is true, and has been prepared and provided in accordance with the BS42020:2013 and Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions.			
Signed (Author) 		Signed (QA) 	

Background and Supporting Information

A. Executive Summary

Two poultry rearing sheds are planned to be constructed at Black Rock Farm, Wrexham (SJ3735247495).

The scheme will involve construction of two poultry sheds and associated access linked from the existing road to the west of the site. The development will result in the permanent loss of approximately 0.5 hectares (ha) of optimal terrestrial great crested newt habitat and the temporary loss of a further 0.3 ha of optimal terrestrial great crested newt habitat. No ponds will be lost as part of the development.

A single pond is currently present on the site and the wider meta-population is known to support a medium sized population of great crested newts, as part of a wider meta-population which is likely to include ponds to the north and south of the development site.

The scheme will involve an exclusion and capture scheme of the development footprint and laydown areas, with a capture period of 60 days, based on the population size.

Further mitigation and compensation will be provided by the creation and long term management of the existing pond, a further three ponds, newly created hibernacula and refugia, new hedgerows, grassland / scrub mosaic and woodland. The existing pond will be enhanced by the installation of stock fencing to reduce livestock poaching.

B. Introduction

B.1 Background to the activity / development

The project involves the construction of two new poultry units along with associated car parking areas and an access from the main road. No ponds will be directly impacted by works but suboptimal terrestrial habitat within close proximity to ponds will be impacted.

B.2 Full details of proposed works on site that are to be covered by the licence

The works to be covered by the licence will include:

- Fencing with amphibian exclusion fencing and clearing of the area to be affected by construction, including the development area, access routes, compensatory ponds and relocation of any amphibians present within this area at the time of works to a receptor site outside of the working area.
- Habitat creation and management including; excavation of three new ponds at the site, creation of hibernacula and three refugia, creation of new hedgerows, scrub / grassland mosaic and associated habitats.

There are no statutory wildlife sites impacted by the scheme.

B.3 Actions requiring licencing

Activities outlined in B.2 will involve capture and translocation of terrestrial great crested newts to avoid potential injury or mortality caused by construction activities. No breeding ponds will be directly impacted by activities on site.

C. Survey and Site Assessment

C.1 Existing information on great crested newts at the survey site

A search with Cofnod, the biological records holder for the area was undertaken for the site and a 1 km buffer zone in July 2017. The following results for great crested newts were retrieved:

Table 1. COFNOD great crested newt records

<u>Date</u>	<u>Location</u>	<u>Count / Details</u>
<u>On Site</u>		
<u>27/04/2000</u>	<u>SJ37354745</u>	<u>9</u>
<u>27/05/2005</u>	<u>SJ3735647476 Southern Road Scheme</u>	<u>Males/Females/Eggs present</u>
<u>08/04/2003-17/05/2005</u>	<u>SJ3735947458</u>	<u>Males/Females/Eggs present</u>
<u>27/04/2000</u>	<u>SJ3734547470 Maelor abattoir</u>	<u>Eggs and Efts</u>
<u>Within 250 m</u>		
<u>21/10/2011 - 09/11/2011</u>	<u>SJ373475 Agricultural field west of Bedwell Rd</u>	<u>Pitfall trap records - Adult male, Adult female, juvenile</u>
<u>28/04/2014 - 10/03/2017</u>	<u>SJ3727647611 Southern Road Scheme</u>	<u>Males/Females/Juveniles present</u>
<u>13/04/2000</u>	<u>SJ372473 Chetwynd Grove</u>	<u>4</u>
<u>28/04/14 – 24/04/2017</u>	<u>SJ3727547633 Southern Road Scheme</u>	<u>Males/Females/Juveniles Present</u>
<u>28/04/2014 – 15/05/15</u>	<u>SJ3720247628 Southern Road Scheme</u>	<u>Torch Count - 2 Males, 1 Female</u>
<u>28/04/14 – 10/03/17</u>	<u>SJ3719747649 Southern Road Scheme</u>	<u>Torch Count - Males/ Females/Juveniles present</u>

<u>Date</u>	<u>Location</u>	<u>Count / Details</u>
<u>Before 23/03/2007</u>	<u>SJ3716647448 The Hollies</u>	
<u>10/03/2017</u>	<u>SJ3716147633 Southern Road Scheme</u>	<u>Torch Count - 7 Males</u>
<u>13/04/2000</u>	<u>SJ3715747434 The Hollies</u>	<u>Eggs</u>
<u>09/05/2001 – 15/04/2009</u>	<u>SJ3715447435 Southern Road Scheme</u>	<u>3 Males, 1 Female</u>
<u>30/04/14 – 24/04/2017</u>	<u>SJ3711947580 Southern Road Scheme</u>	<u>2 Male, 1 Juvenile</u>
<u>13/04/2000</u>	<u>SJ37134742 The Hollies</u>	<u>7</u>
<u>Before 29/08/2003</u>	<u>SJ3713247426 The Hollies</u>	<u>Last surveyed 2001</u>
<u>30/04/2014 – 28/05/2015</u>	<u>SJ3711347595 Southern Road Scheme</u>	<u>Bottle Trap - Male/Females present</u>
<u>10/03/2017</u>	<u>SJ37174769 Southern Road Scheme</u>	<u>Torch Count - 3 Males</u>
<u>24/04/2017</u>	<u>SJ37104758 Southern Road Scheme</u>	<u>Torch Count - 1 Male</u>
<u>14/04/2005 – 19/08/2015</u>	<u>SJ3719247712 Southern Road Scheme</u>	<u>Males/Females/Juveniles present</u>
<u>28/04/2014 – 28/05/2015</u>	<u>SJ3709847590 Southern Road Scheme</u>	<u>Bottle Trap - Males/Females present</u>
<u>10/05/2005</u>	<u>SJ3744247716 Southern Road Scheme</u>	<u>Males/Females present</u>
<u>11/04/2003 – 07/05/2003</u>	<u>SJ37574769 Southern Road Scheme</u>	<u>Bottle Trap - 1 Juvenile, 2 males</u>
<u>Before 29/08/2003</u>	<u>SJ3757947696 Maelor abattoir</u>	<u>4 male, 5 Female</u>
<u>11/04/2003 – 21/04/2009</u>	<u>SJ37564772 Southern Road Scheme</u>	<u>Males/Females present</u>
<u>23/03/2007</u>	<u>Maelor abattoir</u>	
Over 250 m		
<u>08/03/2000 – 10/05/2005</u>	<u>SJ37594772 Southern Road Scheme</u>	<u>Males/Females/Egg resent</u>
<u>Before 27/04/2000</u>	<u>SJ37614772</u>	<u>2</u>
<u>15/04/2000</u>	<u>SJ373470 Cross Lanes Hotel</u>	<u>6</u>
<u>13/04/2003 – 12/05/2005</u>	<u>SJ3708447167 Southern Road Scheme</u>	<u>Males/Females present</u>
<u>24/08/2000</u>	<u>SJ37334704 Southern Road Scheme</u>	<u>Males/Females/Egg present</u>
<u>Before 29/08/2003</u>	<u>SJ3698247527 The Hollies</u>	<u>6 Males, 6 Females</u>
<u>28/04/2014 - 15/05/2015</u>	<u>SJ3697747529 Southern Road Scheme</u>	<u>Bottle Trap - Males/Females present</u>
<u>13/04/2000 - 10/03/2017</u>	<u>SJ3696047621 Southern Road Scheme</u>	<u>Males/Females present</u>
<u>10/03/2017</u>	<u>SJ36954762 Wrexham Industrial Estate Road Access Road</u>	<u>Torch Count - 6 Males</u>
<u>15/04/2000</u>	<u>SJ3692847165 Southern Road Scheme</u>	<u>Torch Count - Egg</u>
<u>15/04/2005</u>	<u>SJ3755248011 Southern Road Scheme</u>	<u>Males/Females/Egg present</u>
<u>29/04/2005</u>	<u>SJ37564682 Southern Road Scheme</u>	<u>Bottle Trap - Males/Females present</u>
<u>15/04/2000</u>	<u>SJ36974687 Gwrych Teg Farm</u>	<u>11</u>
<u>09/05/2005</u>	<u>SJ37854692 Southern Road Scheme</u>	<u>Males/Females present</u>
<u>25/05/2005</u>	<u>SJ37834686 Southern Road Scheme</u>	<u>Males/Females/Egg present</u>
<u>13/04/2000</u>	<u>SJ366474</u>	<u>5</u>
<u>15/04/2000</u>	<u>SJ367470</u>	<u>8</u>
<u>13/04/2000</u>	<u>SJ3663147401 Hollyhedge</u>	<u>5</u>
<u>12/04/2005</u>	<u>SJ37344666 Southern Road</u>	<u>Torch Count - 3 Females</u>

<u>Date</u>	<u>Location</u>	<u>Count / Details</u>
	<u>Scheme</u>	
<u>15/04/2000</u>	<u>SJ365472 Highfield Farm</u>	<u>14</u>
<u>09/05/2005</u>	<u>SJ36994662 Southern Road Scheme</u>	<u>Terrestrial Disturbance - Egg</u>
<u>24/04/2002</u>	<u>SJ36514781 Five Fords Sewage Treatment Works Lagoon</u>	<u>Bottle Trap - 2 Adults</u>
<u>12/04/2005</u>	<u>SJ37634654 Southern Road Scheme</u>	<u>Bottle Trap - 1 Female</u>
<u>03/04/2000</u>	<u>SJ363472 Highfield Farm</u>	<u>6</u>

Further detail regarding the local status of great crested newts was provided by NRW in September 2015. The NRW review focused on the Wrexham Industrial Estate and utilises historic data 2000-2009¹ and a review of aerial photography. This information is summarised below:

'Previous research which examined past and current GCN conservation status in northeast Wales has been undertaken, as part of a wider national project into the development of a National Amphibian and Reptile Recording Scheme (NARRS), led by the Herpetological Conservation Trust. The loss of suitable breeding habitat and decline in pond densities across northeast Wales has resulted in a severe decline in great crested newt status in the region. Examination of historical OS maps was undertaken, to assess changes to the pond landscape over time, studying a representative sample of 25 random 1 km squares across the region. The overall trend shown was that there has been a significant decline in pond densities, with at least 37% of ponds being lost in northeast Wales over the last 160 years.

Despite this northeast Wales constitutes the welsh stronghold for great crested newts, having retained a higher density of ponds than many other areas over the course of its decline across the UK in the 20th century. Existing data collated from 1985 to present has identified 693 known ponds supporting great crested newts in northeast Wales. These comprise 8 in Conwy, 105 in Denbighshire, 282 in Flintshire and 298 in Wrexham, supporting the premise that Northeast Wales is one of the most important regions for this species in the UK, and makes an important contribution to the European population...

A comparison of the population size class estimates for the southern route is shown Table 4 below. It was not possible to make a similar comparison for the northern route, as there is only a limited amount of comparable data where reliable population estimates can be made. Furthermore, where it is possible to obtain population estimates, there is little variation in the small numbers of GCN found in these northern route ponds between 2003 and 2009.

Due to a number of the ponds not being surveyed at all in 2000, the table only compares data from 2003-2009:

¹ The data review focuses on information recorded by AMEC in respect of local highways development.

Table 2: Comparison of Population Size Class Estimates for GCN Populations in the Southern Survey Area.

Pond/ Group of Ponds	2003	2005	2009
	Population Size	Population Size	Population Size
55a, 58, 59-60, 68-70, 53	Small	Medium	Small
63, 65, 66-67, 153 - 154	Medium	Medium	Small
99, 100/101, 102	Medium	Medium	Small
88, 86-87, 95, 89, 111	Medium	Medium	Small
114, 98	Medium	Medium	Small

The number of ponds surveyed has not remained the same over the course of the surveys which provides some constraints when comparing the results. A number of the ponds have been subject to change over time; being dry some years or becoming defunct and in the latter stages of succession, thus affecting their suitability as a viable amphibian habitat, and their ability to support GCN. Health and safety reasons have precluded some ponds from being surveyed in some years. A number of new ponds were additionally found to contain GCN in the 2009 surveys. However, as these had not been surveyed previously, it was not possible to make a comparison with this data.'

C.2 Statutory Sites notified for the species (SSSIs or SACs) within 10 km

Johnstown Newt Sites Special Area of Conservation (SAC UK0030173) and Stryt las A'r Hafod Site of Special Scientific interest (SSSI) share the same site boundary and lie approximately 5.9 km west of the proposal.

This 69 ha SAC and SSSI comprises two separate post-industrial sites in and around Rhosllanerchrugog which lies south of Wrexham. The population of great crested newts present is one of the largest known in Great Britain with much conservation management over the last few years. Mining subsidence pools and natural water-filled hollows on clay are utilised as breeding ponds, whilst other ponds have been created as part of nature conservation management. Terrestrial habitat includes marshy grassland, grazed farmland, swamp, scrub and broad-leaved woodland. Good populations of other widespread amphibian species are also present.

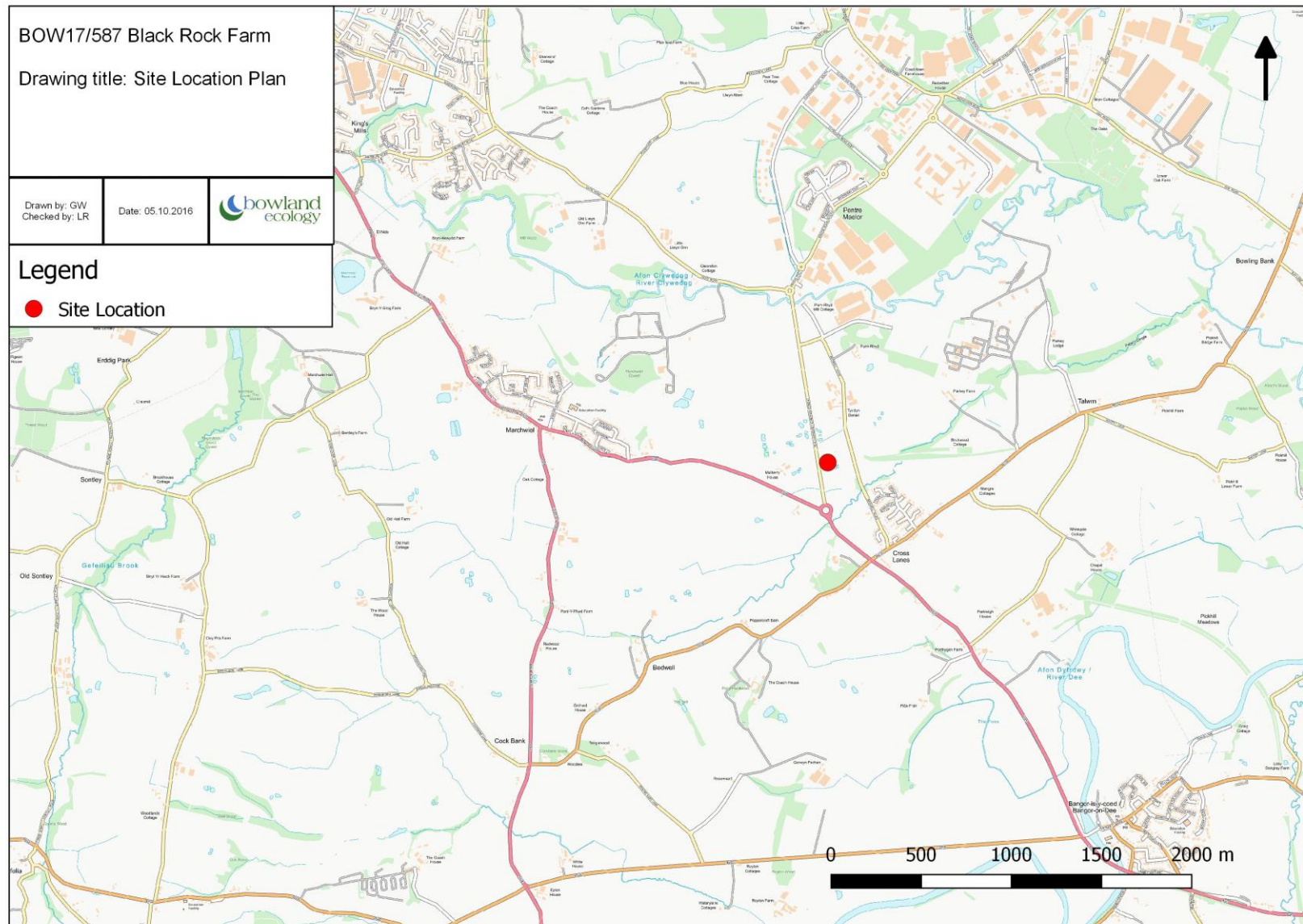
No other statutory sites designated for great crested newts fall within 10 km of the proposal.

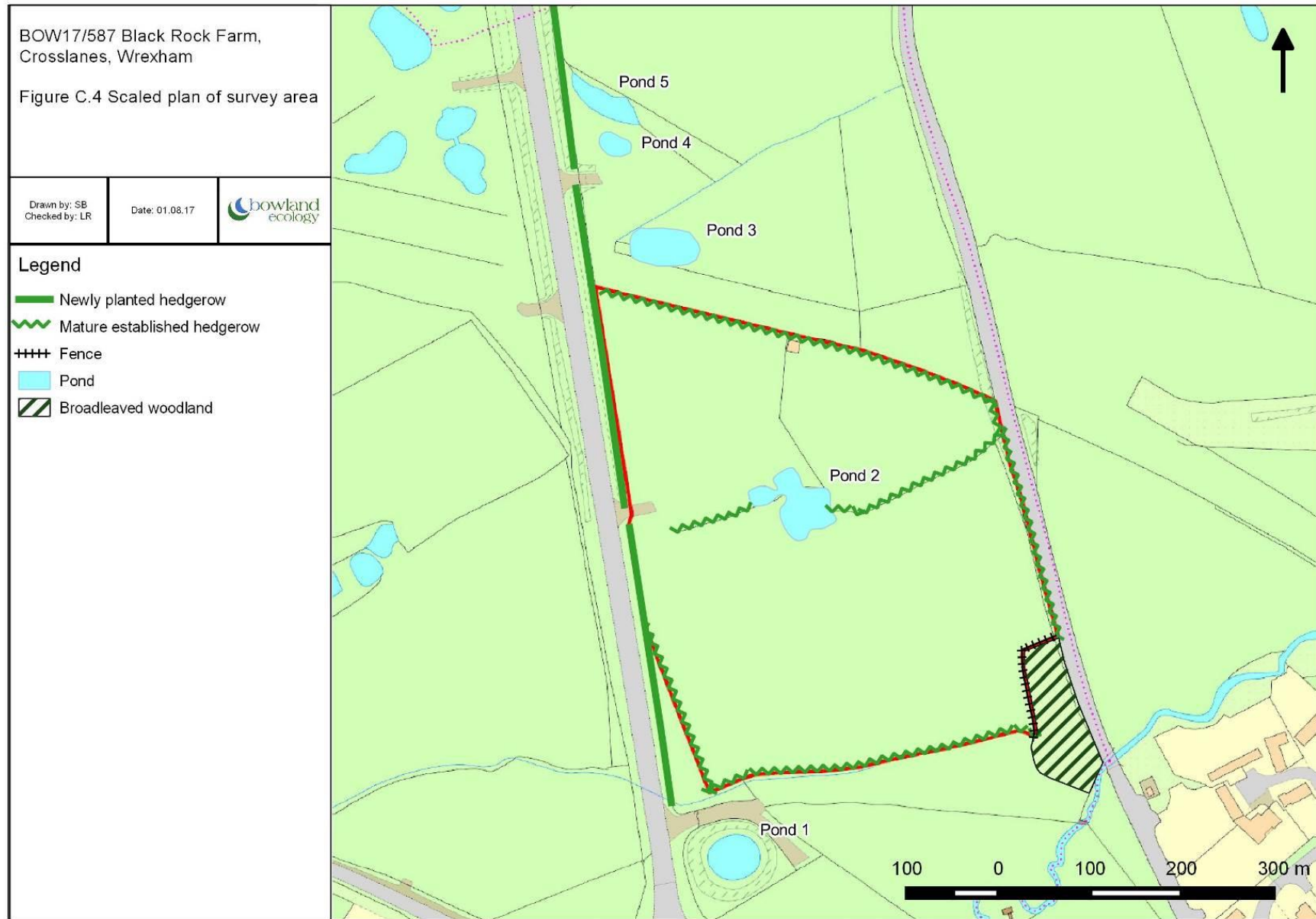
C.3 Objectives of the Survey

Based upon the desk study results indicating that great crested newts were present on site previously, for the purpose of this method statement continued presence is assumed. Due to the age of the records received from Cofnod and the need to establish the population size class, specific surveys were undertaken in 2015. An initial site survey was undertaken by Jeremy James MSc, BSc (Hons), CEcol, CEnv, MCIEEM on 26th March 2015, prior to the commencement of the first survey. The aim was to make an assessment of the existing pond and terrestrial habitats present on the site and in the locality as well as the likely usage of the site by great crested newts and other widespread amphibian species.

A walkover assessment of the site was undertaken on 24th July 2017 by Louise Redgrave MA (Oxon), MSc, CEcol, CEnv, MCIEEM to establish whether or not there had been any significant changes on site since the surveys undertaken in 2015.

C.4 Scaled Plan / Map of Survey area





C.5 Site / Habitat Description

Pond 1

Pond 1 is located to the south of the development site. It comprises a circular pond in a large depression in the ground, judged to be a balancing pond for the adjacent new road and roundabout. It is approximately 15 m in diameter with limited aquatic and marginal vegetation with a stand of bulrush (*Typha latifolia*) on the western bank and flote grass (*Glyceria fluitans*) observed elsewhere. Water clarity was found to be very poor. When the water level in the pond drops, the banks are left with a bare, muddy substrate. During the 2017 site visit, bulrush was found to have spread throughout the pond which also supported much filamentous algae.



Plate 1. View of pond 1 from the north western bank in 2015 (left) and 2017 (right)

Pond 2

Pond 2 is the only pond located within the development boundary. The primary pond is a moderate sized field pond with dense scrub growth on the eastern bank and part of the western bank, comprising hawthorn (*Crataegus monogyna*) and willow (*Salix* sp.). The northern bank has sparse marginal vegetation, dominated by soft rush. The southern bank has much more marginal and aquatic vegetation cover, with a dense stand of bulrush approximately 5m out into the pond. Aquatic and marginal vegetation species include jointed rush (*Juncus articulatus*), water plantain (*Alisma plantago-aquatica*), water forget-me-not (*Myosotis scorpioides*), bittersweet (*Solanum dulcamara*), gipsywort (*Lycopus europaeus*), bur-reed (*Sparganium* sp.), sedges (*Carex nigra*) and water starwort (*Callitriche stagnalis*). No bulrush was observed in the pond in 2017 and broad-leaved pondweed (*Potamogeton natans*) was found to be almost covering the surface of the water.



Plate 2. Pond 2 viewed from the south-eastern bank in 2015 (left) and 2017 (right)

The Ordnance Survey map shows a cluster of four ponds at this location. To the north-west of Pond 2 are two small depressions holding some shallow water, but

considered unlikely to hold sufficient water to support breeding great crested newts. To the south west of Pond 2 is an area of swamp vegetation comprising bottle sedge (*Carex rostrata*), soft rush, willowherb (*Epilobium* sp.) and a species of water dropwort (*Oenanthe* sp.).



Plate 3. Depressions to the north-west of Pond 2 with some shallow water.



Plate 4. Swamp area south-west of Pond 2

Pond 3

Pond 3 is the most southerly of the cluster of what appear to be mitigation ponds, created as part of the mitigation scheme related to the construction of the new road, located to the north of the development site. The pond is approximately 10 m wide and 20 m long. Water clarity was found to be very good, with an abundance of invertebrates present. Good coverage of marginal plant species is present on all banks, with species including jointed rush and water forget-me-not, with a dense stand of bulrush on the eastern bank, stretching into the centre of the pond, as well as growth on other banks. There is also good macrophyte growth in the centre of the pond, including water starwort and milfoil (*Myriophyllum* sp.). Limited marginal vegetation was present in 2017 with scattered bulrush throughout the pond and some water plantain.



Plate 5. Pond 3 viewed from the western bank in 2015 (left) and 2017 (right)

Pond 4

Pond 4 is located approximately 10 m to the north of Pond 3. It is circular in shape with a diameter of approximately 15 m and a similar character to Pond 3. Good coverage of emergent and marginal vegetation is present, with species including jointed rush, water plantain, water forget-me-not, bittersweet, gipsywort, bur reed, water starwort and a number of sedge species. Water clarity is very good, with open areas towards the centre of the pond. As with Pond 3, marginal vegetation was found to be limited in 2017 and comprised predominantly bulrush. The water was slightly turbid and there was also evidence of use by waterfowl.



Plate 6. Pond 4 viewed from the western bank in 2015 (left) and 2017 (right)

Pond 5

Is the most northerly of the three mitigation ponds, and is located immediately east of an amphibian underpass, providing connectivity underneath the new road. The pond is approximately 4 m wide by 35 m long, with dense marginal and emergent vegetation. The northern bank is covered by dense scrub including bramble (*Rubus fruticosus*) and hawthorn, as well as two mature oak (*Quercus robur*) trees. Bulrush growth is dense throughout the pond, leaving less open water than is available in Ponds 3 and 4. Other species include sharp-flowered rush, water plantain, water forget-me-not, bittersweet, starwort and milfoil. Access to Pond 5 was not possible in 2017 due to dense growth of bramble and common nettle (*Urtica dioica*) around the pond. Bulrush was still evident with some open water covered with duckweed (*Lemna* sp.).



Plate 7. Pond 5 viewed from the southern bank in 2015 (left) and 2017 (right)

Terrestrial Habitat

Terrestrial habitat in the field to the north of the development comprises unmanaged grassland and tall ruderal vegetation with species including common nettle, cock's-foot (*Dactylis glomerata*), oxeye daisy (*Leucanthemum vulgare*) and creeping thistle (*Cirsium vulgare*), surrounding Ponds 3, 4 and 5. Young scattered scrub, including a number of tree saplings which have been recently planted between Ponds 3 and 4, are also present. An amphibian underpass is present on the western boundary of this field, connecting it with habitat on the western side of the newly constructed road. This habitat, along with the three ponds situated here, provides highly favourable habitat for breeding great crested newts, with diverse habitat structure. The terrestrial vegetation was found to be in similar condition in 2017, with denser bramble, common nettle and great willowherb around Pond 5.



Plate 8. Terrestrial habitat looking north adjacent to Pond 3



Plate 9. Terrestrial habitat looking north-east adjacent to Pond 4

Terrestrial habitat within the development area comprises three fields, two to the north of Pond 2, bisected by a fence line (the fence line had been removed in 2017), and a third to the south of Pond 2. The northern fields comprised primarily poor semi-improved grassland habitat, with dominant species including creeping buttercup (*Ranunculus repens*), cock's-foot, Yorkshire fog (*Holcus lanatus*), creeping thistle with occasional meadow fox-tail (*Alopecurus pratensis*) and common mouse-ear (*Cerastium fontanum*). The ground felt poached in places, indicating that it had been used for grazing livestock in the recent past, however, in its currently unmanaged state, it provides the structural diversity favoured by great crested newts. This field was not being grazed at the time of the 2017 site visit and appeared to be in similar condition to that recorded in 2015. A large mound is located to the west of the fields, adjacent to the road (still present in 2017). This appears to be an old earth pile which has since re-vegetated, primarily by ruderal species. A small patch of bramble also occurs on the fence line bisecting the fields, providing additional structural diversity. A corrugated metal shed is located on the northern boundary of the development area, with tall ruderal vegetation alongside.



Plate 10. Terrestrial habitat in development area from gateway (2015)



Plate 11. Terrestrial habitat in the field north of Pond 2 in 2017



Plate 12. Re-vegetated earth mound to west of field (still present in 2017)



Plate 13. Small area of scrub along timber fence line bisecting northern fields (absent in 2017)



Plate 14. Metal shed (Northern boundary of development) with adjacent tall ruderal vegetation in 2015

Mature scrub (outgrown hedgerows) comprising primarily hawthorn and blackthorn (*Prunus spinosa*), were present on the northern boundary of the development area, as well as the boundary which runs either side of the Pond 2. A number of mature trees, including oak and willow were also present around the pond. The boundary running north from Pond 2, bisecting the northern fields, comprises a timber fence (absent in 2017) with a single young hawthorn, and therefore provides limited value to great crested newts.

The field to the south of Pond 2 is heavily dominated by graminoid species, with a much greater sward length than the previous fields, with much higher occurrence of

meadow foxtail. This field was found to be in similar condition in 2017 and was being cut for hay. Thick, species-rich hedgerows with some trees border the field. To the south-east of the field is a small area of broadleaved woodland comprising poplar (*Populus* sp.), elm (*Ulmus* sp.) and sycamore (*Acer pseudoplatanus*).



Plate 15. Outgrown hedgerow comprising mature scrub species, adjacent to Pond 2



Plate 16. Field to the south of Pond 2 from gate to the north in 2015 and from the south-west in 2017



Plate 17. Small area of broadleaved woodland south-east of the field south of Pond 2

The field to the south of the development area, where Pond 1 is situated, comprises steep banks down to the pond, with a well managed, short sward covering the banks whilst much taller vegetation regenerated higher up the banks as the growing season

progressed. This area supported moderately species-rich rough grassland in 2017. A line of scattered trees and outgrown hedge, as well as an access track separate this habitat and the development area.

The verges of the newly created road comprised rough grassland with young sapling trees. This is likely to provide an additional route of connectivity between the development area and ponds to the north and south. Connectivity between this group of ponds is primarily maintained via areas of scrub and field margins.



Plate 18. Roadside verge and new hedge to north of development site access



Plate 19. Roadside verge and new hedge to south of development site access

C.6 Field Survey(s)

Information in the field and from map work was collected for the pond in order to complete a 'Great Crested Newt Habitat Suitability Index' (Oldham *et al.*, 2000). This involves collecting information on ten suitability indices, the geometric mean of which gives a Habitat Suitability Index on a scale of 0-1. 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. The HSI score can be interpreted as follows:

Table 3. HSI results scale

HSI	Pond Suitability
<0.5	Poor
0.5-0.59	Below Average
0.6-0.69	Average
0.7-0.79	Good
>0.8	Excellent

The amphibian survey was undertaken in accordance with the methodology prescribed within the Great Crested Newt Mitigation Guidelines (English Nature, 2001) for a presence / absence survey and a population assessment. The presence / absence survey requires the completion of four survey visits to ponds and water features within the study area. These surveys should be undertaken between mid-March and mid-June. Two of the visits need to be undertaken during the peak survey period which extends from mid-April to mid-May. The surveys should be undertaken during suitable weather conditions (ideally the minimum overnight temperature should be greater than 5°C, no rain during the survey and only a gentle breeze). During each of the visits three of the five available survey methods described below should be implemented each time.

Survey methods that can be used are as follows:

- Bottle trapping – bottle traps are spaced evenly around the margin of the pond/water in the evening and then left overnight. These are then checked and removed in the morning to see if there are any newts present within the bottle traps.
- Torching – surveyors walk the entire perimeter of the pond using high powered torches (500,000 candle power) to identify if any amphibians are present.
- Netting – a long handled dip net is used to sample within open water and vegetation.
- Egg searching – newts will lay their eggs upon vegetation. Therefore the vegetation is inspected to see if they are present and to determine if they are small newts of great crested newt eggs.
- Refugia search – natural refugia is lifted and inspected to see if newts are present terrestrially.

The population assessment survey was completed, this requires the completion of a further two survey visits (therefore six survey visits in total). As stated above the survey period extends from mid-March to mid-June and for a population assessment three survey visits should be undertaken during the peak survey period between mid-April and mid-May. As above three survey methods are used on each visit.

C.7 Survey Results

The Habitat Suitability Index for the only pond within the development site, Pond 2, found it to be excellent with a score of 0.82. Ponds to the north of the site, Ponds 3, 4 and 5, were all found to be excellent with respective scores of 0.8, 0.81 and 0.94. Pond 1 to the south of the site was found to have a Habitat Suitability Index score of 0.74, giving it good suitability for great crested newts (Table 4).

Table 4. *Habitat Suitability Index results for the existing ponds*

Pond Ref	Pond 1	Pond 2	Pond 3	Pond 4	Pond 5
SI1 - Location	1	1	1	1	1
SI2 - Pond area	0.5	1	0.6	0.6	1
SI3 - Pond desiccation	0.5	0.9	1	0.9	0.9
SI4 - Water quality	0.67	0.67	1	0.67	1
SI5 - Shade	1	1	1	1	1
SI6 - Fowl	0.67	0.67	0.67	0.67	0.67
SI7 - Fish	0.67	1	1	1	1
SI8 - Ponds	1	1	1	1	1
SI9 - Terr'l habitat	0.67	0.67	1	1	1
SI10 - Macrophytes	<u>1</u>	<u>0.8</u>	0.7	0.5	0.9
Total	<u>0.74</u>	<u>0.86</u>	0.8	0.81	0.94

Presence/absence surveys were undertaken by Kate Statham MSc, BSc (Hons) (KS), ACIEEM, Matt Clifford MSc, BSc (MC) and Sarah Birtley MBiolSci (Hons) (SB), with assistance from Sophie Barrell MEdol (SBA) and Jodie Ginley BSc (Hons) (JG). Surveys were undertaken on the following dates (weather conditions are included in Appendix J.1):

Table 5. *Survey dates and surveyors*

Date	Surveyors
14/04/2015	KS, JG
28/04/2015	MC, JG
06/05/2015	MC, JG
20/05/2015	MC, SBA
01/06/2001	SB, SBA
15/06/2015	KS, SBA

Table 6. Peak count values for each species on each survey date (see Appendix J.1 for full results)

Date	Peak Count			Presence/Absence	
	<i>Triturus cristatus</i>	<i>Lissotriton vulgaris</i>	<i>L. helvetica</i>	<i>Bufo bufo</i>	<i>Rana temporaria</i>
14/04/2015	40	24	2	x	✓
28/04/2015	21	8	0	x	x
06/05/2015	20	11	0	x	x
20/05/2015	27	18	0	x	✓
01/06/2015	13	2	0	✓	✓
15/06/2015	13	1	0	x	✓

x – absent, ✓ - present

C.8 Interpretation / Evaluation of Survey Results

Cofnod records indicate that the site is situated within an area where great crested newts are common, utilising the numerous ponds scattered throughout the area. In addition, one of the largest known populations of great crested newts (Johnstown SAC) lies 5.9 km west of the site.

NRW review (see C.1) concluded that:

‘populations of GCN may be declining due to ponds being lost through succession or drying out. In addition different breeding ponds may be being used in different years, further contributing to changes in GCN populations which were identified during surveys.

Favourable Conservation Status is described as “the sum of the influences acting on the species concerned that may affect the long term distribution and abundance of its populations” and is assessed to have been achieved when “population dynamics data on the species concerned indicate that it is maintaining itself on a long term basis as a viable component of its natural habitats, and the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long term basis”

In the absence of mitigation it is considered that hydrosereal succession would have a significant impact on the GCN population of the area and associated meta populations. It is predicted that the favourable conservation status of the species would not be maintained and the reduction in suitable GCN breeding sites would lead to a decline in local meta populations which would then reduce the population size and distribution of the local population of GCN.’

The 0.86 score for the Habitat Suitability Index indicated that Pond 2, within the development site has excellent suitability for great crested newts. In addition, Ponds 3, 4 and 5 immediately north of the development site also recorded a status of excellent for great crested newts under the Habitat Suitability Index. The 2015 presence / absence survey results to date indicate that all of the ponds surveys support great crested newts. The results of the surveys indicate a medium sized meta-population utilising the 5 ponds, with reference to Section 5.8 of the *Great Crested Newt Mitigation Guidelines* (English Nature, 2001).

D. Impact Assessment

D.1 Short-term Impacts: Disturbance

Short-term impacts, in the absence of mitigation the following impacts could occur to great crested newts:

- permanent loss of optimal terrestrial habitat where the poultry units, car parking and access track are to be located.
- Killing or injury to great crested newts present in terrestrial habitats on the site at the time of works.
- Killing, injury or disturbance to amphibians present in the existing ponds if damaged by construction activities.
- Potential for pollution of the adjacent ponds during construction works.
- Restricted access across the site whilst the works are being undertaken, which could hinder movement across terrestrial habitats to and from the existing ponds.
- Introduction of potential amphibian pathogens, e.g. *Batrachochytrium dendrobatidis*.

D.2 Long-term Impacts: Site Modification

Potential long-term impacts in terms of site modification, in the absence of mitigation are as follows:

- Localised loss of optimal terrestrial habitat, where the proposal is to be located.
- Localised loss of optimal terrestrial habitat to accommodate new aquatic habitat.
- Potential damage to existing ponds due to construction activity.
- Change in terrestrial habitat type (i.e. grassland to poultry unit) may alter movement across terrestrial habitats to and from the existing ponds.
- Introduction of potential amphibian pathogens, e.g. *Batrachochytrium dendrobatidis*.

D.3 Long-term Impacts: Site Loss

There are not considered to be any long-term adverse impacts on the sub-populations within the wider landscape (up to 10 km) as no ponds will be lost and only a small area, approximately 0.8 ha, will be lost. A further small area, approximately 0.2 ha, of sub-optimal habitat will be lost to accommodate the provision of new aquatic and terrestrial receptor habitat at the site. The Favourable Conservation Status (FCS) of great crested newts in the area (North Wales) is considered to be in decline due to succession of ponds reducing the availability of good breeding habitats for great crested newts. Three new ponds will be created and it is considered that this will contribute to wider objectives to maintain the FCS of great crested newts.

D.4 Long-term Impacts: Fragmentation and Isolation

The majority of linear features (hedges) around the site will be retained and are unaffected by the proposal, the entrance to the main road will require widening and therefore a small length of young hedgerow, approximately 10m, will be removed. No ponds will be removed or altered as part of the proposal. New aquatic habitat to be created on site will be fenced from livestock, therefore increasing the availability of high quality terrestrial habitat within the site. Additionally, existing boundary features will be re-enforced where necessary, e.g. replanting of gaps in hedgerows and new hedgerows will be planted. As such it is unlikely that fragmentation and isolation of the pond will occur as a result of the proposed works.

D.5 Post-development Interference Impacts

Post-development interference impacts may include the risk of great crested newts being run over on the access road to the poultry units. Pollution and run off from the poultry units may also negatively affect the adjacent pond and immediate terrestrial habitat, if not adequately mitigated for. The side and end dwarf walls of the broiler houses will be cast *in situ* from poured concrete, not panels. The floors will be subsequently poured to abut the walls and laid by laser so that they fall to drains within the building. The drains will fall to an underground sealed tank with a capacity of 40,000 litres which is sufficient to contain washout from both buildings. The only gap in the dwarf walls will be at the doorway where channel drains will be laid, connected to the underground tank, to capture any run-off. This is the method of construction which satisfies the Environmental Permit requirements for all modern broiler sheds. It is considered, therefore, that there will be negligible risk of run off from the poultry sheds.

Human interference is considered to be minimal at present and is likely to decrease as a result of the scheme because the new aquatic habitat will be fenced with stock fencing to prevent access to the ponds by livestock, further reducing disturbance.

D.6 Predicted Scale of Impact

The predicted scale of impact on species status at the site, 2 km, 10 km, local, county, regional and country levels is as follows:

Table 7. Scale of Impact

Geographic level	Predicted scale of impact
2km	Minor positive impact with increase in available aquatic habitat and improvement of some existing terrestrial habitat
10km	No impact
Local	Minor positive impact with increase in available aquatic habitat and improvement of some existing terrestrial habitat
County	No impact
Regional	No impact

Delivery Information – Mitigation, Compensation and Monitoring

E. Works to be undertaken

E.1 Great Crested Newt Capture and Exclusion

An amphibian exclusion area will be created around the proposed footprint and associated laydown areas prior to the commencement of works. The exclusion will include amphibian fencing around the perimeter and drift fencing within the area. All fencing will have associated pitfall traps set at intervals as recommended in the Great Crested Newt Mitigation Guidelines (2001). In addition, artificial refugia (e.g. carpet tiles or similar) will be utilised to undertake refugia searches within the exclusion area. These will be located around the perimeter and drift fences as well as in areas where terrestrial habitat is judged to be most favourable for great crested newts. See Appendix J.2 for the plan of the exclusion scheme and Appendix J.4 for a plan of the receptor site.

The presence of a medium great crested newt population on site requires a minimum trapping effort of 60 days with appropriate weather conditions, in accordance with the GCN Mitigation Guidelines.

Protection measures during construction include:

- Toolbox talks to be given to all contractors and others working on site, prior to the commencement of works. Toolbox talks to include GCN identification, legislation, the importance of biosecurity and explanation of the exclusion scheme.
- Implementation of biosecurity, e.g. spraying wheels of vehicles and machines with Virkon prior to accessing site.
- Hand search of terrestrial habitat prior to installation of exclusion fencing and supervision of fence installation.
- Hand search prior to hedge removal and supervision of hedge removal.
- Daily checks of the pitfall traps will be undertaken in accordance with the GCN Mitigation Guidelines, which will also include inspection of the perimeter fence to ensure it remains intact throughout the capture period.
- Destructive hand search, by a suitably qualified ecologist, of all log/rock piles and other potential refugia at the end of the capture period.
- If a GCN is found within the construction area during the construction period, all works must cease immediately and the project ecologists contacted for further advice.
- If a GCN is found and is in imminent danger, the GCN to be moved to a safe location and the project ecologist contacted.

E.2 Great Crested Newt Habitat

E.2.1 *Receptor site modification, enhancement or creation*

An area of new aquatic habitat will be created immediately to the east of the exclusion area, including three new ponds (see Appendix J.5 for design specification). Livestock will be excluded from this area by a post and wire fence, with new hedgerow planting along field boundaries as shown on J.3. The fencing will therefore provide undisturbed terrestrial habitat for great crested newts. Three refugia (e.g. log piles) and a single hibernacula (see Appendix J.6 for design specification) will be constructed within this area. New aquatic habitat and associated fencing will be

completed prior to commencement of construction works, allowing adequate time for it to establish, allowing for its use as a receptor site for the exclusion scheme.

Additional planting will be undertaken along the boundary to the north of the exclusion area to reinforce the hedgerow as a commuting route between the existing ponds to the north and the receptor ponds. Further planting will be undertaken along the field boundary to the west of the exclusion area, enhancing the habitat corridor already present along the embankment of the new road, which currently comprises grassland and a young hedgerow. Planting will be undertaken during the winter months, the hedgerow planting season, to ensure a good survival rate of shrubs/hedgerow plants. Supplementary planting of native herbaceous hedgerow species is also recommended.

Areas of matrix habitat will also be established and will comprise a mosaic of scrub and tall neutral grassland as shown on Figure J.3. To the south-east this habitat will succeed to more mature scrub/woodland that is contiguous with existing habitat along Bedwell Road. A further band of mature woodland / scrub will be allowed to develop immediately south of the poultry units.

Species used within the planting scheme will be native species, of local provenance where possible, and will include:

Woody hedgerow species:

- Hawthorn (*Crataegus monogyna*)
- Blackthorn (*Prunus spinosa*)
- Elder (*Sambucus nigra*)
- Field maple (*Acer campestre*)
- Dogwood (*Cornus sanguinea*)
- Hazel (*Corylus avellana*)

The existing pond, Pond 2, will be fenced from livestock along its western and northern boundaries to reduce poaching to the ponds. During construction a 2 m high geotextile barrier will be fitted to the fencing prior to commencement to safeguard the pond from run-off and limestone dust during construction. To minimise dust generation during construction, if the weather is sufficiently dry to cause the formation of any dust, the working area will be dampened down at the start and during the working day. During operation, a more rigid barrier (e.g. Herpetosure² or other suitable barrier) will be fitted to the lower portion of the fencing to prevent any run off from the poultry sheds from entering the ponds. This work will be completed prior to the commencement of construction works.

The area of terrestrial habitat surrounding the new ponds should be sown with yellow rattle (*Rhinanthus minor*), to reduce the vigour of grass growth and therefore encourage greater botanical and structural diversity. Ideally, yellow rattle should be sown in the autumn. As stated above these areas will be allowed to develop a mosaic of scrub and neutral grassland, maintained by occasional strimming /hay cutting (arisings to be removed).

E.2.2 Temporary loss of breeding sites, resting places

Ground out with the poultry sheds which lies within the exclusion area, but is not occupied by the footprint of the buildings, will be allowed to re-vegetate naturally.

² http://www.newtfencing.com/_include/herpetosure-newt-slow-worm.pdf

E.2.3 Destruction of existing breeding sites, resting places

There will be no destruction of existing breeding sites. There will be destruction of approximately 0.5 ha terrestrial habitat. This will be compensated by creation of new aquatic and terrestrial habitat and habitat enhancement as detailed in section E.2.1.

E.2.4 Scaled maps/plans

Please see Appendix J.3 for full plan of mitigation and compensation measures.

E.3 Mechanisms for ensuring delivery of mitigation and compensation measures

E.3.1 Measures to ensure compliance with this method statement

An appropriate audit log will be kept, logging all visits made to site by site ecologists.

An ecological compliance audit will be made to ensure the completion of the two new ponds and new hedgerow, to an acceptable standard, prior to the commencement of amphibian fence installation. An audit visit will also be made to ensure the amphibian fencing is installed correctly, prior to the commencement of the exclusion period. An ecological compliance audit proforma is included at Appendix J.8 which will be completed and submitted to NRW and Wrexham Borough Council following completion of the development.

A full log of all great crested newts, and other widespread amphibians, will be kept for each day of the exclusion period. This will include the number and sex of each individual and which pond they were translocated to.

All site logs, photographs and data will be kept on file.

Regular updates will be provided by the site ecologists to the relevant staff at NRW, as well as the planning authority, to ensure the scheme is implemented as planned. Any issues which result in unforeseen changes to the methods detailed in this document will be dealt with immediately via the appropriate body.

E.3.2 Ensure that sufficient land has been acquired for compensation purposes

The mitigation and compensation plan is included at Appendix J.3.

E.3.3 Ensure that designs of subsequent development are newt friendly

Newt-friendly features will be incorporated into the design of the development. This will include:

- Any perimeter/visual barrier fencing, to maintain a gap of 15mm between the ground and the base of the fence to ensure the porosity of the site to amphibians.
- The access road into the site will be designed without gully pots.

E.3.4 Provide sufficient resources

Prior to occupation of the poultry units, the site owner will enter into a legal interest with an appropriate Third Party to ensure the delivery and long term sustainability of the proposed mitigation and compensation measures identified within this method statement. The overall arrangements will include provision of resources for overall long term management and monitoring to ensure the Favourable Conservation status of GCN is ensured.

E.4 Mitigation Contingencies

The six survey visits have provided an estimate of a medium sized population of great crested newts within the metapopulation present across the five ponds surveyed.

Following commencement of the exclusion period, if the capture rate of great crested newts is found to be significantly higher than anticipated, further contingency mitigation and compensation measures will be employed.

This will include the provision of a new scrape adjacent to Pond 2, on its southern side, increasing the available aquatic habitat and therefore the carrying capacity of the site for great crested newts. In addition, a stock fence will be installed excluding livestock from a buffer of terrestrial habitat around the new scrape as well as the southern banks of Pond 2. This will increase the provision of terrestrial habitat on site which is not accessible to livestock and therefore more structurally diverse and with reduced disturbance.

If monitoring indicates that the barrier around Pond 2 is not sufficient to safeguard the pond against run-off, an open channel drain or alternative measure will be installed.

E.5 Biosecurity Risk Assessment

A Biosecurity Risk Assessment has been prepared for the proposed development. Please see Appendix J.7.

F. Post-development Site Safeguard

F.1 Habitat/Site Management and Maintenance

Post-development, the site will be managed and maintained by N & K Elliott together with an agreed Third Party as per E.3 above. Management and maintenance will include:

- Maintenance of stock fencing to ensure livestock are unable to enter receptor area.
- Maintenance of geotextile/pollution barrier on fencing around Pond 2. Any damaged areas should be repaired or replaced to maintain the barrier to run off
- Monitoring of woody species in hedgerow planting – any which fail should be replaced on a like for like basis.
- Low intensity management of the terrestrial habitat associated with the new ponds – cutting annually in late summer, with arisings removed and no grazing permitted.
- Removal of any scrub saplings within the receptor area every 5 years to ensure that the receptor ponds do not become shaded.

F.2 Population Monitoring

Population monitoring of the site will be undertaken between March and June 2019 and 2020. Monitoring will be undertaken over six visits, with three in the peak period of mid-April to mid-May, utilising four of the standard methods as defined in the GCN Mitigation Guidelines. Monitoring will focus on the receptor ponds as well as Pond 2.

The monitoring data will be input to the Wales online GCN database administered by Cofnod.

F.3 Post-development Mitigation Contingencies

If ongoing monitoring results are unfavourable, an assessment as to why the area has not been occupied by great crested newts will be undertaken. During monitoring visits, the quality of the aquatic and terrestrial habitats created as part of the mitigation and compensation, will be assessed. If the terrestrial habitat has become unfavourable, management will be undertaken to improve it, in consultation with the landowner. This may include scrub management and additional sowing of yellow

rattle to reduce the vigour of grass species in order to maintain the structural diversity of the sward within the mitigation areas. If aquatic habitat becomes unfavourable, management may be undertaken in consultation with the landowner, including additional planting of pond margins.

F.4 Mechanisms for Ensuring Delivery of Post-development Works

All further monitoring will be undertaken by appropriately licensed and experience Bowland Ecology staff, and their accredited agents. All reporting will be provided to both NRW and the council. Any matters which may arise during the course of the monitoring will be discussed immediately with the appropriate body.

Prior to occupation of the poultry units, the site owner will enter into a legal interest with an appropriate Third Party to ensure the delivery and long term sustainability of the proposed mitigation and compensation measures identified within this method statement. The overall arrangements will include provision of resources for overall long term management and monitoring to ensure the Favourable Conservation status of GCN is ensured.

G. Timetable of works

<u>Activity</u>	<u>Timing</u>
<u>Receptor site pond and hibernacula creation</u>	<u>Nov 17-Feb 18</u>
<u>Receptor site terrestrial habitat works (planting)</u>	<u>Nov 17-Feb 18</u>
<u>Newt fence installation</u>	<u>Feb/Mar 18 (when min. night time temperature above 5°C)</u>
<u>Newt capture</u>	<u>Feb/Mar 18 to May 18 (when min. night time temperature above 5°C)</u>
<u>Drift fence removal</u>	<u>May 18</u>
<u>Destructive searches</u>	<u>May 18</u>
<u>Construction period</u>	<u>May18 (following completion of trapping) to Jul/Aug 18</u>
<u>Exclusion fence removal</u>	<u>Jul/Aug 18</u>
<u>Habitat reinstatement (natural re-vegetation)</u>	<u>Aug 18 onwards</u>
<u>Monitoring</u>	<u>Mar-Jun 19 and 20</u>

H. Land Ownership – Mitigation Site/Compensation Site

H.1 Mitigation Site / Compensation Site Ownership

The receptor ponds are owned by N & K Elliott, the owner of the proposed development site.

Hedgerows to the north and west of the site, which are to be reinforced as part of the compensation measures, are outside of N & K Elliott's ownership. However, as these are boundary features, additional planting will take place on the side of the boundary within the ownership of N & K Elliott.

H.2 Mitigation Site / Compensation Site Ownership post construction

The mitigation site will remain within the ownership of N & K Elliott for the foreseeable future, following development.

Prior to occupation of the poultry units, the site owner will enter into a legal interest with an appropriate Third Party to ensure the delivery and long term sustainability of the proposed mitigation and compensation measures identified within this method statement. The overall arrangements will include provision of resources for overall long term management and monitoring to ensure the Favourable Conservation status of GCN is ensured.

I. References

Langton, T., Beckett, C., Foster, J. (2001) *Great Crested Newt Conservation Handbook*. Froglife: Suffolk

Natural England, (2001) *Great Crested Newt Mitigation Guidelines*. English Nature, Peterborough

Muir, D (2012) Amphibians in drains project summary. *Biodiversity News*, 59: 16-18

J. Annexes

J.1 Pre-existing survey reports – none available for the site

J.2 Raw Survey Data

Site: Black Rock Farm				Pond 1							
Method	GCN			Smooth newt		Palmate newt		Palmate/smooth ♀ indet.	Other species present (specify)	Notes - Number of bottles etc...	
	♂	♀	indet.	♂	♀	♂	♀				
Visit 1 - 14/04/15											
Temp: 14°C / Weather: dry and bright / Turbidity: 3 / Veg Cover: 1											
Torch	0	1	0	0	0	0	0	0	Diving beetle		
Net	0	0	0	0	0	0	0	0			
Eggs	None			None							
Visit 2 - 28/04/15											
Temp: 8°C / Weather: breezy, dry / Turbidity: 4 / Veg Cover: 2											
Torch	0	0	0	0	0	0	0	0	snails, diving beetles		
Net	0	0	0	0	0	0	0	0			
Eggs											
Visit 3 - 06/05/15											
Temp: 9°C / Weather: rain clearing, cool / Turbidity: 4 / Veg Cover: 2											
Torch	0	0	0	0	0	0	0	0	Diving beetle larvae		
Net	0	0	0	0	0	0	0	0	diving beetle larvae		
Eggs											
Visit 4 - 20/05/15											
Temp: 10°C / Weather: still, dry, clear / Turbidity: 5 / Veg Cover: 2											
Torch	0	1	0	0	0	0	0	0			
Net	0	0	0	0	0	0	0	0	Various invertebrates		
Eggs											
Visit 5 - 01/06/15											
Temp: 9°C / Weather: Rain / Turbidity: 5 / Veg Cover: 1											
Torch	0	0	0	0	0	0	0	0			
Net	0	0	0	0	0	0	0	0	Water boatmen, damselfly larvae		
Eggs	Present										
Visit 6 - 15/06/15											
Temp: 17°C / Weather: Dry, clear / Turbidity: 2 / Veg Cover: 3											
Torch	0	1	0	0	0	0	0	efts	water boatmen		
Net	0	0	0	0	0	0	0	0			
Eggs	None			None							

Site: Black Rock Farm				Pond 2						
Method	GCN			Smooth newt		Palmate newt		Palmate/smooth ♀ indet.	Other species present (specify)	Notes - Number of bottles etc...
	♂	♀	indet.	♂	♀	♂	♀			
Visit 1 - 14/04/15										
Temp: 14°C / Weather: dry and bright / Turbidity: 2 / Veg Cover: 3										
Torch	3	1	0	5	0	0	0	2		
Bottle	1	2	0	6	1	0	1	0		
Net	0	0	0	1	0	0	0	0	Water hoglouse, diving beetle	
Visit 2 - 28/04/15										
Temp: 8°C / Weather: breezy, dry / Turbidity: 4 / Veg Cover: 2										
Torch	0	0	0	0	0	0	0	0		
Bottle	0	0	0	1	0	0	0	0		
Net	0	0	0	0	0	0	0	0		
Visit 3 - 06/05/15										
Temp: 9°C / Weather: rain clearing, cool / Turbidity: 4 / Veg Cover: 2										
Torch	0	0	0	0	0	0	0	0	Diving beetle larvae	
Net	0	0	0	0	0	0	0	0	diving beetle larvae	
Eggs	Present									
Visit 4 - 20/05/15										
Temp: 10°C / Weather: still, dry, clear / Turbidity: 5 / Veg Cover: 2										
Torch	0	0	0	3	0	0	0	4		
Bottle	0	3	0	0	0	0	0	0	Various invertebrates	
Eggs	0	0	0	0	0	0	0	0		
Visit 5 - 01/06/15										
Temp: 9°C / Weather: Rain / Turbidity: 2 / Veg Cover: 3										
Torch	0	0	0	0	0	0	0	0	2 common frog, 2 common toad	
Bottle	0	1	0	0	0	0	0	0	diving beetle	
Eggs	0			0						
Visit 6 - 15/06/15										
Temp: 17°C / Weather: dry, clear / Turbidity: 4 / Veg Cover: 4										
Torch	0	0	0	0	0	0	0	0	Water boatmen, greater diving beetle	
Bottle	0	0	0	0	0	0	0	efts	greater diving beetle larvae	
Eggs	none			none						

Site: Black Rock Farm				Pond 3							
Method	GCN			Smooth newt		Palmate newt		Palmate/smooth ♀ indet.	Other species present (specify)	Notes - Number of bottles etc...	
	♂	♀	indet.	♂	♀	♂	♀				
Visit 1 - 14/04/15											
Temp: 14°C / Weather: dry and bright / Turbidity: 3 / Veg Cover: 1											
Torch	13	1	0	4	0	0	0	3	water boatmen, diving beetles		
Bottle	2	0	0	2	0	0	1	0			
Net	0	0	0	0	0	0	0	0	Daphnia		
Visit 2 - 28/04/15											
Temp: 8°C / Weather: breezy, dry / Turbidity: 4 / Veg Cover: 2											
Torch	6	2	0	4	0	0	0	5			
Bottle	0	0	0	2	0	0	0	0			
Eggs											
Visit 3 - 06/05/15											
Temp: 9°C / Weather: rain clearing, cool / Turbidity: 4 / Veg Cover: 2											
Torch	11	3	0	4	2	0	0	2			
Bottle	0	0	0	0	2	0	0	0			
Eggs											
Visit 4 - 20/05/15											
Temp: 10°C / Weather: still, dry, clear / Turbidity: 5 / Veg Cover: 2											
Torch	7	3	0	5	4	0	0	3	1 x common frog		
Bottle	2	0	0	0	0	0	0	0			
Eggs											
Visit 5 - 01/06/15											
Temp: 9°C / Weather: Rain / Turbidity: 1 / Veg Cover: 2											
Torch	4	2	0	1	0	0	0	2			
Bottle	1	0	0	1	0	0	0	0	greater diving beetle		
Net	0	0	0	0	0	0	0	0	Water boatmen		
Visit 6 - 15/06/15											
Temp: 17°C / Weather: dry, clear / Turbidity: 2 / Veg Cover: 3											
Torch	0	2	0	0	0	0	0	0	common frog		
Bottle	0	1	0	0	0	0	0	0	common frog, dragonfly larvae, water boatmen		
Net	0	0	0	0	0	0	0	0	Dragonfly larvae, water boatmen		

Site: Black Rock Farm				Pond 4						
Method	GCN			Smooth newt		Palmate newt		Palmate/smooth ♀ indet.	Other species present (specify)	Notes - Number of bottles etc...
	♂	♀	indet.	♂	♀	♂	♀			
Visit 1 - 14/04/15										
Temp: 14°C / Weather: dry and bright / Turbidity: 3 / Veg Cover: 1										
Torch	7	3	1	1	0	0	0	0	1 x Common frog	
Bottle	5	3	0	1	1	0	0	0		
Net	0	0	0	0	0	0	0	0	Daphnia	
Visit 2 - 28/04/15										
Temp: 8°C / Weather: breezy, dry / Turbidity: 4 / Veg Cover: 2										
Torch	9	4	0	1	0	0	0	2		
Bottle	0	0	0	0	0	0	0	0		
Eggs								0		
Visit 3 - 06/05/15										
Temp: 9°C / Weather: rain clearing, cool / Turbidity: 4 / Veg Cover: 2										
Torch	2	2	0	2	1	0	0	0		
Bottle	0	0	0	0	0	0	0	0		
Eggs										
Visit 4 - 20/05/15										
Temp: 10°C / Weather: still, dry, clear / Turbidity: 5 / Veg Cover: 2										
Torch	6	4	0	4	2	0	0	0	2 x common frog	
Bottle	0	0	0	0	0	0	0	0	Various invertebrates	
Eggs										
Visit 5 - 01/06/15										
Temp: 9°C / Weather: Rain / Turbidity: 1 / Veg Cover: 2										
Torch	0	3	1	0	0	0	0	1		
Bottle	1	0	0	0	0	0	0	0		
Net									Water boatmen, tadpole, damselfly larvae	
Visit 6 - 15/06/15										
Temp: 17°C / Weather: dry, clear / Turbidity: 2 / Veg Cover: 3										
Torch	1	7	0	1	0	0	0	0	common frog, water boatmen	
Bottle	0	0	1	0	0	0	0	0	GCN eft	
Eggs	none			none						

Site: Black Rock Farm				Pond 5						
Method	GCN			Smooth newt		Palmate newt		Palmate/smooth ♀ indet.	Other species present (specify)	Notes - Number of bottles etc...
	♂	♀	indet.	♂	♀	♂	♀			
Visit 1 - 14/04/15										
Temp: 14°C / Weather: dry and bright / Turbidity: 3 / Veg Cover: 1										
Torch	0	0	0	2	0	0	0	0	Diving beetle	
Bottle	0	0	0	0	0	0	0	0		
Eggs										
Visit 2 - 28/04/15										
Temp: 8°C / Weather: breezy, dry / Turbidity: 4 / Veg Cover: 2										
Torch	0	0	0	0	0	0	0	0	Diving beetles	
Bottle	0	0	0	0	0	0	0	0		
Eggs										
Visit 3 - 06/05/15										
Temp: 9°C / Weather: rain clearing, cool / Turbidity: 4 / Veg Cover: 2										
Torch	1	0	0	0	0	0	0	1		
Bottle	0	1	0	0	0	0	0	0		
Eggs										
Visit 4 - 20/05/15										
Temp: 10°C / Weather: still, dry, clear / Turbidity: 5 / Veg Cover: 2										
Torch	1	0	0	0	0	0	0	1		
Bottle	0	0	0	0	0	0	0	0	Various invertebrates	
Eggs										
Visit 5 - 01/06/15										
Temp: 9°C / Weather: Rain / Turbidity: 2 / Veg Cover: 4										
Torch	0	0	0	0	0	0	0	0	common frog, greater diving beetle	
Bottle	0	0	0	0	0	0	0	0	diving beetle larvae	
Net	0	0	0	0	0	0	0	0	diving beetle, Gammarus, water boatmen	
Visit 6 - 15/06/15										
Temp: 17°C / Weather: clear, dry / Turbidity: 2 / Veg Cover: 4										
Torch	0	0	0	0	0	0	0	0	common frog, diving beetle	
Bottle	0	0	0	0	0	0	0	0	greater diving beetle larvae	
Net	0	0	0	0	0	0	0	0	diving beetle, water boatmen	

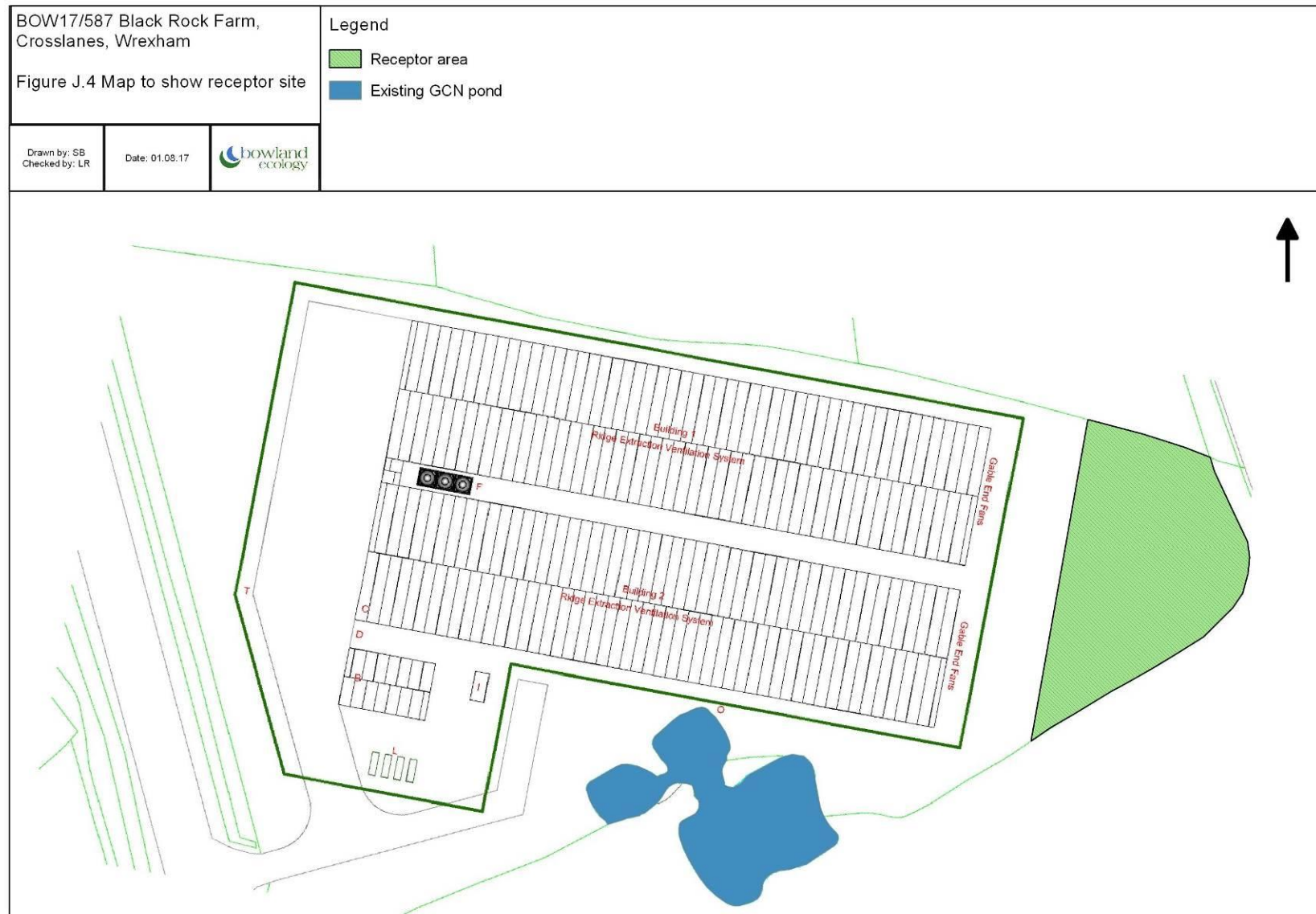
J.2 Exclusion scheme



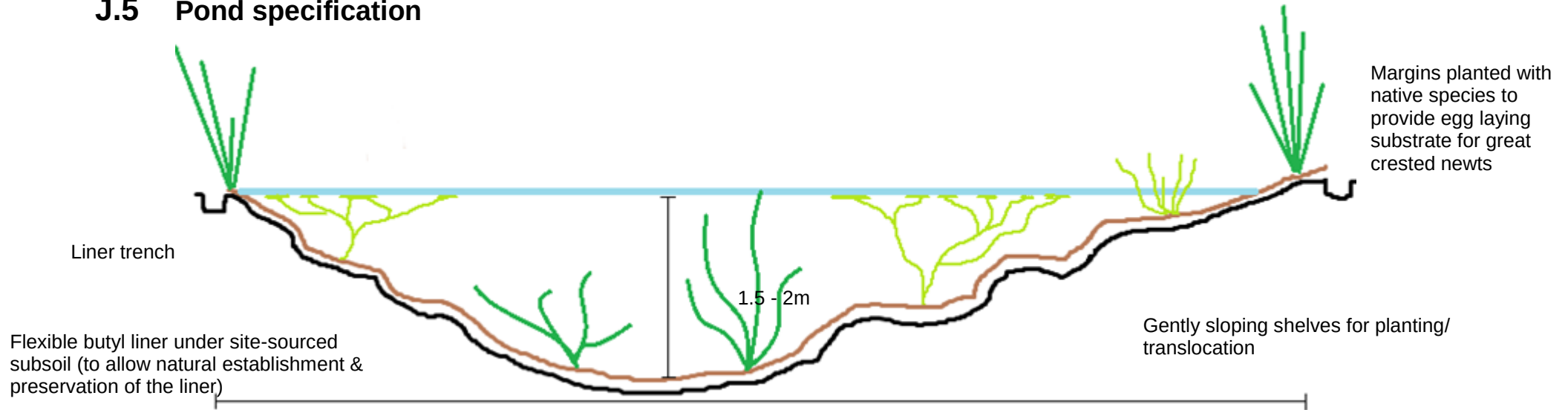
J.3 Mitigation and compensation



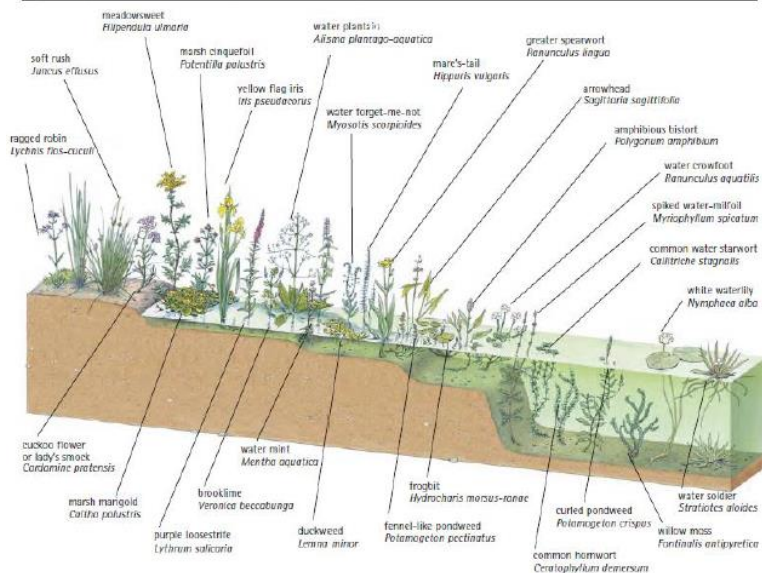
J.4 Receptor site



J.5 Pond specification



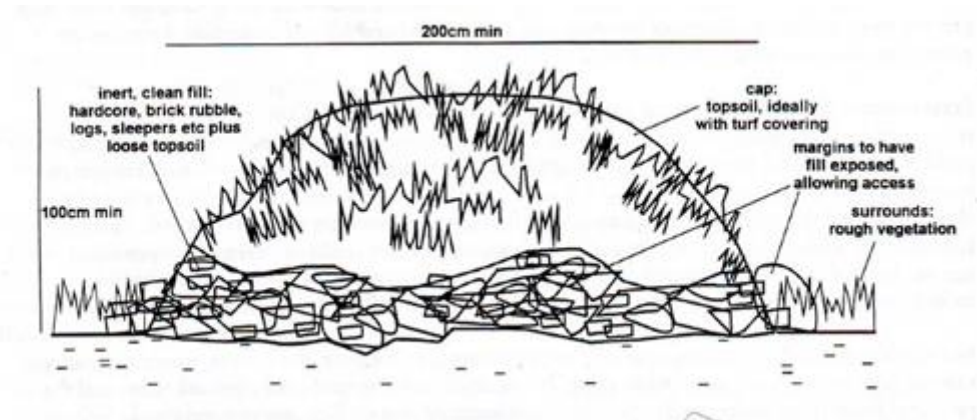
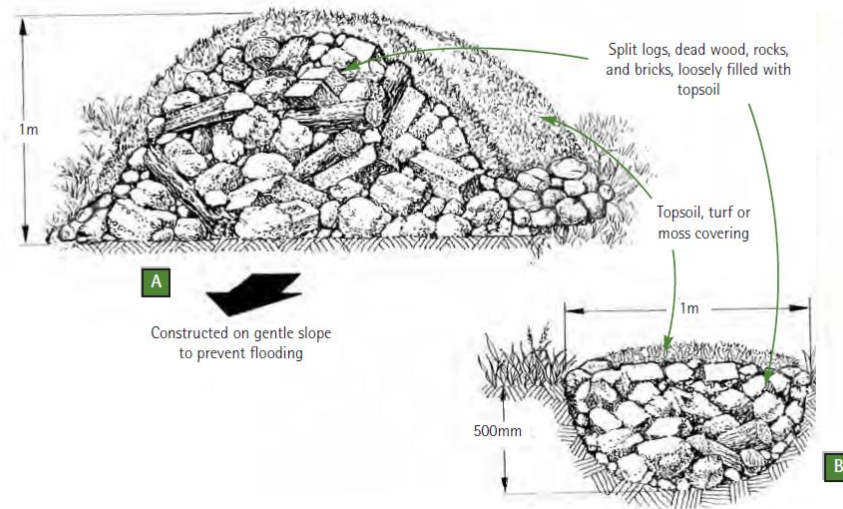
Typical aquatic plant species at great crested newt ponds



An alternative to planting the pond would be to translocate marginal and aquatic vegetation from Pond 2 and allowing the new ponds to establish more naturally

Species appropriate for planting/translocation (Source: Langton, Becket & Foster, 2001)

J.6 Hibernacula specification



Hibernacula design (Source: English Nature, 2001)

Hibernacula design on free draining and non-free draining soils (Source: Langton, Becket & Foster, 2001)



Photographs of artificial hibernacula constructed for amphibians

J.7 Biosecurity Risk Assessment

Company: Bowland Ecology Ltd						Ref: Bowland/ BSRA/BRF			Date issued: 04/08/17			
Activity:						Areas of work:						
Construction of poultry sheds and associated access & mitigation, including pond creation, stock fencing and amphibian exclusion fencing. <u>Long term operation of the site.</u>						Black Rock Farm, Cross Lanes, Wrexham						
Parties at risk		Amphibian population, aquatic & terrestrial habitats		Risk rating before control measures		Control measures			Risk rating after control measures			
Activity		Hazard description		Risk rating					Risk rating			
				S	L				R	S	L	R
Staff/contractors/machinery driving between site <u>both during construction and operation of the site</u>		Vehicles spreading pathogens such as Chytrid		4	3	12	- Where possible, minimise number of vehicles on site - Keep to established tracks and park on hardstanding where possible - Keep vehicles free of accumulated mud, particularly on tyres, wheel arches and undercarriage - Sterilise wheels vehicle wheels prior to accessing site			4	1	4
		Vehicles spreading invasive species such as Japanese knotweed and Himalayan balsam fragments/seeds		2	3	6				2	1	2
Staff/contractors moving between site <u>both during construction and operation of the site</u>		Staff spreading pathogens such as Chytrid via footwear/clothing		4	3	12	- Keep boots and equipment free of accumulated mud - Sterilise boots/wellies prior to accessing site <u>Integrate disinfectant measures within site wide biosecurity. Follow the disinfectant procedures set out in ARG Advice Note 4 Amphibian disease precautions: a guide for UK fieldworkers http://www.arguk.org/advice-and-guidance/view-category</u>			4	1	4
New establishment of invasive plant species on site		Not immediately identified therefore risk of inadvertent spread by works		2	3	6	- Ecologist to check site for newly occurring invasive species during each site visit <u>Long term, annual checks of mitigation ponds for establishment of invasive species such as <i>Crassula helmsii</i>.</u>			2	1	2
Works on site resulting in run off		Run off entering existing ponds on site causing pollution event, potentially affecting amphibians		3	4	12	<u>2 m high geotextile barrier to be fitted to fence around pond during construction to safeguard pond from run-off and dust</u> - Temporary bunds e.g. sandbags, to be placed along the southern and eastern boundaries of the working area to prevent silty run-off entering pond - Monitor level of run-off, and adjust number of sandbags accordingly			2	2	4

Company: Bowland Ecology Ltd					Ref: Bowland/ BSRA/BRF continued...		Date issued: 04/08/17					
Parties at risk	Amphibian population, aquatic & terrestrial habitats		Risk rating before control measures		Control measures			Risk rating after control measures				
Activity		Hazard description		Risk rating				Risk rating				
				S				L	R	S	L	R
Oil/fuel leak from machinery/equipment		Pollutants entering ponds, potentially affecting amphibians		3	4	12	- Re-fuel off site where possible - Where this is no possible, refuel on hardstanding - Spill kits to be kept on site - If an fuel/oil spill/leak occurs use spill kits, prevent spill from entering any water bodies - Inform ecologist as soon as possible following any spills/leaks			2	2	4

Please use the table below to decide on the likelihood and overall risk for each hazard.

Severity of Impact	5	5	10	15	20	25
	4	4	8	12	16	20
	3	3	6	9	12	15
	2	2	4	6	8	10
	1	1	2	3	4	5
		1	2	3	4	5
Likelihood of Spread						

0-4: Risks are likely to be acceptable

4-12: Consider further options for reducing risk; if not available consider proceeding with caution

12+: Risk is too high; do not proceed until further consideration of control options has been taken into account

J.8 Ecological Compliance Audit Proforma

Natural Resources Wales licence reference number:		<u>Site name:</u>	
		<u>Site grid reference:</u>	
<u>Name of licence holder:</u>		<u>Name of developer if different from licence holder:</u>	
<u>Name of ecological consultant:</u>		<u>Date/s of audit (dd/mm/yy):</u>	
<u>Date licence issued (dd/mm/yy):</u>	<u>Date licence expired:</u>	<u>Licence implemented between (dd/mm/yy)</u>	
		<u>From:</u>	<u>To:</u>

No	Performance Indicator	Evidence required - this list should be adapted to reflect the agreed method statement	Pass (Yes/No), comments	What action is required as a result of findings?
1	Before starting work the licensee will advise NRW Species Officer of the date the works will start.	Written or electronic documentation of notification of start of works.		
2	A suitably experienced licensed ecologist will be appointed and retained during the life time of this licence to provide on-site advice.	Letter, contract or other document outlining the appointment of an Ecologist for the lifetime of the project.		
3	Prior to the start of any works on site, all site workers will be inducted by the Project Ecologist. This induction will cover the legal status of the species, the method of working, and action to be taken if protected species are encountered.	Copy of documents from ecological induction, showing content of induction. List of induction attendees		
4	Preparation and implementation of a bio-security risk assessment as detailed in E.5 and Annex J.7 of the method statement.	Bio-security risk assessment is available for inspection. Log of implementation of bio-security measures is available for inspection and shows that they have been implemented. Field observation shows that bio-security measures are in place e.g. foot washes.		
	E.1 GCN capture and exclusion			
5	Design and installation of amphibian fencing to the specifications provided in the CCW guidance sheets/ EN	Log and field observation show that exclusion/ drift fencing have been installed as detailed in the method statement.		

No	Performance Indicator	Evidence required - this list should be adapted to reflect the agreed method statement	Pass (Yes/No), comments	What action is required as a result of findings?
	<u>(2001) and as detailed in the method statement:</u>	including: - <u>fencing has been installed so there is a minimum 1 m access strip left for maintenance on all sides;</u> - <u>fencing layout does not contain gaps through which newts may pass;</u> - <u>access gate fitted with heavy plastic or geotextile;</u> - <u>fencing membrane has been installed without noticeable creases or folds;</u> - <u>joints in the membrane have been 'curl-joined' and well secured to a post with pads and nails. The jointing method continues underground as well as above.</u>		
6	<u>Amphibian fencing has been subject to inspection and maintenance according to CCW guidance sheets/ EN (2001) and as detailed in the method statement throughout the translocation and construction periods.</u>	<u>A fence inspection log of all inspections and all repairs required has been maintained and is available to NRW at 48 hours notice to show that:</u> - <u>the fence has been inspected by a suitably qualified/ licensed ecologist every 24 hours during trapping and relocation.</u> - <u>the fence has been regularly inspected (at least once per month) by a suitably qualified/ licensed ecologist during construction and any damage observed by contractors reported to the ecologist immediately.</u> - <u>any repairs have been completed within 12 hours throughout the duration of construction works.</u> - <u>that 99% or more of the length of the exclusion fencing has been maintained in a satisfactory condition.</u> - <u>fencing has been kept clear of vegetation or other materials that may enable newts</u>		

No	Performance Indicator	Evidence required - this list should be adapted to reflect the agreed method statement	Pass (Yes/No), comments	What action is required as a result of findings?
		<u>to climb over the fence.</u>		
7	<u>Works within amphibian habitats will not commence until working areas are confirmed to be clear of amphibians by the licensed ecologist.</u>	<u>Log of activities, including clearance activities, is available for inspection recording captures.</u>		
8	<u>Any works outside the amphibian fence are to be in accordance with a methodology as approved by NRW and supervised by a licensed person.</u>	<u>Log of works undertaken, including evidence of licensed person on site, available for inspection.</u>		
	<u>E.2/E3 GCN habitat modification and creation for mitigation and compensation</u>			
9	<u>All mitigation and compensation measures have been implemented as per sections E2 and E.3 of the Method Statement:</u>	<u>Log of works demonstrates habitat creation /enhancement implementation.</u> <u>Design and creation of great crested newt ponds: log and field observation show installation was in accordance with the method statement including:</u> - <u>location</u> - <u>dimensions</u> - <u>depth</u> - <u>planting</u> - <u>livestock fencing</u> <u>Design and installation of hibernacula: log and field observation show installation was in accordance with the method statement including:</u> - <u>dimensions</u> - <u>construction materials</u> - <u>number and locations</u> <u>Additional hedgerow/scrub planting undertaken.</u> <u>Existing Pond 2 protected with livestock fencing fitted with geotextile/semi-permanent barrier to prevent pollution entering the pond.</u>		

No	Performance Indicator	Evidence required - this list should be adapted to reflect the agreed method statement	Pass (Yes/No), comments	What action is required as a result of findings?
		Newt-friendly features are incorporated into the design of the development including: - Any perimeter/visual barrier fencing to maintain a gap of 15 mm between the ground and the base of the fence. - The access road into the site designed without gully pots		
10	The compensation/receptor site has been subject to appropriate management during construction as specified in section E.2.1 of the Method Statement.	Log and field observation show that appropriate management activities have been implemented.		
11	The implementation of surveillance or monitoring of schemes, pre, during and post development as specified in section E.3.1 of the Method Statement.	Log shows that surveillance and monitoring have been implemented pre, during and post development and results passed to appropriate data holder.		
12	Legal interest agreement between the land owner and an appropriate Third Party entered into to ensure the long term sustainability of the mitigation and compensation measures.	Signed legal interest agreement.		
	F and H: Long Term Site proposals			
13	Implementation of habitat/site management, maintenance, and habitat monitoring as detailed in F.1 and F.2 of the method statement.	Signed legal interest agreement demonstrating measures are in place to ensure ongoing land management of retained, modified and newly created habitat post-development.		
14	Implementation of population monitoring as detailed in F.2 of the method statement.	Signed legal interest agreement demonstrating measures are in place to ensure ongoing population monitoring post-development.		
15	Implementation of long term site safeguard proposals as detailed in F.4, H.1 and H.2 of the method statement.	Signed legal interest agreement demonstrating measures are in place to ensure ongoing land management of retained, modified and newly created habitat and population monitoring post-		

<u>No</u>	<u>Performance Indicator</u>	<u>Evidence required - this list should be adapted to reflect the agreed method statement</u>	<u>Pass (Yes/No), comments</u>	<u>What action is required as a result of findings?</u>
		<u>development.</u>		

	<u>Any other points to note/comments from auditor:</u>
--	---

<u>Auditor name and organisation</u>	<u>Signature</u>	<u>Date</u>