
ANNEX J.1

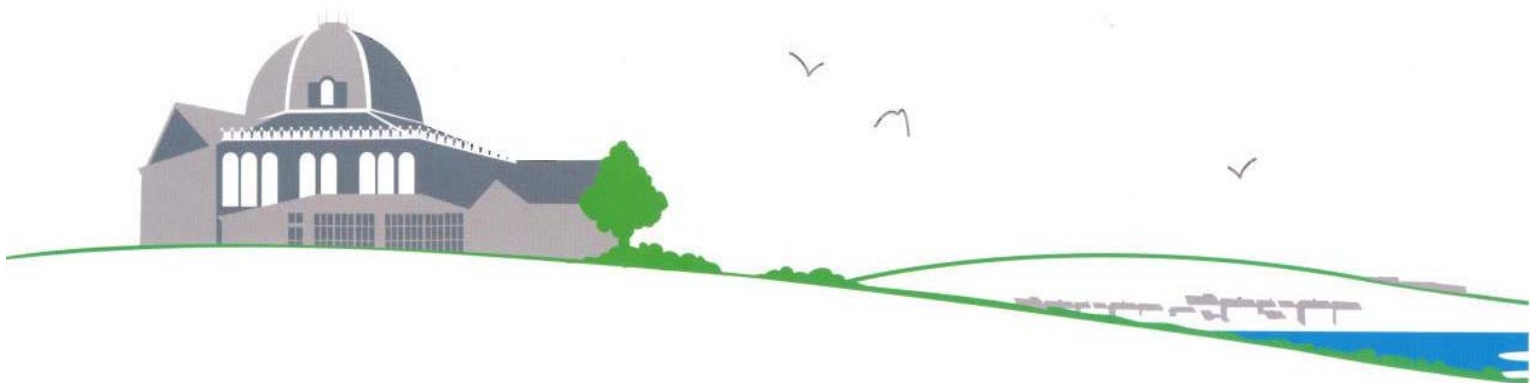
Pre-existing Survey Reports

Appendix II

**Penny Anderson Associates Ltd, 2016a
Aviagen Turkeys Ltd, Land at Llay, Wrexham.
Extended Phase 1 Habitat Report**



AVIAGEN TURKEYS LTD
LAND AT LLAY, WREXHAM
EXTENDED PHASE 1 HABITAT SURVEY REPORT



AVIAGEN TURKEYS LTD

LAND AT LLAY, WREXHAM

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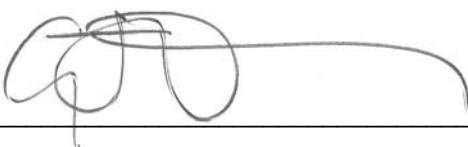
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This project has been undertaken in accordance with PAA policies and procedures on quality assurance.

Signed: 

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1. INTRODUCTION

Background

- 1.1 In March 2016 Aviagen turkeys Ltd commissioned Penny Anderson Associates Limited (PAA) to undertake a preliminary ecological assessment of the Application Site on land at Llay, Wrexham (Grid ref. SJ327570), hereafter referred to as the 'site'), in support of the conversion of arable land north of the village of Llay, near Wrexham to a new turkey farm comprising six new poultry sheds, landscaping proposals and a SuDS.
- 1.2 Aviagen Turkeys Ltd drawing 'Outline Landscaping Proposals' ALLP 1502-R4 (Figure 1 of this report) provides an indication of the outline proposal and is the design footprint used to assess effects upon the ecological features of the site. The site comprises an area of approximately 6.44ha of improved agricultural grassland enclosed by hedgerows and ditches (Figure 2).
- 1.3 This report presents the results of the preliminary ecological assessment, comprising desk study and an Extended Phase 1 Habitat Survey, which aims to assess the site's potential suitability to support protected or other important species, or valuable habitats, and then to define the scope of any detailed surveys and assessments that will be required to fully understand the ecological implications of the development proposals.
- 1.4 A badger survey of the site and surrounding area was undertaken on the same date as the Extended Phase 1 Habitat survey. The results of the badger survey are published separately in a confidential report, the contents of which should only be made available to those with a justifiable need to review. Badgers will, therefore, not be discussed further in this report.

2. SITE DESCRIPTION

- 2.1 The site is situated on the northern edge of Llay, on the north side of Rackerry Lane. It sits within agricultural land, comprising improved pasture, very similar in character to the site, whilst immediately to the south lies Llay Industrial Estate, and beyond, the town of Llay.
- 2.2 The site comprises three improved fields bounded by hedgerows, field margins and ditches on all but a portion of the eastern boundary. The hedgerows contain numerous mature oak¹ trees.

¹ Plant names follow Stace 2010 and are listed in Appendix II. Common names only are referred to in the text.

3. LEGISLATIVE FRAMEWORK

- 3.1 The text below provides a brief summary of the legislation in relation to the species or species group in England and Wales. The original Acts, Regulations and any amendments should be referred to for the precise wording.
- 3.2 A range of international and national legislation has been established in the UK to protect important nature conservation sites and priority species. At the international level, European Union (EU) Directives require individual member states to implement their conservation provisions nationally for the benefit of Europe as a whole. These Directives have been transposed into UK law by the Conservation of Habitats and Species Regulations 2010 (further amended in 2011 and 2012); further details can be obtained from the Joint Nature Conservation Committee (JNCC) web site at www.jncc.defra.gov.uk.
- 3.3 Other international conventions include: the Bern Convention on the Conservation of European Wildlife and Natural Habitats (1979), which requires the maintenance of populations of wild flora and fauna, giving particular protection to endangered and vulnerable species; and the Bonn Convention on the Conservation of Migratory Species of Wild Animals (1979), which requires the protection of migratory species throughout their entire range. The above conventions are implemented in England and Wales via the Wildlife and Countryside Act (WCA) (1981) (as amended) and Countryside and Rights of Way (CRoW) Act 2000. This legislation also protects important habitats and sites such as Sites of Special Scientific Interest (SSSI).
- 3.4 At the national level, the UK Post-2010 Biodiversity Framework published in 2012 is the Government's response to the Convention on Biological Diversity (2010). It describes the UK's biological resources, commits a detailed plan for the protection of these resources within the UK's devolved framework across England, Wales, Scotland and Northern Ireland. The document identifies future priorities for nature conservation and adopts a more strategic approach, including ecosystem services and sustainability alongside biodiversity. Despite administrative changes following devolution, there is still an underlying objective of protecting and enhancing a range of priority species and habitats, often still based on the objectives and classifications of the original UK Biodiversity Action Plan (BAP). Priority Species and Habitats referred to are those of 'Principal Importance' for the conservation of biodiversity in Wales listed on Section 42 (Wales) of the Natural Environment and Rural Communities (NERC) Act 2006.
- 3.5 Legislation related to protected species relevant to this assessment is provided in Appendix I.

4. METHODS

Desk Study

- 4.1 A data request was made to the COFNOD (the North Wales local records centre), to provide information on protected species and sites within 2km of the centre of the site. In addition, on-line resources such as Multi-Agency Geographic Information for the Countryside website 'www.magic.gov.uk' (MAGIC) and the National Biodiversity Network '<https://data.nbn.org.uk/>' (NBN) Gateway were utilised to obtain details of designated conservation sites and protected/notable species.
- 4.2 It is important to note that the desk study results provide an indication of the species present in and around the site and do not confirm current presence or absence of any particular species.

Extended Phase 1 Habitat Survey

- 4.3 A vegetation survey and classification of habitats was completed in order to assess the overall character of the site. This is an important baseline assessment of the current ecological value of the site and potential habitat lost as a consequence of a proposed development. Overall, the aim is to provide an assessment of the ecological constraints and opportunities for the development.
- 4.4 The survey was conducted on 4th April 2016 by Principal Ecologist Paul Fisher (MCIEEM)² and updated on 2nd June to ensure that a comprehensive botanical species list for the site was obtained.
- 4.5 The Extended Phase 1 Habitat Survey methodology was based on guidance set out in the *Handbook for Phase 1 Habitat Survey* (JNCC 2010). This entailed mapping, describing and collating plant species lists for habitats across the area delineated for the survey. Each plant species was assigned abundance codes within each habitat. This was done using the 'DAFOR' scale (where: D = dominant; A = abundant; F = frequent; O = occasional; R = rare), which provides an indication of the relative abundance of each plant species present within a particular habitat.
- 4.6 The broad habitat types were mapped, with each habitat type coded according to the standard JNCC Phase 1 Habitat Survey procedure (JNCC 2010). The plant species present within the site and their relative abundances are listed in Appendix II, which shows both common and scientific names according to Stace (2010).

Survey Limitations

- 4.7 The site was accessible at the time of the survey, which was undertaken in April, which is within the recommended survey period of March to October. However, some plant species and habitats are not readily identifiable in early spring. Given the lack of natural habitats on site and the scarcity of semi-natural habitats and thus the limited potential for either ecological value or function in support of protected species, it is considered that sufficient data were collected and

² Full Member of the Chartered Institute of Ecology and Environmental Management.

an accurate assessment of their conservation value could be gained. The results of this survey are, therefore, considered robust.

Protected Species

- 4.8 The Phase 1 Habitat survey was 'extended' (Institute of Environmental Assessment 1995) to include an assessment of the potential of the sites' habitats and features to support protected species.
- 4.9 Informed by desk based investigations and desk study returns from COFNOD, particular attention was given to establishing the presence or potential for great crested newt (*Triturus cristatus*), (GCN), badger (*Meles meles*), bats and their roosts and breeding birds.

Great Crested Newt

- 4.10 Waterbodies within 300m of the application site boundary were assessed for their potential to support GCN (where access/ownership was established), using the GCN Habitat Suitability Index (HSI) (Oldham *et al.* 2000).
- 4.11 The HSI score is calculated by allocating scores to a range of factors that reflect the potential suitability of a waterbody to support GCN. These include the geographical location of the waterbody, the number of waterbodies within 1km, surface area and permanence, biological water quality, shading, presence of fish and birds, coverage of macrophytes and the suitability of surrounding terrestrial habitat. The resulting HSI score cannot be used to confirm the presence of GCN, and it should not be used as a substitute for a full survey where one is needed. However, the score ranges from 0 (completely unsuitable) to 1 (highly suitable) and represents a useful tool when considering the potential of a site to support GCN, and the need for further more detailed investigation.
- 4.12 Oldham *et al.* (2000) has related the HSI to the probability that a particular waterbody will support GCN, and Brady (2006) expressed qualitatively the suitability of different categories of HSI score (Table 1).

Table 1 GCN Habitat Suitability Index Categories and Likelihood of GCN Presence (after Oldham *et al.* 2000 and Brady 2006)

HSI Scores	% of Waterbodies Found to Support GCN
<0.5 = poor	3
0.5 – 0.59 = below average	20
0.6 – 0.69 = average	55
0.7 – 0.79 = good	79
> 0.8 = excellent	93

Bats

- 4.13 The presence of structures (buildings or mature trees and their condition) was recorded during survey in order to inform the decision to undertake an assessment of the site's features to support roosting bats.

Breeding Birds

- 4.14 All habitats, trees and shrubs were assessed for their potential to support breeding birds.

5. RESULTS

Desk Study

- 5.1 The relevant results of the desk study are summarised below. Appendix III and Figure 3 provide greater detail regarding locations of records and designated sites.

Designated Sites

Statutory Designated Sites

- 5.2 Statutory designated sites include all tiers of nature conservation sites that are legally protected, including Special Areas of Conservation (SAC), Special Protection Areas (SPA) and SSSI.
- 5.3 Two SSSI are present within the search area. Llay Bog SSSI is located 1.5km south of the site, and Chwarel Singret SSSI is located 1.8km west of the site. The site itself falls within an SSSI Impact Risk Zone, which will affect proposals that involve combustion or air pollution.
- 5.4 One Local Nature Reserve (LNR), Alyn Waters Country Park, is located on the southern edge of the search area.

Non-statutory Designated Sites

- 5.5 One Regionally Important Geodiversity Site (RIGS), Caergwrle Castle, is within the search area. RIGS are designated for geology/geomorphology of local importance.
- 5.6 Fourteen wildlife sites are located within the search area. These are a mixture of woodland, grassland sites and waterbodies.
- 5.7 There are 25 ancient woodland sites within the search area. These are ancient semi-natural woodland and restored ancient woodland sites.

Protected Species

Great Crested Newts

- 5.8 GCN are a 'Species of Principal Importance' under section 42 of NERC 2006. Thirteen GCN records within the search area have been provided from 1988 to 2007. The closest record is at a pond 300m from the site.

Bats

- 5.9 Thirty five bat records were returned in the search area, as shown in Table 2. They occur largely in built-up areas and improved fields (probably field margins) in the south and west of the search area. The most common identified species is common pipistrelle (*Pipistrellus pipistrellus*). The closest bat recorded to the site is an unknown species 850m away.

Table 2 Bat Records

English Name	Scientific Name	Earliest Year	Latest Year	Total Records
Brown long-eared bat	<i>Plecotus auritus</i>	2008	2008	3
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	1984	2008	8
Long-eared bat Species	<i>Plecotus</i>	1987	1987	2
Myotis bat species	<i>Myotis</i>	2008	2008	2
Noctule bat	<i>Nyctalus noctula</i>	2005	2005	1
Pipistrelle agg.	<i>Pipistrellus pipistrellus</i> agg.	1984	1987	4
Pipistrellus bat species	<i>Pipistrellus</i>	2005	2008	2
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	2008	2008	3
Unknown bat	<i>Chiroptera</i>	1985	2009	10

Birds

- 5.10 There are 702 birds recorded in the search area, however, the only record within the search area is of a hedge accentor (*Prunella modularis*), a UK BAP species.

Otter

- 5.11 Otter (*Lutra lutra*) is a 'Species of Principal Importance' under section 42 of NERC 2006. Twenty-five records of otter spraints and one road casualty were provided, all occurring on the western edge of the search area along the River Alyn, with the closest record being 1.4km from the site.

Water Vole

- 5.12 Water vole (*Arvicola amphibius*) is a 'Species of Principal Importance' under section 42 of NERC 2006. There were no records of water vole in the search area.

Hedgehog

- 5.13 European hedgehog (*Erinaceus europaeus*) is a 'Species of Principal Importance' under section 42 of NERC 2006. There are five hedgehogs recorded in the search area from 2011 to 2013. The closest record is 1.3km from the site. All these records are sightings of the animals, three of which were taken to Wrexham Hedgehog Rescue Centre.

Brown Hare

- 5.14 Brown hare (*Lepus europaeus*) is a 'Species of Principal Importance' under section 42 of NERC 2006. Three brown hare records are present in the search area from 2005 to 2016. The closest is on improved grassland 650m from the site.

Reptiles

- 5.15 Grass snake (*Natrix natrix*) is a 'Species of Principal Importance' under section 42 of NERC 2006. Three records were returned in the search area between 2010 and 2015. The closest was observed in a waste pile in 2015, on Rackerry Lane, c.80m from the site.
- 5.16 Adder (*Vipera berus*) is a 'Species of Principal Importance' under section 42 of NERC 2006. Four records recorded between 1999 and 2001 were returned, all at Caergwrle Castle, 1.9km west of the site.
- 5.17 Common lizard (*Zootoca vivipara*) is a 'Species of Principal Importance' under section 42 of NERC 2006. Again, records relate to Caergwrle Castle up to 2007.
- 5.18 Slow worm (*Anguis fragilis*) is a 'Species of Principal Importance' under section 42 of NERC 2006. A single record was returned for the search area from 1999 in Caergwrle Castle, where it was reported as common in this year.

Invertebrates

- 5.19 UK Red Data Book invertebrates recorded in the search area are girdled mining bee³ and the wasp *Nysson trimaculatus*. Three BAP priority butterflies are recorded in the search area: dingy skipper (*Erynnis tages*), grayling (*Hipparchia semele*) and small heath (*Caenonympha pamphilus*).

Plants

- 5.20 Five Red Data Book plants have been recorded in the search area: dune helleborine, smooth rapturewort, stream water crow-foot, tall-clustered thread-moss and yellow bird's nest.

Extended Phase 1 Habitat Survey

Main Habitat Types Present

- 5.21 The site chiefly comprises the following habitats as shown on the Extended Phase 1 habitat map (Figure 2):
- Improved pasture;
 - Hedgerows (with standard trees);
 - Field margins; and
 - Ditches.

³ Please see Appendix III for Latin names of species mentioned in the desk study data, common names are referred to in the text.

Improved Pasture

- 5.22 The majority of the site comprises improved pasture. The fields are intensively managed to produce silage and/or grazing, and offer little in the way of botanical interest. The sward is dominated by vigorous grass species with occasional species associated with improved conditions such as dandelion, broad-leaved dock and creeping buttercup.

Field Margins

- 5.23 Field margins are variable in size from between 1 and 2m wide and are present at most field boundaries.
- 5.24 The margins consist chiefly of ruderal species including common nettle, bramble, broad-leaved dock, cow parsley, hogweed, and grasses including cock's-foot, common couch and creeping soft-grass. Rare examples of primrose, wood sage, greater stitchwort and lords-and-ladies were recorded in some hedgerow bases and field margins.

Ditches

- 5.25 With the exception of H5, the western section of H7 and H10, all of the hedgerows are associated with a ditch, all similar in character. The ditches tend to run along the base of the hedge and range between 1 and 1.5m deep. However, water depth varies from c.1 - 5cm with a discernible but low flow in most ditches on the day of the survey. There were no species in any of the ditches that are indicative of a permanent flow or wet conditions. Most had ivy and bramble in the bases, some of which was submerged but indicative of longer-term drier conditions.
- 5.26 The ditches are intrinsically of low ecological value and do not have the potential to support water vole or function in respect of breeding amphibian species.
- 5.27 The field margin and ditches summarised above are described in further detail alongside the hedgerow descriptions, as they form a distinct unit and the ditches do not support aquatic species.

Hedgerows

- 5.28 With the exception of the southern portion of the eastern boundary, the site is completely surrounded by hedgerows of variable quality. All hedgerows contain mature trees, primarily oak but also some ash, sycamore and holly trees. All hedgerows with the exception of H5, the western sections of H7 and H10, are associated with a field margin and ditch. All ditches are of a similar character but on the day of the survey showed variable wetness.

Hedgerow H1

- 5.29 Hedgerow H1 is approximately 2m tall and shows evidence of recent management (Plate 1). It runs along the southern boundary, parallel with Rackerry Lane. At the western end there is a 4m wide gate entrance beyond which is H2. At the eastern end the hedgerow does not connect with any other linear features. Species include mature oaks, hawthorn, holly, elm, hazel, honeysuckle, ivy and bramble. The basal flora includes frequent hedge bedstraw, hogweed, common nettle and cow parsley with occasional cock's-foot and creeping soft grass.

Hedgerow H2

- 5.30 Hedgerow H2 is a short right-angled section at the far south-west of the site. It is approximately 2.5m in height, heavily managed and of different character to hedges H1 and H3 with which it connects (Plates 2 and 3). It is predominantly elm and holly with occasional hazel and hawthorn.

Hedgerow H3

- 5.31 Hedgerow H3 runs along the western boundary and varies in height between 1.5 and 3m, and shows evidence of partial management (Plate 4). Woody species present include willow, ash, hawthorn, holly and common elm with standard oaks along its length. Basal flora includes common nettle, cow parsley, broad-leaved dock, hogweed and bramble.
- 5.32 An intermittently wet and dry ditch (Plate 5) runs parallel with the majority of the hedge length. It is c.1.5m below field level and supports abundant ivy with occasional male fern, showing no evidence of botanical species associated with wet conditions.

Hedgerow H4

- 5.33 Hedgerow H4 is a wide hedgerow that spans a ditch, which is c.100m long and up to 3.5m high and at the western end there is a 4m wide gap for access, beyond which the hedgerow continues for c.10m, albeit with a different character.
- 5.34 The eastern section (Plate 6) is c.3m wide and forms a dense cover across a dry ditch. Woody species include hawthorn, oak, willow, hazel, holly and spruce. This section sits upon a bank, which supports primrose, common sorrel, wood sage, teasel and cow parsley as well as cock's-foot, creeping soft-grass and creeping bent.
- 5.35 The western section (Plate 7) is a more managed section of hedgerow with a central line of hawthorn, holly, hazel and mature standard oaks.
- 5.36 H4 was subject to a Hedgerow Regulations Assessment as this hedgerow is within the footprint of the development proposals (refer to Figure 1). The completed survey form is included in Appendix IV. Under the Regulations the hedgerow would be considered an 'Important' hedgerow by virtue of its biodiversity value. It meets several of the criteria to be classed as an important hedge, the primary criteria being the presence of at least seven woody species within the hedgerow length.

Hedgerow H5

- 5.37 Hedgerow H5 is approximately 75m long and up to 4.5m high (Plate 8) and forms the eastern and northern boundaries of a small copse immediately adjacent to the western boundary of the site (but outside). It shows little evidence of management. Woody species in H5 include oak, hawthorn, common elm and ash with bramble understory, which replicates the composition of the adjacent copse.

Hedgerow H6

- 5.38 Hedgerow H6 runs from the south-western edge of the copse mentioned above (Plate 9). It shows evidence of past management and ranges between 1.5 and 2.5m in height. Woody species include mature oaks, regenerating ash, hawthorn, holly, blackthorn, dog rose and elm.

The hedgerow is associated with a strip of c.1 to 1.5m of ruderal species including common nettle, broad-leaved dock, an *Epilobium* species and cock's-foot, creeping soft grass and couch.

- 5.39 There are a few gaps along the length of the hedge but none over 2m wide.
- 5.40 A ditch approximately 1m below field level runs along the inside of the hedge. Whilst there was c.5cm of water flowing along the ditch, there were no species indicative of permanent or semi-permanent water.

Hedgerow H7

- 5.41 Hedgerow H7 runs east to west across the site. It is in two parts, separated by a c.4m access gap (Plate 10 - eastern half and Plate 11 - western half).
- 5.42 The eastern half of H7 reaches approximately 2m in height and comprises mature oak trees on the north side, mature scrub on the south side and in between there is a flowing ditch. Woody species include oak, elder, willow, ash, dog rose, blackthorn, common gorse and bramble. The basal flora includes primrose, greater stitchwort, common nettle, creeping soft-grass and creeping bent.
- 5.43 The western half differs in composition to the eastern half in that it does not span a ditch, being comprised of mainly hawthorn and mature oaks and has a sparse basal flora due to the improved field extending to the hedgerow base.

Hedgerow H8

- 5.44 Hedgerow H8 (Plate 12) is low, c.1.5m high showing evidence of recent management with a flat cut top. Species include mature oaks (c.9 trees), holly, hawthorn, elm, elder, honeysuckle, rose species, silver birch and sycamore. The hedge is associated with a relatively wide field margin up to 2m wide and supporting typical ruderal species such as bramble, common nettle, broad-leaved dock, hedge bedstraw, cock's-foot and creeping soft-grass

Hedgerow H9

- 5.45 Hedgerow H9 (Plate 13) is a short section of hedgerow, c.40m long and up to 2m high. It has been cut to c.2m within the last two years. Species comprise hazel, holly, hawthorn, elder, elm and dog rose. Ground flora includes bracken, hogweed, common nettle and grasses, Yorkshire fog and cock's-foot.
- 5.46 It is adjacent to a shallow, flowing ditch that briefly runs along the outside of the site's northern boundary and merges with blackthorn scrub at its eastern end.

Hedgerow H10

- 5.47 Hedgerow 10 (Plate 14) is a length of plantation woodland, which lies immediately adjacent to the eastern boundary of the site. It is up to 4m in height and comprises blocks of same species planting including blackthorn, hawthorn and hornbeam and less frequent examples of hazel and willow, mature oaks and semi-mature ash trees. The basal flora is sparse and includes common nettle, lords and ladies, ground ivy, cleavers and broad-leaved dock.

Standard Trees

- 5.48 A total of 56 standard trees were identified throughout the hedgerows that surround and bisect the site. The majority of trees are oak, but also some ash, beech and sycamore are present.

Protected Species

Amphibians

- 5.49 A number of ponds were identified within 500m of the site boundary from desk based sources and the presence of those within 300m was verified during the Extended Phase 1 survey. Access was not possible to all ponds.
- 5.50 Where access was granted, the ponds were assessed for their potential to support GCN using HSI scores (Oldham *et al.* 2000). Table 3 below provides the Index scores for those ponds accessed and their suitability to support GCN (Brady 2006).

Table 3 Habitat Suitability Index Scores

Pond Number	Index Score	Suitability for supporting breeding GCN
1	0.55	Below Average
2	0.25	Poor
3	No Access	No Access
4	0.80	Excellent
5	0.69	Average

Bats

- 5.51 The site contains no built structures that could function as bat roosts.
- 5.52 There are approximately 56 mature oaks within the hedgerows surrounding and crossing the site. Many were observed to have cracks and rot holes during the survey and such features have the potential to provide bat roosting opportunities.
- 5.53 The hedgerows around the site offer commuting and foraging opportunities to bats.

Breeding Birds

- 5.54 The trees, hedgerows, field margins and ditch banks within the site provide suitable habitat for foraging and nesting birds.
- 5.55 The application site does not provide suitable conditions for ground nesting species such as Northern lapwing (*Vanellus vanellus*) or sky lark (*Alauda arvensis*) and none were recorded on the Phase 1 habitat survey or the GCN surveys.

Badgers

- 5.56 Badgers are reported separately in a confidential report.

Otters and Water Voles

- 5.57 There was no evidence of otters or water voles on any of the ditches on or adjacent to the site. This accords with the desk study response, which did not identify any otter records within 1.4km of the application site boundary or any water vole records within the search area.
- 5.58 The ditches looked to have an ephemeral nature and were shaded and sparsely vegetated with typical terrestrial species, offering little in the way of forage for water voles.

6. EVALUATION

Statutory and non-statutory designated sites

- 6.1 The proposals for the site and the distance to the statutory and non-statutory designated sites are such that it is not considered that there would be any negative direct or indirect impacts upon them.

Habitats

- 6.2 The interior of the site is composed of improved and intensively managed grassland and is assessed as being of low ecological value.
- 6.3 The boundary features, which typically consist of a hedgerow (with standard trees), a ditch and field margin or unmanaged strip, provide ecological functionality e.g. nesting habitat for breeding birds and commuting routes for bats, and in connecting the sites' habitats with the wider landscape and thus have an intrinsic ecological value.
- 6.4 With the exception of Hedgerow H4, all of the hedgerows and their associated margins and ditches are to be retained and, in places, enhanced (Figure 1).
- 6.5 Hedgerow H4 qualifies as an 'Important' hedgerow under the Hedgerow Regulations 1997 Assessment (Appendix IV) and therefore its removal will require planning permission to be in place (with appropriate mitigation).
- 6.6 Furthermore, hedgerows are listed as habitats of Principal Importance under section 42 of the Natural Environment and Rural Communities Act 2006 (NERC) and should wherever possible be retained, protected and where opportunities exist, enhanced.
- 6.7 Whilst arable field margins are also listed under section 42, it is considered that the annually sown *Lolium perenne* lays that occupy the site do not constitute arable fields and thus the margins would not be considered habitats of Principal Importance. It is worth noting however, that with the exception of H4, field margins would be retained and in places, enhanced.

Great Crested Newt

- 6.8 There are no ponds on site and therefore, no direct impact upon, or loss of, a breeding site.
- 6.9 The development footprint will result in the loss of c.1.52ha of improved grassland, which has limited functionality with regard to GCN and also the loss of c.75% of hedgerow H4 (c.100m), which has the potential to function as foraging, commuting and refuge habitat for GCN in the local area.

Bats

- 6.10 The mature trees within the hedgerows have some potential to function as bat roosts. The trees in the hedgerow to be lost to the development (H4) have the potential to function as roosts and the hedgerows themselves may function as commuting routes for local bats.

Badgers

- 6.11 Issues relating to badgers are addressed in a separate and confidential report.

7. RECOMMENDATIONS FOR FURTHER SURVEY REQUIREMENTS AND MITIGATION AND ENHANCEMENTS PROPOSALS

GCN

- 7.1 It is recommended that a GCN survey of a targeted selection of the ponds identified in the desk study and extended Phase 1 survey is carried out to establish the likelihood of an impact upon GCN, which have been shown in the desk study to occur within 300m of the site boundary.

Bats

- 7.2 It is recommended that an assessment of those trees identified as being lost to the development, or are likely to be impacted upon by it, are assessed in order to quantify their potential to function as bat roosts.

Breeding Birds

- 7.3 All wild birds, their nests and eggs are protected under the WCA 1981 (as amended). It is, therefore, recommended that potential breeding bird habitats that require removal as part of the development proposals are removed outside of the main breeding season, which runs from March to September (inclusive). Suitable nesting habitat may include trees, hedgerows, ditch banks, scattered scrub and dense vegetation.
- 7.4 If this timing is not possible, a suitably qualified ecologist should check the vegetation no more than 48 hours prior to site clearance to ensure that no active nests are present. If nesting birds are confirmed to be present, then works in this location should be postponed until the young have fledged and the nest is no longer in use. It may be necessary to cordon off the nest and monitor it until it is inactive.

Replacement of Hedgerow H4

- 7.5 Hedgerow H4 qualifies as an 'Important' hedgerow (Hedgerow Regulations 1997 (Defra 1997)). It is recommended that the planting of the 400m section of hedgerow along the eastern boundary (Figure 1) should be designed to maximise ecological benefit and biodiversity gains. For example, the hedgerow could be planted as a double hedge and/or could be planted on a bank. Also the inclusion of bird and bat boxes would provide nesting and roosting opportunities whilst replacement habitats mature.
- 7.6 Incorporating such features into the hedgerow design would, in time, provide a habitat that would more than compensate for the loss of H4.

Protection of Field Margin and Ditches

- 7.7 During works, those habitats that are to be retained should be clearly demarcated and protected with an appropriate buffer (where the land is available), ensuring that retained habitats are not destroyed or damaged.
- 7.8 Controls should be put in place to control the mobilisation of sediments with regard to site clearance, construction and the extensive ditch network which surrounds and bisects the site.

Protection of Tree Roots and Hedgerow Bases

- 7.9 For all retained trees and hedgerows it is recommended that protection measures are put in place to ensure that there is no damage to the roots and limbs as a result of the works.
- 7.10 It is further recommended that the guidance contained within the British Standards Institute publication BSI 5837:2012 *Trees in relation to design, demolition and construction* is followed.

Proposed Ecological Enhancements

- 7.11 Figure 1 identifies landscaping proposals for the site, these include:
- c.400m of new, hedgerow, using native species, along the eastern boundary (currently post and wire fence), which would extend the current hedgerow H10;
 - additional native tree planting alongside hedgerows H1, H3, H5, H6 and H7, and additional tree planting around the application site; and,
 - proposed soil bund at the southern end of the site to be planted with areas of mixed native tree and shrub species and grassland. This offers the opportunity to introduce a species rich wildflower/grassland seed mix of appropriate provenance and suitable to the local conditions which would provide additional biodiversity value.

Potential Ecological Enhancements and Considerations

- 7.12 Ecological enhancements within development proposals are encouraged by local and national planning policy. The following provisions could be included in development plans, to maximise potential ecological value of the site following development:
- Ensure that landscaped areas comprise nectar and berry-bearing native species of local provenance, to improve foraging habitat for bats, birds and invertebrates in the local area;
 - Provision of appropriately placed bird boxes for species known to be present and bat boxes on trees within the site; and
 - Bats are nocturnal animals, adapted to low-light conditions, and artificial lighting can adversely impact some bat species. It is recommended that consideration is given to a lighting design that follows guidelines e.g. Institute of Lighting Professionals and ecologists e.g. Bat Conservation Trust to minimise any adverse effect and reduce lighting without compromising issues of health and safety. Light should be directed where it is needed and the design should avoid illumination of trees close to the site boundary in particular to retain its value as commuting and foraging habitat for bats.

Summary

- 7.13 With the inclusion of appropriate protection, mitigation and enhancement measures as set out above, in respect of;
- protecting existing and retained habitats;

- provision for the loss of hedgerow H4, which is both an 'Important' hedgerow under the Hedgerow Regulations 1997 and a habitat of Principal Importance under Section 42 (NERC 2006);
- precautions with regard to breeding birds and timing of works; and
- the provision of roost and nest boxes for bats and birds.

7.14 It is considered that the impact upon protected habitats and species as a consequence of the development proposals is expected to be negligible

7.15 Further surveys have been commissioned as recommended with regard to GCN and bat roost potential and are reported separately.

8. REFERENCES

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9. ABBREVIATIONS

BAP	Biodiversity Action Plan	NBN	National Biodiversity Network
CRoW	Countryside and Rights of Way	NERC	Natural Environment and Rural Communities
EU	European Union	NPPF	National Planning Policy Framework
GCN	Great Crested Newt	PAA	Penny Anderson Associates Ltd
HSI	Habitat Suitability Index	RIGS	Regionally Important Geological/geomorphological Sites
JNCC	Joint Nature Conservation Committee	SAC	Special Area of Conservation
LNR	Local Nature Reserve	SPA	Special Protection Areas
MAGIC	Multi-Agency Geographic Information for the Countryside	SSSI	Sites of Special Scientific Interest
		WCA	Wildlife and Countryside Act

FIGURES

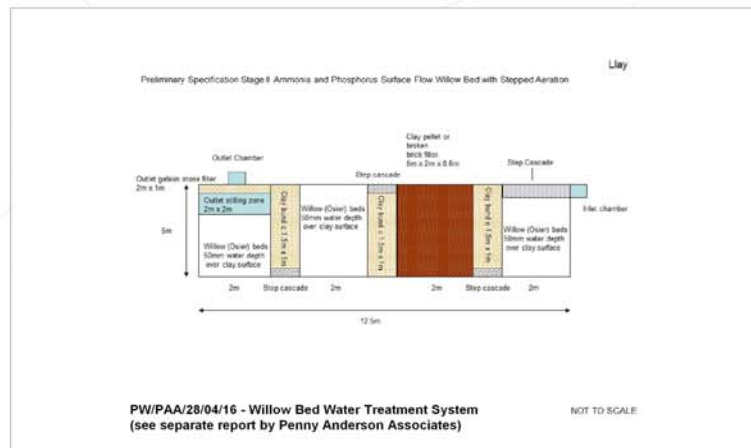


Fig. 1 Site Plan Outline Landscaping Proposals



Landscape Architects

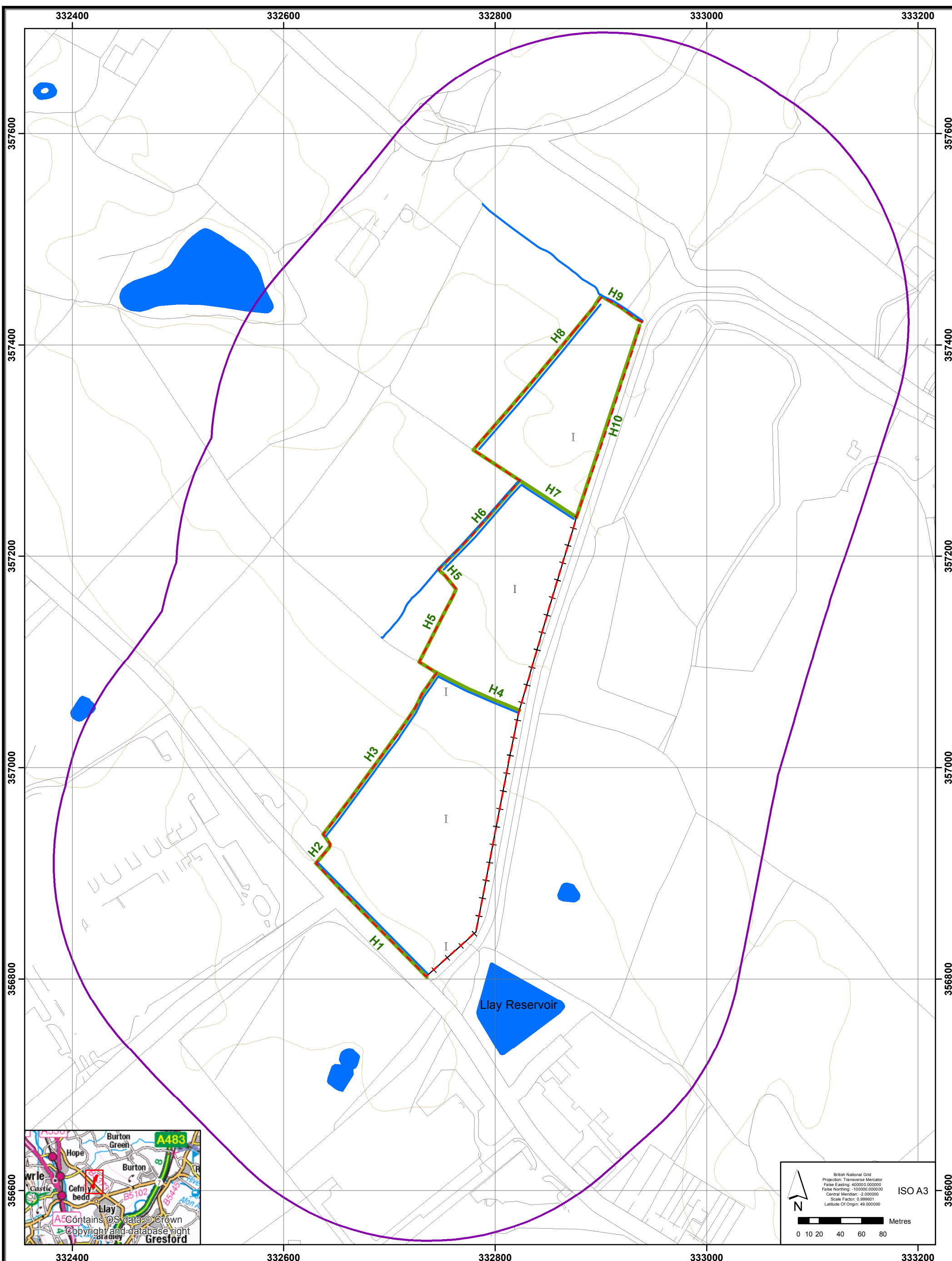
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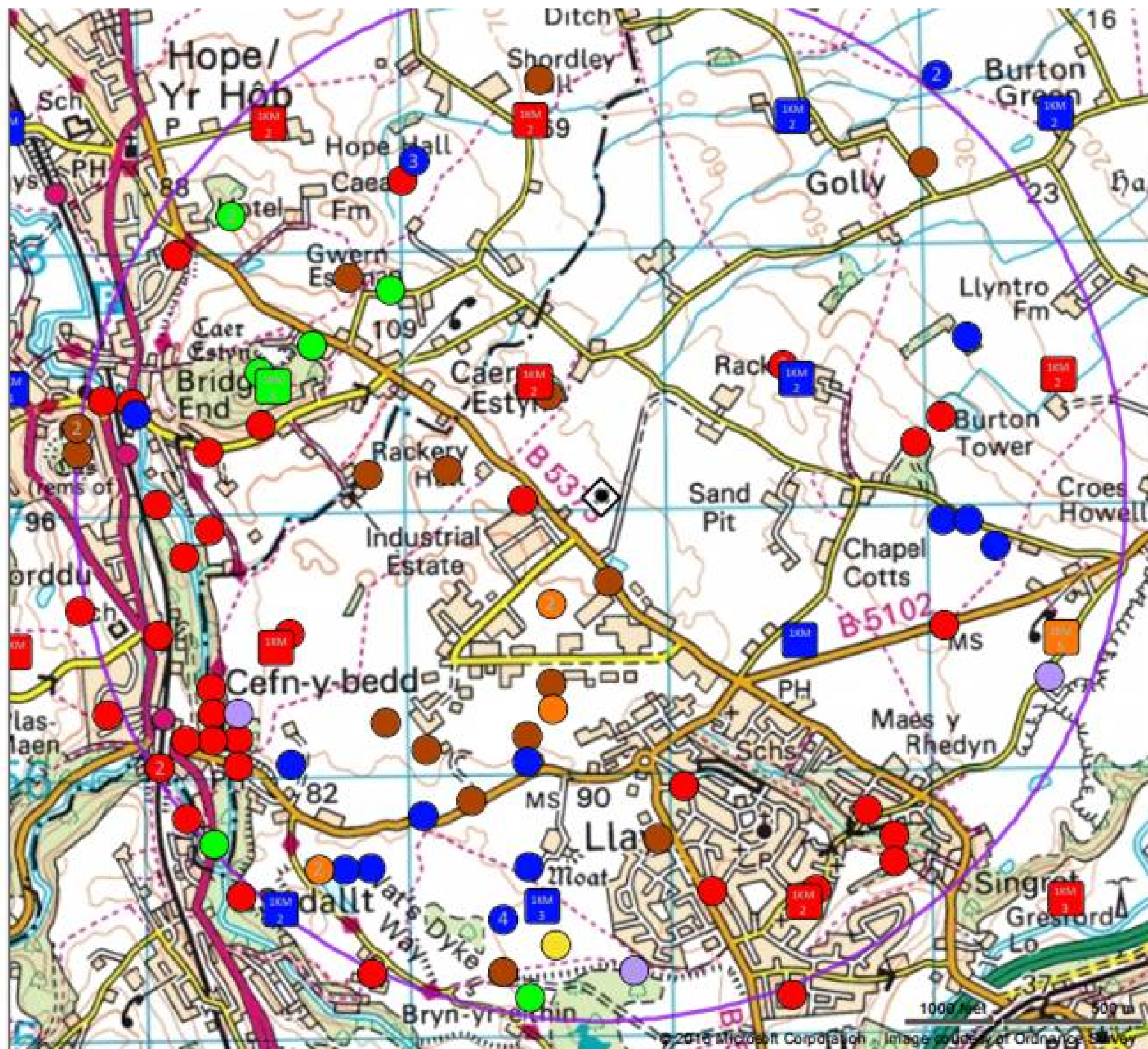
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Dwg No. ALLP15.02	Revision -04		

Do not scale from this drawing.
Verify all dimensions on site before commencing work. Any discrepancies should be reported without delay to Chris Burnett Associates.

Date	Details	Revision
30/05/16	Minor amendments.	-04

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eMapper

Colnod Mapping System
Llay - TR12051 Llay / ED4867

Key

- Search Location
- Search Buffer (2000m)

- Bees, Wasps, Ants and Sawflies
- Birds
- Butterflies and Moths
- Mammals
- Other Invertebrates
- Plants
- Reptiles and Amphibians

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CONSULTANT ECOLOGISTS

Title:

**Figure 3
Desk Study
Results:
eMapper**

Project Name: Aviagen Turkeys Ltd

Drawing No: Figure 3

Drawing JL	Originator PF	Date: JUN 2016
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PAA Ref: G:\AVTU01_Llay_Turkey_Farm\Misc	Revision: A
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PLATES



Plate 1: H1



Plate 2: H2 South



Plate 3: H2 North



Plate 4: H3



Plate 5: Ditch along H3



Plate 6: H4 East



Plate 7: H4 West



Plate 8: H5 with H4 and gate in the background



Plate 9: H6



Plate 10: H7 East



Plate 11: H7 West



Plate 12: H8



Plate 13: H9 (and associated ditch – outside application site)



Plate 14: H10

APPENDICES

APPENDIX I

Legislative Context

APPENIDX I LEGISLATIVE CONTEXT

Introduction

The text given below provides a brief summary of the legislation in relation to the species or species group in England and Wales. The original Acts, Regulations and any amendments should be referred to for the precise wording.

Bats

All wild species of bat are protected under the Wildlife and Countryside Act (WCA) 1981, which has also been amended by later legislation, including the Countryside and Rights of Way (CROW) Act 2000 and the Conservation of Habitats and Species Regulations 2010, and this legislation is applicable to England and Wales. Bats are listed on Schedule 5 of the WCA and are, therefore, subject to some the provisions of Section 9 which, with the amendments, make it an offence to:

- Intentionally or recklessly disturb a bat while it is occupying a structure or place which it uses for shelter or protection (S9:4b).
- Intentionally or recklessly obstruct access to any structure or place used for shelter or protection by a bat (S9:4c).

There are additional offences in relation to buying and selling (S9:5) any live or dead animal of this species or anything derived from them.

Bat species are also listed under Annexes IIa and IVa of the EC Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora, also known as the 'Habitats Directive'. Inclusion on Annex IVa means they are consequently identified as European Protected Species (EPS) and protected under the Conservation of Habitats and Species Regulations 2010.

The Conservation of Habitats and Species Regulations 2010 state that a person commits an offence if they:

- (a) deliberately capture, injure or kill any wild animal of an EPS,
- (b) deliberately disturb wild animals of any such species, in such a way as;
 - (i) to impair their ability to survive, to breed or reproduce, or to rear their young, or
 - (ii) in the case of animals of a hibernating or migratory species, to hibernate or migrate, or
 - (iii) to affect significantly the local distribution or abundance of the species to which they belong;
- (c) deliberately take or destroy the eggs of such an animal, or
- (d) damage or destroy a breeding site or resting place of such an animal.

Under these Regulations it is an offence to damage or destroy a breeding site or resting place whether the animal is in occupation or not, and protection extends to all life stages of the animal

in question. There are additional offences relating to possession, control and sale of a live or dead bat or part of such an animal.

In addition, under UK's Biodiversity Action Plan (BAP), seven native British bat species, including the soprano pipistrelle (*Pipistrellus pygmaeus*) and the brown long-eared bat (*Plecotus auritus*), that are frequently found in buildings, are listed as a 'Priority Species'. UKBAP Priority Species are also referred to as 'species of principal importance' for the conservation of biodiversity in England and Wales within Section 74 of the CRoW Act 2000, and Sections 41 (England) and 42 (Wales) of the Natural Environment and Rural Communities (NERC) Act 2006. Section 11 of NPPF states that the planning system should contribute to and enhance the natural and local environment by minimising impacts on biodiversity and providing net gains in biodiversity where possible. The NPPF also includes the requirement to contribute to the Government's commitment to halt the overall decline in biodiversity and to promote the reservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species populations, linked to national and local targets. Reference is made to Circular 06/2005 *Biodiversity and Geological Conservation - Statutory Obligations and Their Impact within the Planning System* in respect of statutory obligations for biodiversity and geodiversity conservation.

Local authorities in England are required to ensure that where significant harm resulting from development cannot be avoided (through locating on alternative sites with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, planning permission is refused. The commitment to preserving, restoring or enhancing biodiversity is further emphasised for England and Wales in Section 40 of the NERC Act 2006.

Birds

All wild species of breeding birds and their nests are protected under Part 1 of the WCA 1981, as amended by later legislation including the CRoW Act 2000. This legislation applies in England and Wales.

Part 1 (Section 1:1) of the WCA states that:

'If any person intentionally,

- (a) kills, injures or takes any wild bird;*
- (b) takes, damages or destroys the nest of any wild bird while that nest is in use or being built; or*
- (c) takes or destroys an egg of any wild bird,*

he shall be guilty of an offence.'

Part 1 (Section 1:5) of the WCA (amended by the CRoW Act 2000) refers to specific birds listed on Schedule 1 of the WCA, and states that:

'If any person intentionally or recklessly,

- (a) disturbs any wild bird included in Schedule 1 while it is building a nest or is in, on or near a nest containing eggs or young; or*
- (b) disturbs dependant young of such a bird,*

he shall be guilty of an offence and liable to a special penalty.

Schedule 1 includes birds such as barn owl (*Tyto alba*), black redstart (*Phoenicurus ochruros*), woodlark (*Lullula arborea*) and Cetti's warbler (*Cettia cetti*). Please refer to the WCA for a complete list of Schedule 1 species.

Great Crested Newts

Great crested (or warty) newts (*Triturus cristatus*) (GCN) are protected under the WCA 1981, which has been also amended by various legislation including the CRoW Act 2000 and the Conservation of Habitats and Species Regulations 2010, and this legislation is applicable to England and Wales. Great crested newts are listed on Schedule 5 of the WCA and are, therefore, subject to some the provisions of Section 9 which, with the amendments, make it an offence to:

- Intentionally or recklessly disturb a GCN while it is occupying a structure or place which it uses for shelter or protection (S9:4b).
- Intentionally or recklessly obstruct access to any structure or place used for shelter or protection by a GCN (S9:4c).

There are additional offences in relation to buying and selling (S9:5) any live or dead animal of this species or anything derived from them.

Great crested newts are also listed under Annexes IIa and IVa of EC Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora, also known as the 'Habitats Directive'. Inclusion on Annex IVa means they are consequently identified as EPS and protected under the Conservation of Habitats and Species Regulations 2010. The Conservation of Habitats and Species Regulations 2010 state that a person commits an offence if they:

- (a) deliberately capture, injure or kill any wild animal of an EPS,
- (b) deliberately disturb wild animals of any such species, in such a way as –
 - (i) to impair their ability to survive, to breed or reproduce, or to rear their young, or
 - (ii) in the case of animals of a hibernating or migratory species, to hibernate or migrate, or
 - (iii) to affect significantly the local distribution or abundance of the species to which they belong;
- (c) deliberately take or destroy the eggs of such an animal, or
- (d) damage or destroy a breeding site or resting place of such an animal.

Under these Regulations it is an offence to damage or destroy a breeding site or resting place, whether the animal is in occupation or not, and protection extends to all life stages of the animal in question. There are additional offences relating to possession, control and sale of a live or dead GCN or part of such an animal.

In addition, GCN are listed as a 'Priority Species' under UKBAP. UKBAP Priority Species are also referred to as 'species of principal importance' for the conservation of biodiversity in England and Wales within Section 74 of the CRoW Act 2000, and Sections 41 (England) and 42 (Wales) of the

NERC Act 2006. Section 11 of the NPPF states that the planning system should contribute to and enhance the natural and local environment by minimising impacts on biodiversity and providing net gains in biodiversity where possible. The NPPF also includes the requirement to contribute to the Government's commitment to halt the overall decline in biodiversity and to promote the reservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species populations, linked to national and local targets. Reference is made to Circular 06/2005 *Biodiversity and Geological Conservation - Statutory Obligations and Their Impact within the Planning System* in respect of statutory obligations for biodiversity and geodiversity conservation. Local authorities in England are required to ensure that where significant harm resulting from development cannot be avoided (through locating on alternative sites with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, planning permission is refused. The commitment to preserving, restoring or enhancing biodiversity is further emphasised for England and Wales in Section 40 of the NERC Act 2006.

Water Voles

Water voles (*Arvicola amphibius*) are protected under the WCA 1981, as amended, and this legislation is applicable to England and Wales. Water voles are listed on Schedule 5 of the Act and are, therefore, subject to some the provisions of Section 9 which, with the amendments, make it (in brief) an offence to:

- Intentionally kill, injure or take a water vole (S9:1);
- Intentionally or recklessly damage or destroy or a structure or place used for shelter or protection by a water vole (S9:4a);
- Intentionally or recklessly disturb a water vole while it is occupying such a place (S9:4b); or
- Intentionally or recklessly obstruct access to any structure or place a water vole uses for shelter or protection (S9:4c).

There are additional offences in relation to possessing, controlling (S9:2), and buying and selling (S9:5) any live or dead animal of this species or anything derived from them. Water voles are also listed as a 'Priority Species' in the UK's BAP. UKBAP Priority Species are also referred to as 'species of principal importance' for the conservation of biodiversity in England and Wales within Section 74 of the CRow Act 2000, and Sections 41 (England) and 42 (Wales) of the NERC Act 2006. Section 11 of the National Planning Policy Framework (NPPF) states that the planning system should contribute to and enhance the natural and local environment by minimising impacts on biodiversity and provide net gains in biodiversity where possible. The NPPF also includes the requirement to contribute to the Government's commitment to halt the overall decline in biodiversity and to promote the reservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species populations, linked to national and local targets. Reference is made to Circular 06/2005 *Biodiversity and Geological Conservation - Statutory Obligations and Their Impact within the Planning System* in respect of statutory obligations for biodiversity and geodiversity conservation.

Local authorities in England are required to ensure that where significant harm resulting from development cannot be avoided (through locating on alternative sites with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, planning permission is refused. The commitment to preserving, restoring or enhancing biodiversity is further emphasised for England and Wales in Section 40 of the NERC Act 2006.

Otter

Otters (*Lutra lutra*), also known as European otters, are protected under the WCA 1981, which has also been amended by various later legislation including the CRoW Act 2000 and the Conservation of Habitats and Species Regulations 2010, and this legislation is applicable to England and Wales. Otters are listed on Schedule 5 of the WCA and are, therefore, subject to some the provisions of Section 9 which, with the amendments, make it an offence to:

- Intentionally or recklessly disturb an otter while it is occupying a structure or place which it uses for shelter or protection (S9:4b).
- Intentionally or recklessly obstruct access to any structure or place used for shelter or protection by an otter (S9:4c).

There are additional offences in relation to buying and selling (S9:5) any live or dead animal of this species or anything derived from them.

Otters are also listed under Annexes IIa and IVa of EC Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora, also known as the 'Habitats Directive'. Inclusion on Annex IVa means they are consequently identified as EPS and protected under the Conservation of Habitats and Species Regulations 2010.

The Conservation of Habitats and Species Regulations 2010 state that a person commits an offence if they:

- (a) *deliberately capture, injure or kill any wild animal of an EPS,*
- (b) *deliberately disturb wild animals of any such species, in such a way as –*
 - (i) *to impair their ability to survive, to breed or reproduce, or to rear their young, or*
 - (ii) *in the case of animals of a hibernating or migratory species, to hibernate or migrate, or*
 - (iii) *to affect significantly the local distribution or abundance of the species to which they belong;*
- (c) *deliberately take or destroy the eggs of such an animal, or*
- (d) *damage or destroy a breeding site or resting place of such an animal.*

Under these Regulations it is an offence to damage or destroy a breeding site or resting place, whether the animal is in occupation or not, and protection extends to all life stages of the animal in question. There are additional offences relating to possession, control and sale of a live or dead otter or part of such an animal.

In addition, otters are listed as a 'Priority Species' on the UKBAP. UKBAP Priority Species are also referred to as 'species of principal importance' for the conservation of biodiversity in England and Wales within Section 74 of the CRoW Act 2000, and Sections 41 (England) and 42 (Wales) of the NERC Act 2006. Section 11 of the NPPF states that the planning system should contribute to and enhance the natural and local environment by minimising impacts on biodiversity and

providing net gains in biodiversity where possible. The NPPF also includes the requirement to contribute to the Government's commitment to halt the overall decline in biodiversity and to promote the reservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species populations, linked to national and local targets. Reference is made to Circular 06/2005 *Biodiversity and Geological Conservation - Statutory Obligations and Their Impact within the Planning System* in respect of statutory obligations for biodiversity and geodiversity conservation.

Local authorities in England are required to ensure that where significant harm resulting from development cannot be avoided (through locating on alternative sites with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, planning permission is refused. The commitment to preserving, restoring or enhancing biodiversity is further emphasised for England and Wales in Section 40 of the NERC Act 2006.

Reptiles

All six of the native British reptile species are afforded varying degrees of protection under the Wildlife and Countryside Act (WCA) 1981, as amended by various later legislation, and this legislation is applicable to England and Wales. All six species are listed on Schedule 5 of the WCA.

The four widespread species, common lizard (*Zootoca vivipara*), slow-worm (*Anguis fragilis*), grass snake (*Natrix natrix*) and adder (*Vipera berus*) are afforded part protection under Section 9(1), making it an offence to intentionally kill or injure any of these species of reptile. The two rarer species, sand lizard (*Lacerta agilis*) and smooth snake (*Coronella austriaca*), are subject to a greater degree of protection under Section 9(4) which, with the amendments, make it (in brief) an offence to:

- Intentionally or recklessly disturb a sand lizard or smooth snake while it is occupying a structure or place used for shelter or protection (S9:4b); or
- Intentionally or recklessly obstruct access to any structure or place a sand lizard or smooth snake uses for shelter or protection (S9:4c).

All six species are afforded protection from buying, selling or exchange under Section 9(5) of the WCA.

Sand lizard and smooth snake are also listed under Annexes IIa and IVa of EC Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora, also known as the 'Habitats Directive'. Inclusion on Annex IVa means they are consequently identified as European Protected Species (EPS) and protected under the Conservation of Habitats and Species Regulations 2010.

The Conservation of Habitats and Species Regulations 2010 state that a person commits an offence if they:

- (a) deliberately capture, injure or kill any wild animal of a European protected species,
- (b) deliberately disturb wild animals of any such species, in such a way as –

- (i) to impair their ability to survive, to breed or reproduce, or to rear their young, or
 - (ii) in the case of animals of a hibernating or migratory species, to hibernate or migrate, or
 - (iii) to affect significantly the local distribution or abundance of the species to which they belong;
- (c) deliberately take or destroy the eggs of such an animal, or
- (d) damage or destroy a breeding site or resting place of such an animal.

Under these Regulations it is an offence to damage or destroy a breeding site or resting place whether the animal is in occupation or not, and protection extends to all life stages of the animal in question. There are additional offences relating to possession, control and sale of a live or dead sand lizard or smooth snake or part of such an animal.

In addition, all six reptile species are listed as a 'Priority Species' under the under the 2011 biodiversity strategy for England, *Biodiversity 2020: A strategy for England's wildlife and ecosystem services*, under the 2012 UK Post-2010 UK Biodiversity Framework. These Priority Species are also referred to as 'species of principal importance' for the conservation of biodiversity in England and Wales within Section 74 of the CRoW Act 2000, and Sections 41 (England) and 42 (Wales) of the Natural Environment and Rural Communities (NERC) Act 2006. Section 11 of the National Planning Policy Framework (NPPF) states that the planning system should contribute to and enhance the natural and local environment by minimising impacts on biodiversity and providing net gains in biodiversity where possible. The NPPF also includes the requirement to contribute to the Government's commitment to halt the overall decline in biodiversity and to promote the reservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species populations, linked to national and local targets. Reference is made to Circular 06/2005 *Biodiversity and Geological Conservation - Statutory Obligations and Their Impact within the Planning System* in respect of statutory obligations for biodiversity and geodiversity conservation.

Local authorities in England are required to ensure that where significant harm resulting from development cannot be avoided (through locating on alternative sites with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, planning permission is refused. The commitment to preserving, restoring or enhancing biodiversity is further emphasised for England and Wales in Section 40 of the NERC Act 2006.

Please note: the above text provides a brief summary of the legislation in relation to reptiles for England and Wales and the original Acts, Regulations and any amendments should be referred to for the precise wording.

HEDGEROW REGULATIONS 1997

CRITERIA FOR DETERMINING “IMPORTANT” HEDGEROWS

(Simplified)

1.
 - i) A hedgerow which has existed for 30 years or more; AND
 - ii) satisfies at least one of the following additional criteria.
2. **Archaeology /History**
 - i) Hedgerow marks a boundary of an “historic” parish or township, i.e. “historic” = prior to 1850.
 - ii) Hedgerow lies within or adjacent to or incorporates an archaeological feature:
 - a) a Scheduled Ancient Monument; OR
 - b) recorded at relevant date in a Sites + Monuments Record; OR
 - c) is associated with such a monument or feature on or adjacent to the hedgerow.
 - iii) Marks the boundary of a pre-1600AD estate or manor recorded in the Sites and Monuments Record or other record in a Record Office OR is visibly related to features of such an estate or manor.
 - iv) Recorded in Record Office documents as integral part of or visibly related to a pre-Inclosure Acts field system.
3. **Wildlife + Landscape**
 - i) Contains Schedule 1, 5 or 8 species.
 - ii) Contains RDB (Category 3) declining breeding birds (Batten *et al.* 1990).
 - iii) Contains RDB Plants; Insects; other Invertebrates; Stoneworts.
 - iv) i-iii) includes old records <5 years before regulations, i.e. after 24th March 1992 – for animals - <10 years for plants – UNLESS a more recent record suggests no longer present.
 - v) Hedge includes (All woody spp. Nos. reduced by 1 in selected northern counties = North of Mersey-Humber except Merseyside and Greater Manchester).

a)	>7 woody spp.	
b)	>6 woody spp. PLUS > 3 of:	BANK OR WALL supporting >50% of Hedge. GAPS <10% of Hedge. 1 STANDARD TREES >1/50m. >3 woodland spp/m (within or 1m in any direction from edges of hedge). DITCH < 50% of Hedge. >4 connection score. Parallel hedge <15m away
c)	>5 woody spp. PLUS > 4 of:	
d)	>6 woody spp. Including: <i>Populus nigra</i> var. <i>betulifolia</i> <i>Tilia platyphyllos</i> <i>Tilia cordata</i> <i>Sorbus torminalis</i>	

(CONNECTION SCORE: 1 point – connection to another hedgerow
2 points – connection to pond or wood >50% trees.

CONNECTION: = Meets or within 10m + would meet if continued).

vi) Hedge adjacent to bridleway or footpath, RUPP, BOAT
AND
Includes >4 woody spp. and >2 of features above.

WOODY SPECIES TOTAL DERIVED AS FOLLOWS:

1. If hedge <30m – total no. woody spp. in hedge.
2. 30-100m – total no. woody spp. in central 30m.
3. 100-200m – total no. woody spp. in central 30m of both halves of hedge (aggregated no. of counts, not species), divided by 2.
4. 200m+ - total no. woody spp. in all central 30m stretches of each 100m of hedge (aggregated no. of counts, not species), divided by no. of 30m stretches.

Useful approximation = Total no. spp. divided by no. of 100m reaches – N.B. Do not use this approximation in proper analysis against Regulations

Reference: Batten, L.A., Bibby, C.J., Clement, P., Elliott G.D., and Porter R.F., 1990. *Red Data Birds in Britain*. Poyser.

APPENDIX II

Botanical Species List for Habitats Recorded on Site

Appendix II Botanical Species List for Habitats Recorded on Site

English Name	Scientific Name	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10
Trees and Shrubs											
Ash	<i>Fraxinus excelsior</i>			r		r	f	lf			
Birch species	<i>Betula</i> sp.								r		
Blackthorn	<i>Prunus spinosa</i>			r	f		r	r		o	lf
Common elm	<i>Ulmus minor</i>		f	f		o	o		f	f	
Elder	<i>Sambucus nigra</i>							o	o	o	
Field rose	<i>Rosa arvensis</i>	r		o		r	o			o	o
Gorse	<i>Ulex europaeus</i>			r				r			
Hawthorn	<i>Crataegus monogyna</i>	f		r	o	o	o	o	o	o	lf
Hazel	<i>Corylus avellana</i>	la	f		f					o	o
Holly	<i>Ilex aquifolium</i>	la	o	o	o		o	r	o	r	
Honeysuckle	<i>Lonicera periclymenum</i>	o				o			o		
Hornbeam	<i>Carpinus betula</i>										lf
Pedunculate oak	<i>Quercus robur</i>	f	f	f	f	f	f	f	f	f	o
Pine species	<i>Pinus</i> sp.				r						
Silver birch	<i>Betula pendula</i>								r		
Sycamore	<i>Acer pseudoplatanus</i>								r		
Willow sp.	<i>Salix</i> sp.			r	o			r			r
Herbs, Grasses and Ferns											
Black bryony	<i>Dioscorea communis</i>	o		lf			r			r	
Bracken	<i>Pteridium aquilinum</i>								r	f	o
Bramble	<i>Rubus fruticosus</i> agg.	o	f	f	f	f	o	f	o	f	f
Broad-leaved dock	<i>Rumex obtusifolius</i>		o	o	f	o	o	o	o		r
Broad-leaved willowherb	<i>Epilobium montanum</i>			r	r		f	r	o	o	
Cat's ear	<i>Hypochaeris radicata</i>										
Cleavers	<i>Galium aparine</i>	f	o	f	a	f	o	a	o	f	f
Cock's-foot	<i>Dactylis glomerata</i>	f			r		o	f	p	o	
Common chickweed	<i>Stellaria media</i>	r			r		r		o	o	
Common couch	<i>Elytrigia repens</i>										o
Common mouse-ear	<i>Cerastium fontanum</i>	o					r		o	o	
Common nettle	<i>Urtica dioica</i>	o	o				o		o	r	
Common ragwort	<i>Senecio jacobaea</i>	r									
Common sorrel	<i>Rumex acetosa</i>				r						
Cow parsley	<i>Anthriscus sylvestris</i>	f	f	o	f	f	o	o	f	f	o
Creeping bent	<i>Agrostis stolonifera</i>				o			a			
Creeping buttercup	<i>Ranunculus repens</i>	r				r			r		
Creeping soft-grass	<i>Holcus mollis</i>	o			o			a		f	
Creeping thistle	<i>Cirsium arvense</i>									r	

English Name	Scientific Name	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10
Dandelion	<i>Taraxacum officinale</i> agg.	r								r	
False oat-grass	<i>Arrhenatherum elatius</i>	r									r
Field bindweed	<i>Convolvulus arvensis</i>	r									
Foxglove	<i>Digitalis purpurea</i>			r	o	o		r		r	r
Germander speedwell	<i>Veronica chamaedrys</i>	r									
Great willowherb	<i>Epilobium hirsutum</i>			o			o				
Greater plantain	<i>Plantago major</i>	o				r					
Greater stitchwort	<i>Stellaria holostea</i>				o			lf			
Groundsel	<i>Senecio vulgaris</i>	r									r
Ground ivy	<i>Glechoma hederacea</i>	r									o
Hedge bedstraw	<i>Galium aparine</i>	f	o	f	f	o	o	o	f	f	o
Hedge garlic	<i>Alliaria petiolaris</i>	r		o						r	
Herb-Robert	<i>Geranium robertianum</i>	o					o			o	r
Hogweed	<i>Heracleum sphondylium</i>	o								o	
Ivy	<i>Hedera helix</i>	o	f	o	o	o	r	r	o	o	o
Lesser celandine	<i>Ficaria verna</i>								o	o	
Lords-and-ladies	<i>Arum maculatum</i>			o	r		r	o		o	r
Male-fern	<i>Dryopteris filix-mas</i>			r							
Meadow foxtail	<i>Alopecurus pratensis</i>	r							r		
Primrose	<i>Primula veris</i>			r				r			
Red fescue	<i>Festuca rubra</i>				r						
Teasel	<i>Dipsacus fullonum</i>				r			r			r
Upright hedge parsley	<i>Torilis japonica</i>	o				o					
Wood anemone	<i>Anemone nemorosa</i>					r			r		
Woods avens	<i>Geum urbanum</i>	r		o	o		f	o		r	r
Wood sage	<i>Teucrium scorodonia</i>				r						
Yorkshire fog	<i>Holcus lanatus</i>	r			r			r		r	r

Key

d = dominant
 a = abundant
 f = frequent
 o = occasional
 r = rare
 l = locally
 (e) = edge

APPENDIX III

COFNOD Desk Study Data

(large dataset to be viewed digitally/separately)

APPENDIX IV

Hedgerow Regulations Survey Form

Project Code: AVTU01	Site Name: Llay, Wrexham		Date: 04/04/2016 and 02/06/2016		Surveyor/s: PF	Hedgerow Number: H4
<u>Hedge Structure</u>					Sketch of hedge to include location and measurement of gaps, location of all trees, highlighting those with bat potential or are considered to be veteran. Also show location of dead trees. All trees should be species coded. Mark on sketch direction of photos and indicate which ends of hedgerows are north, south, east and west. Provide as much information as possible so that some one else can interpret your diagram and descriptions.	
Average Height	0.1-1m	1.1-2m	2.1-4m ✓	4.1m +		
Average width at base	0.1-1m	1.1-2m	2.1-4m ✓	4.1m +		
Integrity	Stock proof	leggy	gaps ✓			
Fenced	No fence ✓	At side	In middle			
<u>Management</u>						
Describe management, please state if whole or only part of hedge is managed Is management recent (under 2yrs) or old (2-10yrs)						
Unmanaged	Some trimming of width in last 2 years Appears to be 5 years+ re topping					
Coppice						
Trim top, (flat top)						
Face up sides (A shape)						
Has hedge been laid?						
Other						
<u>Adjacent land use</u>					Within this space please list all faunal species observed (badgers, rabbits, brown hare, birds, butterflies). If a badger sett is located please show location on your sketch, classify as main, annex, subsidiary or outlier and define status. Please also note if birds are nesting in hedgerow. Think about trees with bat potential, sketch on map, describe below. The idea is to provide as much information as possible of the hedgerows value to support faunal species.	
Brief description of land use, arable, residential, woodland etc but state which side ie N, S, W or E. Improved grassland – silage						
<u>Hedgerow trees</u>						
Species	Mature	Semi -mature	Pollarded	Senescent/ dying		
Oak	✓					
Willow	✓					
Spruce		✓				
Holly		✓				
Are there any veteran trees? If so how many and what species :						

5 trees with bat potential – subject to emergence surveys

Penny Anderson
Associates Ltd
CONSULTANT ECOLOGISTS



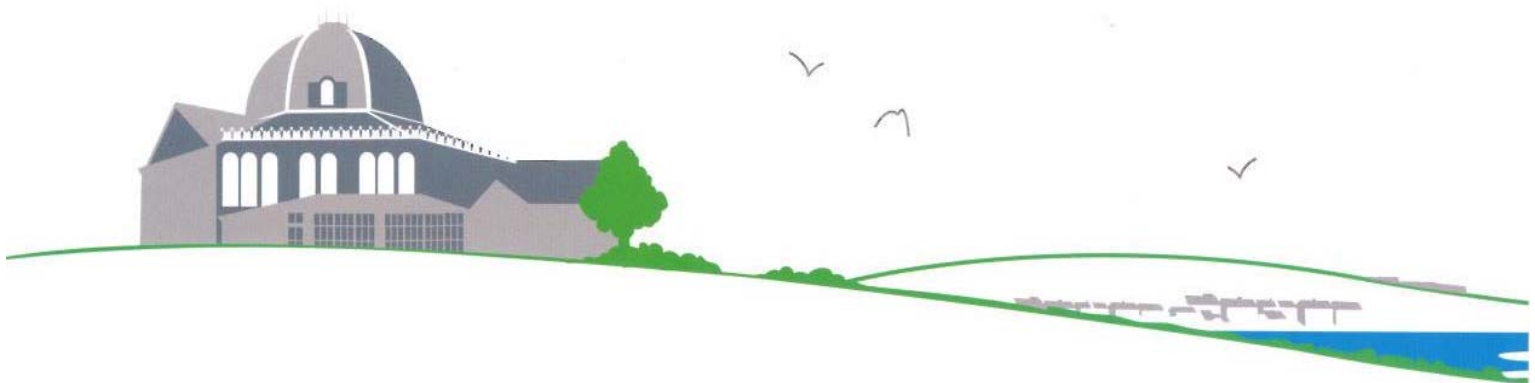
Park Lea, 60 Park Road, Buxton, Derbyshire SK17 6SN

Appendix III

**Penny Anderson Associates Ltd, 2016b
Aviagen Turkeys Ltd, Land at Llay, Wrexham. Great
Crested Newt Report**



AVIAGEN TURKEYS LTD
LAND AT LLAY, WREXHAM
GREAT CRESTED NEWT REPORT



AVIAGEN TURKEYS LTD

LAND AT LLAY, WREXHAM

GREAT CRESTED NEWT REPORT

Penny Anderson Associates Limited
'Park Lea'
60 Park Road
Buxton
Derbyshire
SK17 6SN

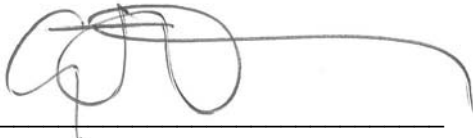
Project Manager
Peter Worrall Bed (Hons), MSc, MCIWEM, MIWA, CSci, CEnv

Author
Paul Fisher, BSc (Hons), MCIEEM

June 2016

This project has been undertaken in accordance with PAA policies and procedures on quality assurance.

Signed: _____



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APPENDICES

I	Summary of the Legislation relating to Great Crested Newts
II	Full Survey Results

1. INTRODUCTION

- 1.1 Penny Anderson Associates Limited (PAA) was commissioned on 21st April by Aviagen Turkeys Ltd to undertake an amphibian survey of ponds within 300m of the Application Site on land at Llay, Wrexham (Grid ref. SJ327570), hereafter referred to as the 'site', in support of the conversion of arable land north of the village of Llay, near Wrexham to a new turkey farm comprising six new poultry sheds, landscaping proposals and a SuDS.
- 1.2 There are no ponds on or immediately adjacent to the site. However, a number of ponds were identified within 500m of the application site. Figure 1 identifies those ponds known to occur within 500m of the site and those within 300m that were selected for survey (the criteria for selection is described in paragraph 2.24 and 2.25)
- 1.3 Aviagen Turkeys Ltd drawing 'Outline Landscaping Proposals' ALLP 1502-R4 (Figure 2 of this report) provides an description of the outline proposal for the site, which presently comprises an area of approximately 6.44ha of improved agricultural grassland enclosed by hedgerows and ditches (Figure 3). The proposed development would result in the loss of 1.52ha of improved grassland and a 100m section of hedgerow.

Summary of Legislation Relating to Great Crested Newts

- 1.4 Great crested (or warty) newts (*Triturus cristatus*) are protected under various legislation including the Countryside and Rights of Way (CROW) Act 2000, Wildlife and Countryside Act (WCA) 1981 (as amended) and the Conservation of Habitats and Species Regulations 2010. A summary of the legislation and planning policy guidance as it relates to GCN is provided in Appendix I.

2. DESK STUDY AND FIELD SURVEY METHODOLOGY

Desk Study

- 2.1 A request was made to The North Wales Environmental Information Service COFNOD, the organisation that holds biological records for protected species for North Wales, to provide records of great crested newts (GCN) within a 2km radius of the site.

Habitat Suitability Index

- 2.2 Waterbodies were assessed for their potential to support GCN (where access/ownership was established), using the GCN Habitat Suitability Index (HSI) (Oldham *et al.* 2000).
- 2.3 The HSI score is calculated by allocating scores to a range of factors that reflect the potential suitability of a waterbody to support GCN. These include the geographical location of the waterbody, the number of waterbodies within 1km, surface area and permanence, biological water quality, shading, presence of fish and birds, coverage of macrophytes and the suitability of surrounding terrestrial habitat. The resulting HSI score cannot be used to confirm the presence of GCN, and it should not be used as a substitute for a full survey where one is needed. However, the score ranges from 0 (completely unsuitable) to 1 (highly suitable) and represents a useful tool when considering the potential of a site to support GCN, and the need for further more detailed investigation.
- 2.4 Oldham *et al.* (2000) has related the HSI to the probability that a particular waterbody will support GCN, and Brady (2006) expressed qualitatively the suitability of different categories of HSI score (Table 1).

Table 1 GCN Habitat Suitability Index Categories and Likelihood of GCN Presence (after Oldham *et al.* 2000 and Brady 2006)

HSI Scores	% of Waterbodies Found to Support GCN
<0.5 = poor	3
0.5 – 0.59 = below average	20
0.6 – 0.69 = average	55
0.7 – 0.79 = good	79
> 0.8 = excellent	93

Great Crested Newt Survey

- 2.5 The surveys followed the recommended approach and methods outlined in the Great Crested Newt Mitigation Guidelines (English Nature 2001). Surveys were carried out by licensed surveyors Peter Tattersfield (Licence number 55881:OTH:SA:2014) and Paul Fisher (Licence number 71854:OTH:SA:2016) and assisted by Kate Reed (accredited to Licence No 71854:OTH:SA:2016). Each surveyor was assisted by a second person for health and safety reasons.
- 2.6 The survey dates and weather conditions are provided in Table 2 below. Whenever possible, surveys were carried out during suitable weather conditions, specifically avoiding periods of heavy rain, strong winds and night time temperatures below 5°C (English Nature 2001).

Table 2 Survey Dates and Weather Conditions

Survey Number	Date (Evening and Morning)	Weather Conditions
1	3rd and 4th May 2016	12°C overnight minimum temperature, mild, dry
2	13th and 14th May 2016	6°C overnight minimum temperature - dry, cool
3	15th and 16th May 2016	7°C overnight minimum temperature, dry, cool
4	26th and 27th May 2016	15°C overnight minimum temperature, dry and breezy
5	1st and 2nd June 2016	15°C overnight minimum temperature, clear warm night
6	6th and 7th June 2016	14°C overnight minimum dry, warm, overcast

2.7 Three of the following four standard methods (described in detail below) were employed on each survey date:

- torchlight surveys;
- bottle trapping;
- egg searching; and
- netting.

Torchlight Counts

2.8 This involves searching for GCN at night by shining a high-powered 1,000,000 candle-power torch into the waterbody margins. The perimeter of each waterbody was slowly walked and the water and bank scanned for GCN and other amphibians, all of which were identified (species and sex) and recorded.

2.9 A tally is made of the total number of amphibians observed during a circuit of the pond (Gent and Gibson 1998). It should be noted that this method is less effective in turbid or densely vegetated or otherwise obscured waterbodies.

Bottle Trapping

2.10 On each visit, bottle traps were set at approximately 2m intervals around the waterbody peripheries. Bottles were left overnight, checked in accordance with the 2001 English Nature (now Natural England) guidelines and removed early the following morning. Any trapped animals were identified and subsequently carefully released.

Egg Searching

- 2.11 All species of newt lay their eggs individually on submerged or floating water plants. During each visit, GCN eggs were searched for on submerged and floating aquatic vegetation in each pond. This method is considered to be effective at detecting GCN (Gent and Gibson 1998) and is used to confirm breeding within ponds.
- 2.12 Although useful in establishing the presence of breeding newts, this method cannot be used to give a population estimate (Gent and Gibson 1998). It is undesirable to survey intensively using this method, as once the leaves have been unfolded, the egg becomes much more vulnerable to predation or can more easily become dislodged. Therefore, egg searching was stopped upon confirmation of the presence of GCN eggs as breeding was confirmed. However, eggs were recorded upon each subsequent visit if observed.

Netting

- 2.13 A long-handled dip-net was used to sample waterbody margins for GCN, with at least 15 minutes of netting per 50m of shoreline. Netting is a less effective method of detecting adult GCN presence than bottle trapping, torch survey or egg searching, but it is nonetheless still a useful technique. Indeed, netting is often useful for finding newt larvae during late summer. Results from netting are normally only useful for indicating presence/absence of GCN (English Nature 2001) and cannot be used in population estimates.

Population Estimates

- 2.14 Amphibian populations are categorised according to size by taking the maximum adult count for a pond in one night, obtained by either torchlight survey or bottle trapping (whichever yields the highest results). This is the method advocated by English Nature (2001). The populations can then be classed as follows:
- 'Small' for maximum counts per night up to ten;
 - 'Medium' for maximum counts per night between 11 and 100; and
 - 'Large' for maximum counts per night over 100.
- 2.15 It must be noted that it is not possible to estimate the actual size of a GCN population, therefore, the above classifications have been used to give an approximate indication of the population size class.

Survey Limitations

- 2.16 Figure 1 identifies pond locations and their numbers. Survey limitations affected three ponds.

Pond 2

- 2.17 Pond 2 is known as Llay Reservoir and is managed by Llay Angling Club. Despite obtaining two telephone numbers and an e-mail address for the club, both numbers were unobtainable and no response was received via e-mail. It was not possible, therefore, to obtain permission to place bottle traps.

- 2.18 The pond was subject to torch survey only - this was undertaken on 5 of the 6 survey visits.
- 2.19 As this pond is heavily stocked with fish it is considered unlikely that this is a constraint to the assessment of the ponds function with regard to GCN.

Pond 3

- 2.20 Ownership of Pond 3 was not established. It was advised that the pond was on land under the management of Llay Industrial Estate. However, discussion with Peter Shackleton of Prospect Estates Ltd, who manage the estate, established that this was incorrect. The pond sits within a chain-link fence with padlocked gates, beyond which is another chain-link fence and, therefore, access was not possible without permission.

Pond 4

- 2.21 Pond 4 is situated within grazing pasture. On visits 3, 4 and 5 a herd of young bulls occupied the field. Surveyors went ahead with the full survey on visit 3. However, the bulls were distressed by their presence and were aggressive. The following morning bottle traps had been pulled out by the bulls and chewed, with some bottles free floating in the pond. It was decided that the survey of this pond would not continue whilst bulls were present and aggressive, and where there was the potential for animal welfare issues, i.e. bottle traps sinking to the bottom of the pond with animals in them. The bulls were present on visits 4 and 5 and torching and netting were undertaken on these visits but not bottle trapping. The bulls were gone on visit 6 and the full survey methodology was applied.
- 2.22 It is considered, however, that sufficient survey data was obtained to ensure a robust assessment of Pond 4.
- 2.23 Despite these limitations it is considered that with the exception of P3 the survey results adequately reflect the likely population size of GCN within the surveyed ponds and are, therefore, suitable for assessment of the application.

Ponds Selected for Survey - Rationale

- 2.24 Those ponds selected for survey are identified on Figure 1 (dark blue numbered ponds 1 to 5). The remaining ponds (un-numbered and light blue) were deselected from survey due to their distance from the application site (over 300m), combined with the intervening land use of intensively managed improved grassland and the lack of a pond or high quality habitat features within the site that would draw animals specifically to it.
- 2.25 Whilst the wider landscape is well connected with the site by hedgerows, the distances involved in using these networks and the addition of an intervening road (Rackerry Lane) as well as the current land use, would also reduce the likelihood that GCN would be using the site intensively.

3. BASELINE CONDITIONS - DESK STUDY AND FIELD SURVEY RESULTS

Desk Study

- 3.1 Thirteen GCN records within the search area have been provided from 1988 to 2007. The closest record is at a pond 300m from the site boundary.
- 3.2 Figure 1 identifies the location and age of the most relevant records provided by COFNOD.

Pond Descriptions

Pond 1

- 3.3 Pond 1 is a small pond within an improved field. The entire perimeter is lined with trees and scrub, some of which extends into the pond. There were no submerged or emergent aquatic plants visible. The water is of poor quality, having a slightly milky quality.

Pond 2

- 3.4 Pond 2 is known as Llay Reservoir and is a medium sized waterbody. The entire perimeter is ringed by trees, set c.10m from the waters' edge. There is a thin ring of marginal plants for the majority of the perimeter and some patches of water lily.
- 3.5 It is heavily stocked with fish and owned/tenanted by Llay Angling Club. The water is turbid, probably the result of high carp numbers that forage on the bottom causing sediment disturbance and discolouration of the water column.

Pond 3

- 3.6 Pond 3 is located within what appears to be a derelict agricultural field on the south side of Rackerry Lane and c.100m from the southern boundary of the site.
- 3.7 It was not possible to access Pond 3. However, observation from c.60m and review of aerial photography indicate that the pond is present. It is ringed by dense trees and scrub with a small opening in the canopy above the centre of the pond.

Pond 4

- 3.8 Pond 4 sits within an improved field. It is partially surrounded by trees (c.60%) but is open on the southern side. This southern side supports submerged macrophytes including a *Callitriche* species and emergent species such as water forget-me-not (*Myosotis scorpioides*) and water mint (*Mentha aquatica*).
- 3.9 Water quality appeared to be good and visibility was possible to a depth of c.70cm.
- 3.10 The southern open margin is also used by low numbers of cattle to drink and there is evidence of poaching and damage at the waters' edge.

Pond 5

- 3.11 Pond 5 is an extensive pond set in a depression within woodland. It is approximately 150m long and 100m wide at its widest. Water levels appeared high throughout the survey period with some indication of a fall in levels during visits 5 and 6. Scrub extends some 30m into the waterbody.
- 3.12 Despite heavy shading there are some areas with submerged and emergent aquatic species, including sparsely distributed water forget-me-not, gipsywort (*Lycopus europaeus*) and bittersweet (*Solanum dulcamara*).

Habitat Suitability Index

- 3.13 The HSI scores and associated suitability to support GCN are presented in Table 3.

Table 3 Habitat Suitability Index Scores

Pond Number	Index Score	Suitability for Supporting Breeding GCN	GCN Presence
1	0.55	Below Average	No
2	0.25	Poor	Unlikely
3	No Access	No Access	No Access
4	0.80	Excellent	Yes
5	0.69	Average	Yes

Amphibian Field Survey

- 3.14 Table 4 below summarises the results of the surveys, providing maximum counts for GCN and smooth newts for any one survey technique in either adult or larval form. Full results are provided in Appendix II.

Table 4 Peak Amphibian Counts

Pond	Maximum Count (Adult)		Presence	
	GCN	Smooth Newt	Frog	Toad
1	0	7	Y (Larvae)	0
2	0	0	0	0
3	N/A	N/A	N/A	N/A
4	10 (Torch)	8	0	0
5	27 (Torch)	4	Y (Larvae)	Y (Larvae)

- 3.15 GCN were recorded in Ponds 4 and 5 during each survey visit. GCN eggs were also observed at both of the ponds, confirming breeding.
- 3.16 Pond 4 returned a peak count of ten GCN observed whilst torching on 26th May indicating a 'Small' population of GCN. Pond 4 HSI score of 0.80 indicates 'Excellent' suitability for GCN.
- 3.17 Pond 5 returned a peak count of 27 GCN observed whilst torching on 3rd May 2016 indicating a 'Medium' population of GCN. Pond 5 scored a HSI of 0.69 indicating 'Average' suitability for GCN.
- 3.18 Ponds 4 and 5 are 350m apart, with Rackerry Lane between them. The land use between the 2 ponds is improved grassland. Whilst there are hedgerows that link the two ponds, GCN would have to cross Rackerry Lane and travel c.500m via the hedgerow network to travel between ponds. It is, therefore, considered that these two ponds do not form a cluster (see English Nature 2001).

Other Amphibian Species

Smooth Newt

- 3.19 Small populations of smooth newt (*Lissotriton vulgaris*) were recorded in Ponds 1, 4 and 5, with peak counts respectively of seven, eight and nine.

Common Frog

- 3.20 Small numbers of larvae of common frog (*Rana temporaria*) were recorded in Ponds 1 and 5. It is likely that many frog larvae had metamorphosed and left the ponds as they generally breed earlier than newt species.

Common Toad

- 3.21 Small numbers of larvae of common toad (*Bufo bufo*) were recorded in Pond 5. It is likely that many toad larvae had metamorphosed and left the ponds as they generally breed earlier than newt species.

4. POTENTIAL ECOLOGICAL EFFECTS OF THE DEVELOPMENT

- 4.1 The following activities and operations are identified that could result in effects on any GCN using the site, or have legal consequences.

Site Clearance and Construction Impacts

- 4.2 GCN are unlikely to be present in the habitats on the application site in high numbers. However, it is possible that GCN are present on the site as field survey and desk study identify historical and contemporary populations of GCN around the site, albeit at distances of over 250m.
- 4.3 Without being able to survey Pond 3 it is not possible to be definitive regarding the presence of GCN. It is considered prudent in the absence of survey data to assume that they are present and, therefore in such proximity that they could occur on site and be harmed by site clearance.
- 4.4 Clearance of hedgerow H4 and associated micro-habitats within the field margin and ditch has the potential to result in harm to individual newts, and the loss of GCN sheltering and hibernation sites.
- 4.5 Clearance of 1.52ha of improved, sown grassland to house the poultry sheds and associated infrastructure has the potential to result in harm to individual newts. However, given the nature and quality of the habitat this is considered to be a low risk activity.
- 4.6 Unless adequately mitigated and permitted via a statutory licence (as explained in para. 5.5), the clearance of these areas would potentially result in an infringement of the legislation (see Appendix I).

Indirect Effects

Great Crested Newt

- 4.7 The development would result in the loss of 1.52ha of low quality distant terrestrial habitat. However, since the wider landscape is of the same character and more suitable habitat is present immediately around the ponds surveyed, this loss is unlikely to have a long-term significant impact on the GCN populations associated with either P4 or P5 and potentially P3.
- 4.8 The completed development would represent an obstacle to GCN dispersal across the site because newts are less able to disperse across hardstanding and sealed surfaces.

Operational Impacts

Great Crested Newts and Surface Water Drainage Infrastructure

- 4.9 Traditional open grates and gully pots have the capacity to trap GCN, especially when associated with high kerbing that may guide dispersing GCN towards open grates. Consequently, the use of such drainage systems is likely to result in GCN mortality.

5. MITIGATION MEASURES FOR GREAT CRESTED NEWT AND OTHER AMPHIBIANS

- 5.1 GCN, smooth newt, common frog and common toad were identified during the surveys and evidence of breeding by all of them was confirmed in ponds within 300m of the application site. It is possible that all these species utilise terrestrial habitats on the site.
- 5.2 There are no waterbodies within the site boundary. Ponds P4 and P5, which are c.300m and 250m from the site respectively, support 'Small' and 'Medium' GCN populations respectively.
- 5.3 Because there are no ponds on site, the large distances involved between the site and known breeding ponds and the low quality habitat that characterises most of the site, it is recommended that discussions with Natural Resources Wales are initiated to discuss and agree a realistic and appropriate level of mitigation to address the predicted low level impacts upon GCN.
- 5.4 A detailed mitigation scheme will need to be implemented under the provisions of a statutory Natural Resources Wales licence prior to the commencement of development. Para. 5.5 is taken from Natural Resource Wales publication 'Information to be provided in a European Protected Species licence application'.
- 5.5 *'Natural Resources Wales (NRW), in exercise of the powers conferred under regulation 53(1) and 56(3) (a) of the Conservation of Habitats and Species Regulations 2010, may issue licences for the following purposes:*
- ***Preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment;***
 - *Preventing the spread of disease;*
 - ***Preventing serious damage to livestock, foodstuffs for livestock, crops, vegetables, fruit, growing timber or any other form of property or to fisheries; to allow people to carry out activities which would otherwise be illegal'***
- 5.6 In order for Natural Resources Wales to issue the licence, they will need to be satisfied that the mitigation proposals are sufficient to ensure that the consequences of the development will not be detrimental to the maintenance of the population of GCN at a favourable conservation status in its natural range (Regulation 53(9)(b) Conservation of Habitats and Species Regulations 2010). As a result, this process provides a mechanism to ensure that potential impacts on GCN are satisfactorily mitigated, and that the development proceeds lawfully.
- 5.7 In summary, the mitigation measures need to address each of the identified impacts on GCN, and they will ensure:
- That mitigation measures will follow relevant advice and best practise guidance, for example, that published on NRW website (<https://naturalresources.wales>) and English Nature (2001) (or any subsequent advice), and be presented in full in a detailed Method Statement.

- The provision of a prescriptive and detailed working Method Statement and toolbox talk will guide works and ensure that all reasonable measures are taken to avoid committing an offence with regard to GCN and their welfare and maintenance of a favourable population status.
- The removal of GCN from the development area and their translocation to a suitable receptor site. This will involve pitfall trapping, hand searching and other methods as appropriate.
- The exclusion of GCN from the development area during construction, using amphibian fencing.
- The provision of mitigatory terrestrial habitats in the remaining 4.92ha of the site to replace those lost on the development. This may involve the creation of new habitats (e.g. artificial amphibian hibernacula and/or hedgerows and tree planting) and/or the enhancement of existing habitat or habitat features.
- Any additional necessary measures to ensure that the operation of the development does not have adverse effects on the local conservation status of GCN. This might include design measures to reduce the effects of surface water drainage infrastructure. For example, a 'Wildlife Kerb' can be used adjacent to roadside gulley pots to prevent entrapment/drowning of GCN and other amphibians. This will facilitate the wider dispersal of GCN.
- Habitat management and maintenance measures of the mitigation planting on site and on the receptor site, if required.

6. RESIDUAL EFFECTS, ENHANCEMENT MEASURES AND CONCLUSIONS

- 6.1 The implementation of the Method Statement associated with a statutory licence would ensure that there would be no adverse residual impacts on GCN. This is because the licensing process must ensure that the conservation status of the local GCN population is maintained in a favourable condition.

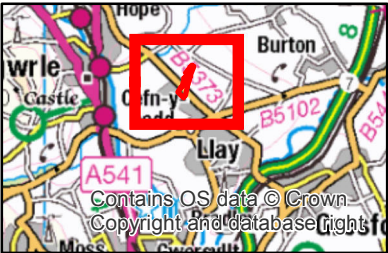
Summary

- 6.2 The ecological assessment presented in this report, and the recommended mitigation and enhancement measures, demonstrate that the development could be constructed and operated in such a way as to meet the requirements of both local and national policy on nature conservation and biodiversity.
- 6.3 The surveys undertaken have confirmed that there is the potential for impacts of material relevance on GCN. Mitigation measures are recommended that would ensure that the local conservation status of this species is not compromised, and that the development would not result in any infringement of wildlife legislation, thus also complying with local plan policy, the National Planning Policy Framework. In terms of planning policy, the development proposals would not result in significant adverse impacts on GCN, and the predicted negative effects can be mitigated or compensated (for example, by replacing lost GCN terrestrial habitats).

7. REFERENCES

- Brady, L., 2006. *How many great crested newt ponds are there in Kent?* ARC UK Herpetofauna Workers' meeting 4th February 2006.
- English Nature, 2001. *Great Crested Newt Mitigation Guidelines*. English Nature.
- Gent, T., and Gibson, S., 1998. *Herpetofauna Workers' Manual*. Joint Nature Conservation Committee.
- Oldham, R.S., Keeble, J., Swan, M.J.S., and Jeffcote, M., 2000. Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*). *Herpetological Journal*, **10**(4), 143-155.

FIGURES



Legend

- Application site boundary
- Ditches
- Ponds selected for survey
- Ponds and waterbodies
- Streams and rivers
- 500m buffer of site
- Great Crested Newt record
- 250m buffer of site

British National Grid
Projection: Transverse Mercator
False Easting: 400000.000000
False Northing: 100000.000000
Central Meridian: 2.000000
Scale Factor: 0.999601
Latitude Of Origin: 49.000000

ISO A3

Metres

0 25 50 100 150

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Project Name
Llay Turkey Farm

Discipline
Ecology

Title
**SITE OVERVIEW
AND GCN OVERVIEW**

Scale 1:6,250	Drawing No. Figure 1	
Drawn By CC/JL	Originator AB/PF	Date 14/06/2016
PAA Ref: G:\AVTU01_Llay_Turkey_Farm\Maps GCN_report		Revision 1.1



Fig. 2 Site Plan Outline Landscaping Proposals

Do not scale from this drawing.
Verify all dimensions on site before commencing work. Any discrepancies should be reported without delay to Chris Burnett Associates.

Date	Details	Revision
30/05/16	Minor amendments.	-04

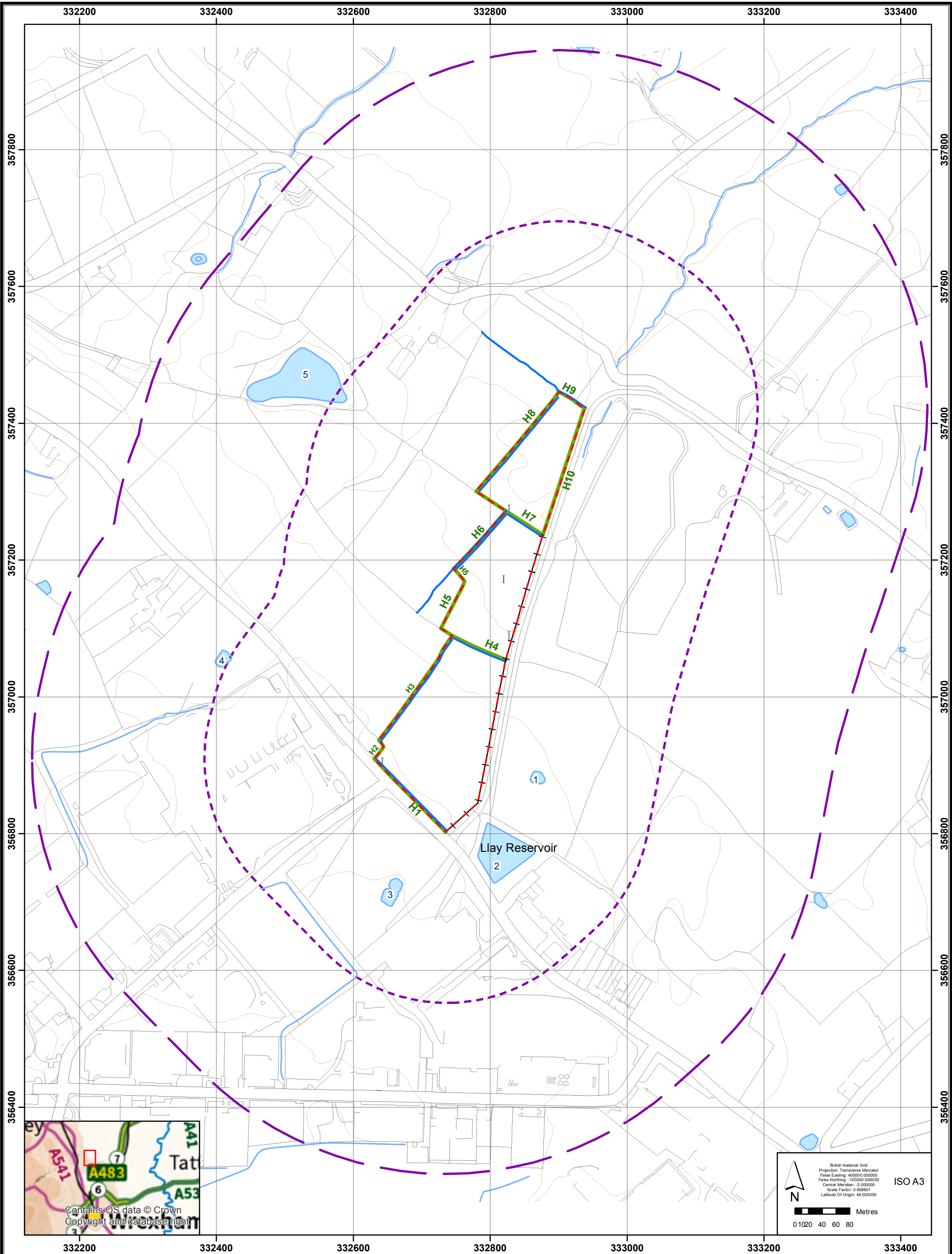
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Client	Aviagen		
Project	Turkey Facility Llay: Landscape & Visual Impact Assessment.		
Scale	1:1,000 @ A1 (section A-A' 1:500)		
Date	Drawn	Checked	
30/05/16	JHD	CB	
Dwg No.	ALLP15.02		Revision
			-04



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- Application site boundary
- Improved grassland (B4)
- Ponds and waterbodies
- Streams and rivers
- Ditch (G1)
- Native species-rich hedge with trees (J2.3.1)
- Post and wire fence (J2.4)
- Site buffer 250m
- 500m buffer of site

Title: **Extended Phase 1
Habitat Survey,
land at Llay, Wrexham**

Project Name: **Llay Turkey Farm**

Discipline Ecology			
Scale 1:5,000		Drawing No. Figure 3	
Drawn By JL	Originator PF		Date 14/06/2016
PAA Ref. G:\V\TU01_Llay_Turkey_Farm\ Maps\GCN_report			Revision 1.0

APPENDICES

APPENDIX I

Summary of the Legislation relating to Great Crested Newts

SUMMARY OF THE LEGISLATION RELATING TO GREAT CRESTED NEWTS (GCN)

Great crested (or warty) newts (*Triturus cristatus*) (GCN) are protected under the Wildlife and Countryside Act (WCA) 1981, which has been also amended by various legislation including the Countryside and Rights of Way (CROW) Act 2000 and the Conservation of Habitats and Species Regulations 2010, and this legislation is applicable to England and Wales. Great crested newts are listed on Schedule 5 of the WCA and are therefore subject to some the provisions of Section 9 which, with the amendments, make it an offence to:

- Intentionally or recklessly disturb a GCN while it is occupying a structure or place which it uses for shelter or protection (S9:4b).
- Intentionally or recklessly obstruct access to any structure or place used for shelter or protection by a GCN (S9:4c).

There are additional offences in relation to buying and selling (S9:5) any live or dead animal of this species or anything derived from them.

Great crested newts are also listed under Annexes IIa and IVa of EC Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora, also known as the 'Habitats Directive'. Inclusion on Annex IVa means they are consequently identified as European Protected Species (EPS) and protected under the Conservation of Habitats and Species Regulations 2010¹. The Conservation of Habitats and Species Regulations 2010 state that a person commits an offence if they:

- (a) deliberately capture, injure or kill any wild animal of a European protected species,
- (b) deliberately disturb wild animals of any such species, in such a way as –
 - (i) to impair their ability to survive, to breed or reproduce, or to rear their young, or
 - (ii) in the case of animals of a hibernating or migratory species, to hibernate or migrate, or
 - (iii) to affect significantly the local distribution or abundance of the species to which they belong;
- (c) deliberately take or destroy the eggs of such an animal, or
- (d) damage or destroy a breeding site or resting place of such an animal.

Under these Regulations it is an offence to damage or destroy a breeding site or resting place, whether the animal is in occupation or not, and protection extends to all life stages of the animal in question. There are additional offences relating to possession, control and sale of a live or dead GCN or part of such an animal.

In addition, GCN are listed as a 'Priority Species' under the under the 2011 biodiversity strategy for England, *Biodiversity 2020: A strategy for England's wildlife and ecosystem services*, under the 2012 UK Post-2010 UK Biodiversity Framework. These Priority Species are also referred to as 'species of principal importance' for the conservation of biodiversity. These Priority Species are also referred to as 'species of principal importance' for the conservation of biodiversity in England and Wales within Section 74 of the CROW Act 2000, and Sections 41 (England) and 42 (Wales) of the Natural Environment and Rural Communities (NERC) Act 2006. Section 11 of the National Planning Policy Framework (NPPF) states that the planning system should contribute to and enhance the natural and local environment by minimising impacts on biodiversity and providing net gains in biodiversity where possible. The NPPF also includes the requirement to contribute to the Government's commitment to halt the overall decline in biodiversity and to promote the reservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species populations, linked to national and local targets. Reference is made to Circular 06/2005 *Biodiversity and Geological Conservation - Statutory*

¹ These regulations have been slightly amended by The Conservation of Habitats and Species Regulations 2012

Obligations and Their Impact within the Planning System in respect of statutory obligations for biodiversity and geodiversity conservation.

Local authorities in England are required to ensure that where significant harm resulting from development cannot be avoided (through locating on alternative sites with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, planning permission is refused. The commitment to preserving, restoring or enhancing biodiversity is further emphasised for England and Wales in Section 40 of the NERC Act 2006.

Please note: the above text provides a brief summary of the legislation in relation to GCN for England and Wales and the original Acts, Regulations and any amendments should be referred to for the precise wording.

APPENDIX II

Full Survey Results

Site Name: Llay				Job No. AVTU01.1		Surveyor(s): Peter Tattersfield & Paul Fish				* Turbidity 0 - 5:		3	
Date: 3-4 May 2016		Pond/Cluster No.: 1		No. of traps: 25		Visit: <u>1</u> 2 3 4 5 6				** Veg cover 0 - 5:		0	
Weather & o/n temp: Mild, breezy 12 degrees				Pond shape/circumf.: Round - c.55m circumference				*** % shore shaded:		100			
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.													
Method used	Torch				Bottle				Net				Egg search
	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	
GCN	0	0	0	0	0	0	0	0					None observed
Smooth	1	1	0	0	0	0	0	0					
<i>Undetermined smooth / palmate newt ?</i>	0	0	0	0									
Palmate	0	0	0	0	0	0	0	0					
Frog	0		0	0	0		0	0					
Toad	0		0	0	0		0	0					
Species										H S I DONE ?		Y	
Fish													
Waterfowl													
Noteworthy species				Invasive species present ?				Constraints on survey effort ?					
Water shrew		LSWB		New Zealand Pygmyweed		%/m inaccessible shoreline / reason?							
Water vole		Predatory beetles		Azolla (water) fern		0							
Otter		Dragonfly larvae		Floating Pennywort		% shoreline not trappable due to water depth?							
Mink				Least duckweed		0							
Crayfish				Parrot's Feather		Other constraints ?							
Grass snake				Japanese knotweed		No							
				Himalayan balsam		Might waterbody dry out <u>this</u> summer?							
						No							



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* Turbidity: 0=completely clear 5=very turbid / **Veg cover: 0=no veg obscuring survey 5=water completely obscured by vegetation / ***Shading by trees/scrub

Site Name: Llay				Job No. AVTU01.1		Surveyor(s): Peter Tattersfield & Paul Fish				* Turbidity 0 - 5:		5	
Date: 3-4 May 2016		Pond/Cluster No.: 2		No. of traps: N/A		Visit: <u>1</u> 2 3 4 5 6				** Veg cover 0 - 5:		1	
Weather & o/n temp: Mild, breezy 12 degrees				Pond shape/circumf.:				*** % shore shaded:		30			
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.													
Method used	Torch				Bottle (No permission gained)				Net - (No permission gained)				Egg search
	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	
GCN	0	0	0	0									None found
Smooth	0	0	0	0									
Undetermined smooth / palmate newt ?	0	0	0	0									
Palmate	0	0	0	0									
Frog		0	0	0									
Toad		0	0	0									
Species										H S I DONE ?			
Fish													
Waterfowl													Y
Noteworthy species				Invasive species present ?				Constraints on survey effort ?					
Water shrew		LSWB		New Zealand Pygmyweed		% / m inaccessible shoreline / reason?							
Water vole		Predatory beetles		Azolla (water) fern		% shoreline not trappable due to water depth?							
Otter		Dragonfly larvae		Floating Pennywort		Other constraints ? Owner/manager uncontactable							
Mink				Least duckweed									
Crayfish				Parrot's Feather									
Grass snake				Japanese knotweed		Might waterbody dry out <u>this</u> summer?							
				Himalayan balsam									



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* Turbidity: 0=completely clear 5=very turbid / **Veg cover: 0=no veg obscuring survey 5=water completely obscured by vegetation / ***Shading by trees/scrub

Site Name: Llay				Job No. AVTU01.1		Surveyor(s): Peter Tattersfield & Paul Fisi				* Turbidity 0 - 5:		2			
Date: 3-4 May 2016		Pond/Cluster No.: 4		No. of traps: 25			Visit: 1 2 3 4 5 6			** Veg cover 0 - 5:		2			
Weather & o/n temp: Mild, breezy 12 degrees				Pond shape/circumf.:				*** % shore shaded:		60					
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.															
Method used		Torch				Bottle				Net				Egg search	
		MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae		
GCN		3	4(3)	0	0	4	3(1)	0	0					Yes	
Smooth		0	0	0	0	1	0	0	0						
Undetermined smooth / palmate newt ?		0	0	0	0			0	0						
Palmate		0	0	0	0	0	0	0	0						
Frog		0		0	0	0		0	0						
Toad		0		0	0	0		0	0						
Fish		Species										H S I DONE ?		Y	
Waterfowl															
Noteworthy species				Invasive species present ?				Constraints on survey effort ?							
Water shrew		LSWB		New Zealand Pygmyweed		% / m inaccessible shoreline / reason?									
Water vole		Predatory beetles		Azolla (water) fern		% shoreline not trappable due to water depth?									
Otter		Dragonfly larvae		Floating Pennywort		Other constraints ?									
Mink				Least duckweed		Might waterbody dry out <u>this</u> summer?									
Crayfish				Parrot's Feather											
Grass snake				Japanese knotweed											
				Himalayan balsam											



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* Turbidity: 0=completely clear 5=very turbid / **Veg cover: 0=no veg obscuring survey 5=water completely obscured by vegetation / ***Shading by trees/scrub

Site Name: Llay				Job No. AVTU01.1		Surveyor(s): Peter Tattersfield & Paul Fisi				* Turbidity 0 - 5:		3			
Date: 3-4 May 2016		Pond/Cluster No.: 5		No. of traps: 50			Visit: <u>1</u> 2 3 4 5 6			** Veg cover 0 - 5:		1			
Weather & o/n temp: Mild, breezy 12 degrees				Pond shape/circumf.:				*** % shore shaded:		100					
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.															
Method used		Torch				Bottle				Net				Egg search	
		MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae		
GCN		18	9(6)	0	0	1	0	0	0					Yes	
Smooth		0	0	0	0	0	0	0	0						
Undetermined smooth / palmate newt ?		0	0	0	0			0	0						
Palmate		0	0	0	0	0	0	0	0						
Frog		0		0	0	0		0	0						
Toad		0		0	0	0		0	0						
Species										H S I DONE ?					
Fish															
Waterfowl												Y			
Noteworthy species				Invasive species present ?				Constraints on survey effort ?							
Water shrew		LSWB		New Zealand Pygmyweed		% / m inaccessible shoreline / reason?									
Water vole		Predatory beetles		Azolla (water) fern		30% Scrub									
Otter		Dragonfly larvae		Floating Pennywort		% shoreline not trappable due to water depth?									
Mink				Least duckweed		10%									
Crayfish				Parrot's Feather		Other constraints ?									
Grass snake				Japanese knotweed		Might waterbody dry out <u>this</u> summer?									
				Himalayan balsam		Probably not									



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* Turbidity: 0=completely clear 5=very turbid / **Veg cover: 0=no veg obscuring survey 5=water completely obscured by vegetation / ***Shading by trees/scrub

Site Name: Llay				Job No. AVTU01.1		Surveyor(s): PT & Kate Reed				* Turbidity 0 - 5:		3	
Date: 13-14 May 2016		Pond/Cluster No.: 1		No. of traps: 25			Visit: 1 <u>2</u> 3 4 5 6			** Veg cover 0 - 5:		0	
Weather & o/n temp: 6°C dry with light wind				Pond shape/circumf.:				*** % shore shaded:		100			
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.													
Method used	Torch				Bottle				Net				Egg search
	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	
GCN	0	0	0	0	0	0	0	0					None observed
Smooth	0	2	0	0	3	4	0	0					
<i>Undetermined smooth / palmate newt ?</i>	0	0	0	0			0	0					
Palmate	0	0	0	0	0	0	0	0					
Frog	0		0	0	0		0	0					
Toad	0		0	0	0		0	0					
Species										H S I DONE ?			
Fish													
Waterfowl													
Noteworthy species				Invasive species present ?				Constraints on survey effort ?					
Water shrew		LSWB		New Zealand Pygmyweed		% / m inaccessible shoreline / reason?							
Water vole		Predatory beetles		Azolla (water) fern		0%							
Otter		Dragonfly larvae		Floating Pennywort		% shoreline not trappable due to water depth?							
Mink				Least duckweed		0%							
Crayfish				Parrot's Feather		Other constraints ?							
Grass snake				Japanese knotweed		No							
				Himalayan balsam		Might waterbody dry out <u>this</u> summer?							
						No							



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* Turbidity: 0=completely clear 5=very turbid / **Veg cover: 0=no veg obscuring survey 5=water completely obscured by vegetation / ***Shading by trees/scrub

Site Name: Llay				Job No. AVTU01.1		Surveyor(s): PT & Kate Reed				* Turbidity 0 - 5:		5	
Date: 13-14 May 2016		Pond/Cluster No.: 2		No. of traps: N/A		Visit: 1 <u>2</u> 3 4 5 6				** Veg cover 0 - 5:		1	
Weather & o/n temp: 6°C dry with light wind				Pond shape/circumf.:				*** % shore shaded:		30			
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.													
Method used	Torch				Bottle - (No permission gained)				Net - (No permission gained)				Egg search
	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	
GCN	0	0	0	0									None observed
Smooth	0	0	0	0									
<i>Undetermined smooth / palmate newt ?</i>	0	0	0	0									
Palmate	0	0	0	0									
Frog	0		0	0									
Toad	0		0	0									
Species										H S I DONE ?			
Fish	Many large and small												
Waterfowl													
Noteworthy species				Invasive species present ?				Constraints on survey effort ?					
Water shrew		LSWB		New Zealand Pygmyweed		% / m inaccessible shoreline / reason?							
Water vole		Predatory beetles		Azolla (water) fern		% shoreline not trappable due to water depth?							
Otter		Dragonfly larvae		Floating Pennywort		Other constraints ?							
Mink				Least duckweed		Owner/manager uncontactable							
Crayfish				Parrot's Feather		Might waterbody dry out <u>this</u> summer?							
Grass snake				Japanese knotweed		No							
				Himalayan balsam									



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* Turbidity: 0=completely clear 5=very turbid / **Veg cover: 0=no veg obscuring survey 5=water completely obscured by vegetation / ***Shading by trees/scrub

Site Name: Llay				Job No. AVTU01.1		Surveyor(s): PT & Kate Reed				* Turbidity 0 - 5:		1			
Date: 13-14 May 2016		Pond/Cluster No.: 4		No. of traps: 25		Visit: 1 <u>2</u> 3 4 5 6				** Veg cover 0 - 5:		2			
Weather & o/n temp: 6°C dry with light wind				Pond shape/circumf.:				*** % shore shaded:		60					
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.															
Method used		Torch - aggressive bulls - not done				Bottle				Net - aggressive bulls - not done				Egg search	
		MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	Eggs observed	
GCN						3	0	1	0						
Smooth						0	8(5)	0	0						
Undetermined smooth / palmate newt ?								0	0						
Palmate						0	0	0	0						
Frog						0			0						
Toad						0			0						
Fish		Species								H S I DONE ?					
Waterfowl															
Noteworthy species				Invasive species present ?				Constraints on survey effort ?							
Water shrew		LSWB		New Zealand Pygmyweed		% / m inaccessible shoreline / reason?									
Water vole		Predatory beetles		Azolla (water) fern		% shoreline not trappable due to water depth?									
Otter		Dragonfly larvae		Floating Pennywort		Other constraints ?									
Mink				Least duckweed		Young bulls aggressive & knocked over bottles									
Crayfish				Parrot's Feather		Might waterbody dry out <u>this</u> summer?									
Grass snake				Japanese knotweed											
				Himalayan balsam											



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* Turbidity: 0=completely clear 5=very turbid / **Veg cover: 0=no veg obscuring survey 5=water completely obscured by vegetation / ***Shading by trees/scrub

Site Name: Llay				Job No. AVTU01.1		Surveyor(s): PT & Kate Reed				* Turbidity 0 - 5:		3			
Date: 13-14 May 2016		Pond/Cluster No.: 5		No. of traps: 50			Visit: 1 <u>2</u> 3 4 5 6			** Veg cover 0 - 5:		1			
Weather & o/n temp: 6°C dry with light wind				Pond shape/circumf.:				*** % shore shaded:		100					
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.															
Method used		Torch				Bottle				Net				Egg search	
		MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae		
GCN		10	12(8)	0	0	7	1	0	0	0	0	0	0		
Smooth		1	0	0	0	1	0	0	0	0	1	0	0		
Undetermined smooth / palmate newt ?		0	0	0	0			0	0			0	0		
Palmate		0	0	0	0	0	0	0	0	0	0	0	0		
Frog		0		0	0	0		0	0	0		0	0		
Toad		0		0	0	0		0	0	0		0	0		
Fish		Species								H S I DONE ?					
Waterfowl															
Noteworthy species				Invasive species present ?				Constraints on survey effort ?							
Water shrew		LSWB		New Zealand Pygmyweed		%/m inaccessible shoreline / reason?									
Water vole		Predatory beetles		Azolla (water) fern		% shoreline not trappable due to water depth?									
Otter		Dragonfly larvae		Floating Pennywort		Other constraints ?									
Mink				Least duckweed		Might waterbody dry out <u>this</u> summer?									
Crayfish				Parrot's Feather											
Grass snake				Japanese knotweed											
				Himalayan balsam											



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* Turbidity: 0=completely clear 5=very turbid / **Veg cover: 0=no veg obscuring survey 5=water completely obscured by vegetation / ***Shading by trees/scrub

Site Name: Llay				Job No. AVTU01.1		Surveyor(s): PT, CT				* Turbidity 0 - 5:		2	
Date: 15-16 May 2016		Pond/Cluster No.: 1		No. of traps: 25			Visit: 1 2 <u>3</u> 4 5 6			** Veg cover 0 - 5:		1	
Weather & o/n temp: 7°C min, clear, dry, light wind				Pond shape/circumf.:				*** % shore shaded:		95			
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.													
Method used	Torch				Bottle				Net				Egg search
	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	
GCN	0	0	0	0	0	0	0	0	0	0	0	0	
Smooth	0	1	0	0	0	0	0	0	0	0	0	0	
Undetermined smooth / palmate newt ?	0	0	0	0			0	0	0		0	0	
Palmate	0	0	0	0	0	0	0	0	0	0	0	0	
Frog	0		0	0	0		0	2	0		0	0	
Toad	0		0	0	0		0	0	0		0	0	
Species										H S I DONE ?			
Fish													
Waterfowl													
Noteworthy species				Invasive species present ?				Constraints on survey effort ?					
Water shrew		LSWB		New Zealand Pygmyweed		% / m inaccessible shoreline / reason?							
Water vole		Predatory beetles		Azolla (water) fern		% shoreline not trappable due to water depth?							
Otter		Dragonfly larvae		Floating Pennywort		Other constraints ? Floating leaves hinder torching							
Mink				Least duckweed									
Crayfish				Parrot's Feather									
Grass snake				Japanese knotweed		Might waterbody dry out <u>this</u> summer?							
				Himalayan balsam									



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* Turbidity: 0=completely clear 5=very turbid / **Veg cover: 0=no veg obscuring survey 5=water completely obscured by vegetation / ***Shading by trees/scrub

Site Name: Llay				Job No. AVTU01.1		Surveyor(s): PT, CT				* Turbidity 0 - 5:		2	
Date: 15-16 May 2016		Pond/Cluster No.: 4		No. of traps: 25		Visit: 1 2 <u>3</u> 4 5 6				** Veg cover 0 - 5:		3	
Weather & o/n temp: 7°C min, clear, dry, light wind				Pond shape/circumf.:				*** % shore shaded:		60			
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.													
Method used	Torch				Bottle - not done as bulls removing/chewing traps				Net				Egg search
	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	
GCN	3	4	0	0					0	0	0	3	
Smooth	1	2	0	0					0	0	0	0	
Undetermined smooth / palmate newt ?	0	0	0	0					0		0	0	
Palmate	0	0	0	0					0	0	0	0	
Frog	0		0	0					0		0	0	
Toad	0		0	0					0		0	0	
Species										H S I DONE ?			
Fish													
Waterfowl													
Noteworthy species				Invasive species present ?				Constraints on survey effort ?					
Water shrew		LSWB		New Zealand Pygmyweed		% / m inaccessible shoreline / reason?							
Water vole		Predatory beetles		Azolla (water) fern		% shoreline not trappable due to water depth?							
Otter		Dragonfly larvae		Floating Pennywort		Other constraints ?							
Mink				Least duckweed		Might waterbody dry out <u>this</u> summer?							
Crayfish				Parrot's Feather									
Grass snake				Japanese knotweed									
				Himalayan balsam									



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* Turbidity: 0=completely clear 5=very turbid / **Veg cover: 0=no veg obscuring survey 5=water completely obscured by vegetation / ***Shading by trees/scrub

Site Name: Llay				Job No. AVTU01.1		Surveyor(s): PT, CT				* Turbidity 0 - 5:		2	
Date: 15-16 May 2016		Pond/Cluster No.: 5		No. of traps: 50		Visit: 1 2 <u>3</u> 4 5 6				** Veg cover 0 - 5:		1	
Weather & o/n temp: 7°C min, clear, dry, light wind				Pond shape/circumf.:				*** % shore shaded:		100			
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.													
Method used	Torch				Bottle				Net				Egg search
	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	
GCN	9	6	0	0	6	12	0	0	0	0	0	0	Observed
Smooth	0	0	0	0		1	0	0	1	0	0	1	
Undetermined smooth / palmate newt ?	0	0	0	0			0	0					
Palmate	0	0	0	0	0	0	0		0	0	0	0	
Frog	0		0	0	0		0	1	0		0	0	
Toad	0		0	0	0		0	2	0		0	0	
Species													H S I DONE ?
Fish	No												
Waterfowl	Yes - tufted, mallard, moorhen, heron												
Noteworthy species				Invasive species present ?				Constraints on survey effort ?					
Water shrew		LSWB		New Zealand Pygmyweed		%/m inaccessible shoreline / reason?							
Water vole		Predatory beetles		Azolla (water) fern		0							
Otter		Dragonfly larvae		Floating Pennywort		% shoreline not trappable due to water depth?							
Mink				Least duckweed		0							
Crayfish				Parrot's Feather		Other constraints ?							
Grass snake				Japanese knotweed		None							
				Himalayan balsam		Might waterbody dry out <u>this</u> summer?							
						No							



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Site Name: Llay				Job No. AVTU01.1		Surveyor(s): PT, PF				* Turbidity 0 - 5:		4	
Date: 26-27 May 2016		Pond/Cluster No.: 1		No. of traps: 25		Visit: 1 2 3 <u>4</u> 5 6				** Veg cover 0 - 5:		0	
Weather & o/n temp: Mild and humid, 15°C				Pond shape/circumf.:				*** % shore shaded:		100			
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.													
Method used	Torch				Bottle				Net				Egg search
	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	
GCN	0	0	0	0	0	0	0	0					None observed
Smooth	0	0	0	0	0	0	0	0					
Undetermined smooth / palmate newt ?	0	0	0	0			0	0					
Palmate	0	0	0	0	0	0	0	0					
Frog	0		0	0	0		0	0					
Toad	0		0	0	0		0	0					
Species										H S I DONE ?			
Fish													
Waterfowl													
Noteworthy species				Invasive species present ?				Constraints on survey effort ?					
Water shrew		LSWB		New Zealand Pygmyweed		% / m inaccessible shoreline / reason?							
Water vole		Predatory beetles		Azolla (water) fern		% shoreline not trappable due to water depth?							
Otter		Dragonfly larvae		Floating Pennywort		Other constraints ?							
Mink				Least duckweed		Might waterbody dry out <u>this</u> summer?							
Crayfish				Parrot's Feather									
Grass snake				Japanese knotweed									
				Himalayan balsam									



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* Turbidity: 0=completely clear 5=very turbid / **Veg cover: 0=no veg obscuring survey 5=water completely obscured by vegetation / ***Shading by trees/scrub

Site Name: Llay				Job No. AVTU01.1		Surveyor(s): PT, PF				* Turbidity 0 - 5:		4			
Date: 26-27 May 2016		Pond/Cluster No.: 2		No. of traps: N/A			Visit: 1 2 3 <u>4</u> 5 6			** Veg cover 0 - 5:		1			
Weather & o/n temp: Mild and humid, 15 °C				Pond shape/circumf.:				*** % shore shaded:		100					
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.															
Method used		Torch				Bottle (No permission gained)				Net (No permission gained)				Egg search	
		MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae		
GCN		0	0	0	0									None	
Smooth		0	0	0	0										
Undetermined smooth / palmate newt ?		0	0	0	0										
Palmate		0	0	0	0										
Frog		0		0	0										
Toad		0		0	0										
		Species										H S I DONE ?			
Fish		Lots of coarse fish													
Waterfowl															
Noteworthy species				Invasive species present ?				Constraints on survey effort ?							
Water shrew		LSWB		New Zealand Pygmyweed		% / m inaccessible shoreline / reason?									
Water vole		Predatory beetles		Azolla (water) fern		% shoreline not trappable due to water depth?									
Otter		Dragonfly larvae		Floating Pennywort		Other constraints ?									
Mink				Least duckweed		Might waterbody dry out <u>this</u> summer?									
Crayfish				Parrot's Feather											
Grass snake				Japanese knotweed											
				Himalayan balsam											



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* Turbidity: 0=completely clear 5=very turbid / **Veg cover: 0=no veg obscuring survey 5=water completely obscured by vegetation / ***Shading by trees/scrub

Site Name: Llay				Job No. AVTU01.1		Surveyor(s): PT, PF				* Turbidity 0 - 5:		3		
Date: 26-27 May 2016		Pond/Cluster No.: 5		No. of traps: 50			Visit: 1 2 3 <u>4</u> 5 6			** Veg cover 0 - 5:		1		
Weather & o/n temp: Mild and humid, 15 °C				Pond shape/circumf.:				*** % shore shaded:		100				
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.														
Method used		Torch				Bottle				Net				Egg search
		MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	
GCN		9	5	0	0	14	9	0	0	0	0	0	0	
Smooth		0	0	0	0	2	1	0	0	0	0	0	0	
Undetermined smooth / palmate newt ?		0	0	0	0	0		0	0	0		0	0	
Palmate		0	0	0	0	0	0	0	0	0	0	0	0	
Frog		0		0	0	0		0	0	0		0	0	
Toad		0		0	0	0		0	0	0		0		
Species										H S I DONE ?				
Fish														
Waterfowl														
Noteworthy species				Invasive species present ?				Constraints on survey effort ?						
Water shrew		LSWB		New Zealand Pygmyweed		% / m inaccessible shoreline / reason?								
Water vole		Predatory beetles		Azolla (water) fern		% shoreline not trappable due to water depth?								
Otter		Dragonfly larvae		Floating Pennywort		Other constraints ?								
Mink				Least duckweed		Might waterbody dry out <u>this</u> summer?								
Crayfish				Parrot's Feather										
Grass snake				Japanese knotweed										
				Himalayan balsam										



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Site Name: Llay				Job No. AVTU01.1		Surveyor(s): Paul Fisher & Rosie Fisher				* Turbidity 0 - 5:		4	
Date: 1-2 June 2016		Pond/Cluster No.: 2		No. of traps: N/A		Visit: 1 2 3 4 5 <u>6</u>				** Veg cover 0 - 5:		1	
Weather & o/n temp: Mild and clear, 15°C				Pond shape/circumf.:				*** % shore shaded:		100			
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.													
Method used	Torch				Bottle (No permission gained)				Net (No permission gained)				Egg search
	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	
GCN	0	0	0	0									None
Smooth	0	0	0	0									
Undetermined smooth / palmate newt ?	0	0	0	0									
Palmate	0	0	0	0									
Frog	0		0	0									
Toad	0		0	0									
Species										H S I DONE ?			
Fish													
Waterfowl													
Noteworthy species				Invasive species present ?				Constraints on survey effort ?					
Water shrew		LSWB		New Zealand Pygmyweed		% / m inaccessible shoreline / reason?							
Water vole		Predatory beetles		Azolla (water) fern		% shoreline not trappable due to water depth?							
Otter		Dragonfly larvae		Floating Pennywort		Other constraints ?							
Mink				Least duckweed		Might waterbody dry out <u>this</u> summer?							
Crayfish				Parrot's Feather									
Grass snake				Japanese knotweed									
				Himalayan balsam									



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* Turbidity: 0=completely clear 5=very turbid / **Veg cover: 0=no veg obscuring survey 5=water completely obscured by vegetation / ***Shading by trees/scrub

Site Name: Llay				Job No. AVTU01.1		Surveyor(s): Paul Fisher & Rosie Fisher				* Turbidity 0 - 5:		2			
Date: 1-2 June 2016		Pond/Cluster No.: 4		No. of traps: N/A			Visit: 1 2 3 4 <u>5</u> 6			** Veg cover 0 - 5:		2			
Weather & o/n temp: Mild and clear, 15°C				Pond shape/circumf.:				*** % shore shaded:		65					
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.															
Method used		Torch				Bottle - not done as bulls removing/chewing traps				Net				Egg search	
		MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae		
GCN		3	7	0	0					0	0	0	4	Observed	
Smooth		1	1	0	0					0	0	0	0		
Undetermined smooth / palmate newt ?		0	0	0	0							0	0		
Palmate		0	0	0	0					0	0	0	0		
Frog		0		0	0					0		0	0		
Toad		0		0	0					0		0	0		
Fish		Species								H S I DONE ?					
Waterfowl															
Noteworthy species				Invasive species present ?				Constraints on survey effort ?							
Water shrew		LSWB		New Zealand Pygmyweed		% / m inaccessible shoreline / reason?									
Water vole		Predatory beetles		Azolla (water) fern		% shoreline not trappable due to water depth?									
Otter		Dragonfly larvae		Floating Pennywort		Other constraints ?									
Mink				Least duckweed		Cows pulling out bottle traps									
Crayfish				Parrot's Feather		Might waterbody dry out <u>this</u> summer?									
Grass snake				Japanese knotweed											
				Himalayan balsam											



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* Turbidity: 0=completely clear 5=very turbid / **Veg cover: 0=no veg obscuring survey 5=water completely obscured by vegetation / ***Shading by trees/scrub

Site Name: Llay				Job No. AVTU01.1		Surveyor(s): Paul Fisher & Rosie Fisher				* Turbidity 0 - 5:		3			
Date: 1-2 June 2016		Pond/Cluster No.: 5		No. of traps: 50			Visit: 1 2 3 4 <u>5</u> 6			** Veg cover 0 - 5:		1			
Weather & o/n temp: Mild and clear, 15°C				Pond shape/circumf.:				*** % shore shaded:		100					
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.															
Method used		Torch				Bottle				Net				Egg search	
		MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae		
GCN		8	11(5)	0	0	6	4(3)	0	0	0	0	0	0		
Smooth		0	1	0	0	2	1	0	0	0	0	0	0		
Undetermined smooth / palmate newt ?		0	0	0	0	0		0	0	0		0	0		
Palmate		0	0	0	0	0	0	0	0	0	0	0	0		
Frog		0		0	0	0		0	0	0		0	0		
Toad		0		0	0	0		0	0	0		0			
Species										H S I DONE ?					
Fish															
Waterfowl															
Noteworthy species				Invasive species present ?				Constraints on survey effort ?							
Water shrew		LSWB		New Zealand Pygmyweed		% / m inaccessible shoreline / reason?									
Water vole		Predatory beetles		Azolla (water) fern		% shoreline not trappable due to water depth?									
Otter		Dragonfly larvae		Floating Pennywort		Other constraints ?									
Mink				Least duckweed		Might waterbody dry out <u>this</u> summer?									
Crayfish				Parrot's Feather											
Grass snake				Japanese knotweed											
				Himalayan balsam											



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* Turbidity: 0=completely clear 5=very turbid / **Veg cover: 0=no veg obscuring survey 5=water completely obscured by vegetation / ***Shading by trees/scrub

Site Name: Llay				Job No. AVTU01.1		Surveyor(s): Kate Reed & Rosie Fisher				* Turbidity 0 - 5:		4	
Date: 6-7 June 2016		Pond/Cluster No.: 2		No. of traps: N/A		Visit: 1 2 3 4 5 <u>6</u>				** Veg cover 0 - 5:		1	
Weather & o/n temp: Dry, warm & still 14 degrees				Pond shape/circumf.:				*** % shore shaded:		100			
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.													
Method used	Torch				Bottle (No permission gained)				Net (No permission gained)				Egg search
	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	
GCN	0	0	0	0									None
Smooth	0	0	0	0									
Undetermined smooth / palmate newt ?	0	0	0	0									
Palmate	0	0	0	0									
Frog		0	0	0									
Toad		0	0	0									
Species										H S I DONE ?			
Fish													
Waterfowl													
Noteworthy species				Invasive species present ?				Constraints on survey effort ?					
Water shrew		LSWB		New Zealand Pygmyweed		% / m inaccessible shoreline / reason?							
Water vole		Predatory beetles		Azolla (water) fern		% shoreline not trappable due to water depth?							
Otter		Dragonfly larvae		Floating Pennywort		Other constraints ?							
Mink				Least duckweed		Might waterbody dry out <u>this</u> summer?							
Crayfish				Parrot's Feather									
Grass snake				Japanese knotweed									
				Himalayan balsam									



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* Turbidity: 0=completely clear 5=very turbid / **Veg cover: 0=no veg obscuring survey 5=water completely obscured by vegetation / ***Shading by trees/scrub

Site Name: Llay				Job No. AVTU01.1		Surveyor(s): Kate Reed & Rosie Fisher				* Turbidity 0 - 5:		2			
Date: 6-7 June 2016		Pond/Cluster No.: 4		No. of traps: N/A			Visit: 1 2 3 4 5 <u>6</u>			** Veg cover 0 - 5:		2			
Weather & o/n temp: Dry, warm & still 14 degrees				Pond shape/circumf.:				*** % shore shaded:		65					
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.															
Method used		Torch				Bottle				Net				Egg search	
		MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae		
GCN		3	7	0	0	2	2	1	0	0	0	0	4	Observed	
Smooth		1	1	0	0	2	2	0	0	0	0	0	0		
Undetermined smooth / palmate newt ?		0	0	0	0	0		0	0	0		0	0		
Palmate		0	0	0	0	0	0	0	0	0	0	0	0		
Frog		0		0	0	0		0	0	0		0	0		
Toad		0		0	0	0		0	0	0		0	0		
Fish		Species								H S I DONE ?					
Waterfowl															
Noteworthy species				Invasive species present ?				Constraints on survey effort ?							
Water shrew		LSWB		New Zealand Pygmyweed		% / m inaccessible shoreline / reason?									
Water vole		Predatory beetles		Azolla (water) fern		% shoreline not trappable due to water depth?									
Otter		Dragonfly larvae		Floating Pennywort		Other constraints ?									
Mink				Least duckweed		Cows pulling out bottle traps									
Crayfish				Parrot's Feather		Might waterbody dry out <u>this</u> summer?									
Grass snake				Japanese knotweed											
				Himalayan balsam											



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* Turbidity: 0=completely clear 5=very turbid / **Veg cover: 0=no veg obscuring survey 5=water completely obscured by vegetation / ***Shading by trees/scrub

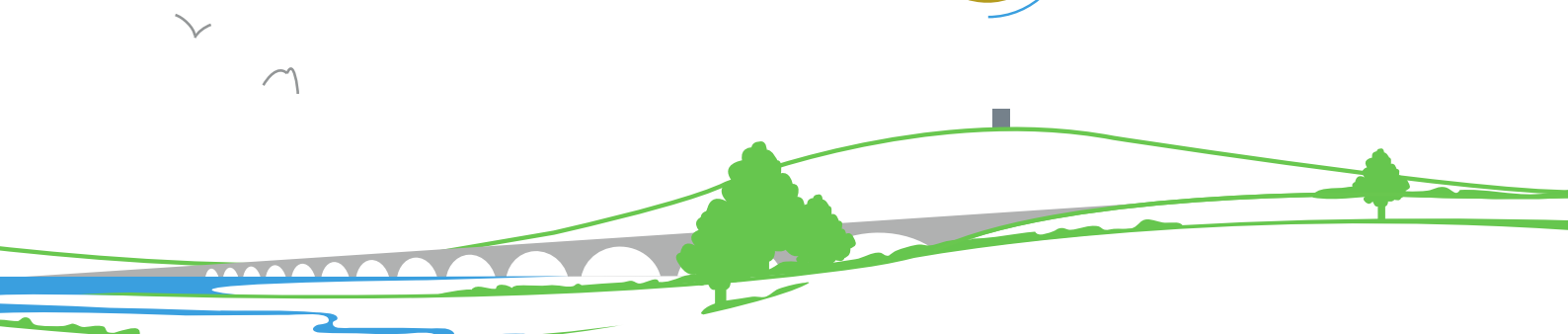
Site Name: Llay				Job No. AVTU01.1		Surveyor(s): Kate Reed & Rosie Fisher				* Turbidity 0 - 5:		3			
Date: 6-7 June 2016		Pond/Cluster No.: 5		No. of traps: 50			Visit: 1 2 3 4 5 <u>6</u>			** Veg cover 0 - 5:		1			
Weather & o/n temp: Dry, warm & still 14 degrees				Pond shape/circumf.:				*** % shore shaded:		100					
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.															
Method used		Torch				Bottle				Net				Egg search	
		MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae		
GCN		1	2	0	0	1	9(2)	0	0	0	0	0	0		
Smooth		0	0	0	0	2	1	0	0	0	0	0	0		
Undetermined smooth / palmate newt ?		0	0	0	0	0		0	0	0		0	0		
Palmate		0	0	0	0	0	0	0	0	0	0	0	0		
Frog		0		0	0	0		0	0	0		0	0		
Toad		0		0	0	0		0	0	0		0			
Species										H S I DONE ?					
Fish															
Waterfowl															
Noteworthy species				Invasive species present ?				Constraints on survey effort ?							
Water shrew		LSWB		New Zealand Pygmyweed		% / m inaccessible shoreline / reason?									
Water vole		Predatory beetles		Azolla (water) fern		% shoreline not trappable due to water depth?									
Otter		Dragonfly larvae		Floating Pennywort		Other constraints ?									
Mink				Least duckweed		Might waterbody dry out <u>this</u> summer?									
Crayfish				Parrot's Feather											
Grass snake				Japanese knotweed											
				Himalayan balsam											



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* Turbidity: 0=completely clear 5=very turbid / **Veg cover: 0=no veg obscuring survey 5=water completely obscured by vegetation / ***Shading by trees/scrub

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Park Lea, 60 Park Road, Buxton, Derbyshire SK17 6SN

ANNEX J.2

Raw Survey Data

Appendix IV – Survey Data

Site Name: Llay				Job No. AVTU01.1		Surveyor(s): Peter Tattersfield & Paul Fish				* Turbidity 0 - 5:		3			
Date: 3-4 May 2016		Pond/Cluster No.: 1		No. of traps: 25			Visit: <u>1</u> 2 3 4 5 6			** Veg cover 0 - 5:		0			
Weather & o/n temp: Mild, breezy 12 degrees				Pond shape/circumf.: Round - c.55m circumference				*** % shore shaded:		100					
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.															
Method used		Torch				Bottle				Net				Egg search	
		MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae		
GCN		0	0	0	0	0	0	0	0					None observed	
Smooth		1	1	0	0	0	0	0	0						
Undetermined smooth / palmate newt ?		0	0	0	0										
Palmate		0	0	0	0	0	0	0	0						
Frog			0	0	0		0	0	0						
Toad			0	0	0		0	0	0						
Species										H S I DONE ?					
Fish															
Waterfowl												Y			
Noteworthy species				Invasive species present ?				Constraints on survey effort ?							
Water shrew		LSWB		New Zealand Pygmyweed		% / m inaccessible shoreline / reason?									
Water vole		Predatory beetles		Azolla (water) fern		0									
Otter		Dragonfly larvae		Floating Pennywort		% shoreline not trappable due to water depth?									
Mink				Least duckweed		0									
Crayfish				Parrot's Feather		Other constraints ?									
Grass snake				Japanese knotweed		No									
				Himalayan balsam		Might waterbody dry out <u>this</u> summer?									
						No									



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* Turbidity: 0=completely clear 5=very turbid / **Veg cover: 0=no veg obscuring survey 5=water completely obscured by vegetation / ***Shading by trees/scrub

Site Name: Llay				Job No. AVTU01.1		Surveyor(s): Peter Tattersfield & Paul Fish				* Turbidity 0 - 5:		5	
Date: 3-4 May 2016		Pond/Cluster No.: 2		No. of traps: N/A		Visit: <u>1</u> 2 3 4 5 6				** Veg cover 0 - 5:		1	
Weather & o/n temp: Mild, breezy 12 degrees				Pond shape/circumf.:				*** % shore shaded:		30			
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.													
Method used	Torch				Bottle (No permission gained)				Net - (No permission gained)				Egg search
	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	
GCN	0	0	0	0									None found
Smooth	0	0	0	0									
Undetermined smooth / palmate newt ?	0	0	0	0									
Palmate	0	0	0	0									
Frog		0	0	0									
Toad		0	0	0									
Species										H S I DONE ?		Y	
Fish													
Waterfowl													
Noteworthy species				Invasive species present ?				Constraints on survey effort ?					
Water shrew		LSWB		New Zealand Pygmyweed		% / m inaccessible shoreline / reason?							
Water vole		Predatory beetles		Azolla (water) fern		% shoreline not trappable due to water depth?							
Otter		Dragonfly larvae		Floating Pennywort		Other constraints ? Owner/manager uncontactable							
Mink				Least duckweed									
Crayfish				Parrot's Feather									
Grass snake				Japanese knotweed		Might waterbody dry out <u>this</u> summer?							
				Himalayan balsam									



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* Turbidity: 0=completely clear 5=very turbid / **Veg cover: 0=no veg obscuring survey 5=water completely obscured by vegetation / ***Shading by trees/scrub

Site Name: Llay				Job No. AVTU01.1		Surveyor(s): Peter Tattersfield & Paul Fisi				* Turbidity 0 - 5:		2			
Date: 3-4 May 2016		Pond/Cluster No.: 4		No. of traps: 25			Visit: 1 2 3 4 5 6			** Veg cover 0 - 5:		2			
Weather & o/n temp: Mild, breezy 12 degrees				Pond shape/circumf.:				*** % shore shaded:		60					
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.															
Method used		Torch				Bottle				Net				Egg search	
		MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae		
GCN		3	4(3)	0	0	4	3(1)	0	0					Yes	
Smooth		0	0	0	0	1	0	0	0						
Undetermined smooth / palmate newt ?		0	0	0	0			0	0						
Palmate		0	0	0	0	0	0	0	0						
Frog		0		0	0	0		0	0						
Toad		0		0	0	0		0	0						
Species										H S I DONE ?					
Fish															
Waterfowl												Y			
Noteworthy species				Invasive species present ?				Constraints on survey effort ?							
Water shrew		LSWB		New Zealand Pygmyweed		% / m inaccessible shoreline / reason?									
Water vole		Predatory beetles		Azolla (water) fern		% shoreline not trappable due to water depth?									
Otter		Dragonfly larvae		Floating Pennywort		Other constraints ?									
Mink				Least duckweed		Might waterbody dry out <u>this</u> summer?									
Crayfish				Parrot's Feather											
Grass snake				Japanese knotweed											
				Himalayan balsam											



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* Turbidity: 0=completely clear 5=very turbid / **Veg cover: 0=no veg obscuring survey 5=water completely obscured by vegetation / ***Shading by trees/scrub

Site Name: Llay				Job No. AVTU01.1		Surveyor(s): Peter Tattersfield & Paul Fisi				* Turbidity 0 - 5:		3			
Date: 3-4 May 2016		Pond/Cluster No.: 5		No. of traps: 50			Visit: 1 2 3 4 5 6			** Veg cover 0 - 5:		1			
Weather & o/n temp: Mild, breezy 12 degrees				Pond shape/circumf.:				*** % shore shaded:		100					
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.															
Method used		Torch				Bottle				Net				Egg search	
		MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae		
GCN		18	9(6)	0	0	1	0	0	0					Yes	
Smooth		0	0	0	0	0	0	0	0						
Undetermined smooth / palmate newt ?		0	0	0	0			0	0						
Palmate		0	0	0	0	0	0	0	0						
Frog		0		0	0	0		0	0						
Toad		0		0	0	0		0	0						
Species										H S I DONE ?					
Fish															
Waterfowl												Y			
Noteworthy species				Invasive species present ?				Constraints on survey effort ?							
Water shrew		LSWB		New Zealand Pygmyweed		% / m inaccessible shoreline / reason?									
Water vole		Predatory beetles		Azolla (water) fern		30% Scrub									
Otter		Dragonfly larvae		Floating Pennywort		% shoreline not trappable due to water depth?									
Mink				Least duckweed		10%									
Crayfish				Parrot's Feather		Other constraints ?									
Grass snake				Japanese knotweed		Might waterbody dry out <u>this</u> summer?									
				Himalayan balsam		Probably not									



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Site Name: Llay				Job No. AVTU01.1		Surveyor(s): PT & Kate Reed				* Turbidity 0 - 5:		3			
Date: 13-14 May 2016		Pond/Cluster No.: 1		No. of traps: 25			Visit: 1 <u>2</u> 3 4 5 6			** Veg cover 0 - 5:		0			
Weather & o/n temp: 6°C dry with light wind				Pond shape/circumf.:				*** % shore shaded:		100					
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.															
Method used		Torch				Bottle				Net				Egg search	
		MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae		
GCN		0	0	0	0	0	0	0	0					None observed	
Smooth		0	2	0	0	3	4	0	0						
Undetermined smooth / palmate newt ?		0	0	0	0			0	0						
Palmate		0	0	0	0	0	0	0	0						
Frog		0		0	0	0		0	0						
Toad		0		0	0	0		0	0						
Species										H S I DONE ?					
Fish															
Waterfowl															
Noteworthy species				Invasive species present ?				Constraints on survey effort ?							
Water shrew		LSWB		New Zealand Pygmyweed		% / m inaccessible shoreline / reason?									
Water vole		Predatory beetles		Azolla (water) fern		0%									
Otter		Dragonfly larvae		Floating Pennywort		% shoreline not trappable due to water depth?									
Mink				Least duckweed		0%									
Crayfish				Parrot's Feather		Other constraints ?									
Grass snake				Japanese knotweed		No									
				Himalayan balsam		Might waterbody dry out <u>this</u> summer?									
						No									



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* Turbidity: 0=completely clear 5=very turbid / **Veg cover: 0=no veg obscuring survey 5=water completely obscured by vegetation / ***Shading by trees/scrub

Site Name: Llay				Job No. AVTU01.1		Surveyor(s): PT & Kate Reed				* Turbidity 0 - 5:		5	
Date: 13-14 May 2016		Pond/Cluster No.: 2		No. of traps: N/A		Visit: 1 <u>2</u> 3 4 5 6				** Veg cover 0 - 5:		1	
Weather & o/n temp: 6°C dry with light wind				Pond shape/circumf.:				*** % shore shaded:		30			
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.													
Method used	Torch				Bottle - (No permission gained)				Net - (No permission gained)				Egg search
	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	
GCN	0	0	0	0									None observed
Smooth	0	0	0	0									
Undetermined smooth / palmate newt ?	0	0	0	0									
Palmate	0	0	0	0									
Frog	0		0	0									
Toad	0		0	0									
Species										H S I DONE ?			
Fish	Many large and small												
Waterfowl													
Noteworthy species				Invasive species present ?				Constraints on survey effort ?					
Water shrew		LSWB		New Zealand Pygmyweed		% /m inaccessible shoreline / reason?							
Water vole		Predatory beetles		Azolla (water) fern		% shoreline not trappable due to water depth?							
Otter		Dragonfly larvae		Floating Pennywort		Other constraints ?							
Mink				Least duckweed		Owner/manager uncontactable							
Crayfish				Parrot's Feather		Might waterbody dry out <u>this</u> summer?							
Grass snake				Japanese knotweed		No							
				Himalayan balsam									



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* Turbidity: 0=completely clear 5=very turbid / **Veg cover: 0=no veg obscuring survey 5=water completely obscured by vegetation / ***Shading by trees/scrub

Site Name: Llay				Job No. AVTU01.1		Surveyor(s): PT & Kate Reed				* Turbidity 0 - 5:		1			
Date: 13-14 May 2016		Pond/Cluster No.: 4		No. of traps: 25		Visit: 1 <u>2</u> 3 4 5 6				** Veg cover 0 - 5:		2			
Weather & o/n temp: 6°C dry with light wind				Pond shape/circumf.:				*** % shore shaded:		60					
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.															
Method used		Torch - aggressive bulls - not done				Bottle				Net - aggressive bulls - not done				Egg search	
		MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae		
GCN						3	0	1	0					Eggs observed	
Smooth						0	8(5)	0	0						
Undetermined smooth / palmate newt ?								0	0						
Palmate						0	0	0	0						
Frog						0		0	0						
Toad						0		0	0						
Fish		Species								H S I DONE ?					
Waterfowl															
Noteworthy species				Invasive species present ?				Constraints on survey effort ?							
Water shrew		LSWB		New Zealand Pygmyweed		% / m inaccessible shoreline / reason?									
Water vole		Predatory beetles		Azolla (water) fern		% shoreline not trappable due to water depth?									
Otter		Dragonfly larvae		Floating Pennywort		Other constraints ?									
Mink				Least duckweed		Young bulls aggressive & knocked over bottles									
Crayfish				Parrot's Feather		Might waterbody dry out <u>this</u> summer?									
Grass snake				Japanese knotweed											
				Himalayan balsam											



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* Turbidity: 0=completely clear 5=very turbid / **Veg cover: 0=no veg obscuring survey 5=water completely obscured by vegetation / ***Shading by trees/scrub

Site Name: Llay				Job No. AVTU01.1		Surveyor(s): PT & Kate Reed				* Turbidity 0 - 5:		3		
Date: 13-14 May 2016		Pond/Cluster No.: 5		No. of traps: 50			Visit: 1 <u>2</u> 3 4 5 6			** Veg cover 0 - 5:		1		
Weather & o/n temp: 6°C dry with light wind				Pond shape/circumf.:				*** % shore shaded:		100				
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.														
Method used		Torch				Bottle				Net				Egg search
		MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	
GCN		10	12(8)	0	0	7	1	0	0	0	0	0	0	
Smooth		1	0	0	0	1	0	0	0	0	1	0	0	
Undetermined smooth / palmate newt ?		0	0	0	0			0	0			0	0	
Palmate		0	0	0	0	0	0	0	0	0	0	0	0	
Frog		0		0	0	0		0	0	0		0	0	
Toad		0		0	0	0		0	0	0		0	0	
Species										H S I DONE ?				
Fish														
Waterfowl														
Noteworthy species				Invasive species present ?				Constraints on survey effort ?						
Water shrew		LSWB		New Zealand Pygmyweed		% / m inaccessible shoreline / reason?								
Water vole		Predatory beetles		Azolla (water) fern		% shoreline not trappable due to water depth?								
Otter		Dragonfly larvae		Floating Pennywort		Other constraints ?								
Mink				Least duckweed		Might waterbody dry out <u>this</u> summer?								
Crayfish				Parrot's Feather										
Grass snake				Japanese knotweed										
				Himalayan balsam										



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Site Name: Llay				Job No. AVTU01.1		Surveyor(s): PT, CT				* Turbidity 0 - 5:		2	
Date: 15-16 May 2016		Pond/Cluster No.: 1		No. of traps: 25			Visit: 1 2 <u>3</u> 4 5 6			** Veg cover 0 - 5:		1	
Weather & o/n temp: 7°C min, clear, dry, light wind				Pond shape/circumf.:				*** % shore shaded:		95			
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.													
Method used	Torch				Bottle				Net				Egg search
	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	
GCN	0	0	0	0	0	0	0	0	0	0	0	0	
Smooth	0	1	0	0	0	0	0	0	0	0	0	0	
Undetermined smooth / palmate newt ?	0	0	0	0			0	0	0		0	0	
Palmate	0	0	0	0	0	0	0	0	0	0	0	0	
Frog	0		0	0	0		0	2	0		0	0	
Toad	0		0	0	0		0	0	0		0	0	
Species										H S I DONE ?			
Fish													
Waterfowl													
Noteworthy species				Invasive species present ?				Constraints on survey effort ?					
Water shrew		LSWB		New Zealand Pygmyweed		% / m inaccessible shoreline / reason?							
Water vole		Predatory beetles		Azolla (water) fern		% shoreline not trappable due to water depth?							
Otter		Dragonfly larvae		Floating Pennywort		Other constraints ? Floating leaves hinder torching							
Mink				Least duckweed									
Crayfish				Parrot's Feather									
Grass snake				Japanese knotweed		Might waterbody dry out <u>this</u> summer?							
				Himalayan balsam									



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* Turbidity: 0=completely clear 5=very turbid / **Veg cover: 0=no veg obscuring survey 5=water completely obscured by vegetation / ***Shading by trees/scrub

Site Name: Llay				Job No. AVTU01.1		Surveyor(s): PT, CT				* Turbidity 0 - 5:		2	
Date: 15-16 May 2016		Pond/Cluster No.: 4		No. of traps: 25		Visit: 1 2 <u>3</u> 4 5 6				** Veg cover 0 - 5:		3	
Weather & o/n temp: 7°C min, clear, dry, light wind				Pond shape/circumf.:				*** % shore shaded:		60			
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.													
Method used	Torch				Bottle - not done as bulls removing/chewing traps				Net				Egg search
	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	
GCN	3	4	0	0					0	0	0	3	
Smooth	1	2	0	0					0	0	0	0	
Undetermined smooth / palmate newt ?	0	0	0	0					0		0	0	
Palmate	0	0	0	0					0	0	0	0	
Frog	0		0	0					0		0	0	
Toad	0		0	0					0		0	0	
Species										H S I DONE ?			
Fish													
Waterfowl													
Noteworthy species				Invasive species present ?				Constraints on survey effort ?					
Water shrew		LSWB		New Zealand Pygmyweed		% / m inaccessible shoreline / reason?							
Water vole		Predatory beetles		Azolla (water) fern		% shoreline not trappable due to water depth?							
Otter		Dragonfly larvae		Floating Pennywort		Other constraints ?							
Mink				Least duckweed		Might waterbody dry out <u>this</u> summer?							
Crayfish				Parrot's Feather									
Grass snake				Japanese knotweed									
				Himalayan balsam									



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* Turbidity: 0=completely clear 5=very turbid / **Veg cover: 0=no veg obscuring survey 5=water completely obscured by vegetation / ***Shading by trees/scrub

Site Name: Llay				Job No. AVTU01.1		Surveyor(s): PT, CT				* Turbidity 0 - 5:		2		
Date: 15-16 May 2016		Pond/Cluster No.: 5		No. of traps: 50			Visit: 1 2 <u>3</u> 4 5 6			** Veg cover 0 - 5:		1		
Weather & o/n temp: 7°C min, clear, dry, light wind				Pond shape/circumf.:				*** % shore shaded:		100				
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.														
Method used	Torch				Bottle				Net				Egg search	
	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae		
GCN	9	6	0	0	6	12	0	0	0	0	0	0	Observed	
Smooth	0	0	0	0		1	0	0	1	0	0	1		
<i>Undetermined smooth / palmate newt ?</i>	0	0	0	0			0	0						
Palmate	0	0	0	0	0	0	0		0	0	0	0		
Frog	0		0	0	0		0	1	0		0	0		
Toad	0		0	0	0		0	2	0		0	0		
Species										H S I DONE ?				
Fish	No													
Waterfowl	Yes - tufted, mallard, moorhen, heron													
Noteworthy species				Invasive species present ?				Constraints on survey effort ?						
Water shrew		LSWB		New Zealand Pygmyweed		% / m inaccessible shoreline / reason?								
Water vole		Predatory beetles		Azolla (water) fern		0								
Otter		Dragonfly larvae		Floating Pennywort		% shoreline not trappable due to water depth?								
Mink				Least duckweed		0								
Crayfish				Parrot's Feather		Other constraints ?								
Grass snake				Japanese knotweed		None								
				Himalayan balsam		Might waterbody dry out <u>this</u> summer?								
						No								



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* Turbidity: 0=completely clear 5=very turbid / **Veg cover: 0=no veg obscuring survey 5=water completely obscured by vegetation / ***Shading by trees/scrub

Site Name: Llay				Job No. AVTU01.1		Surveyor(s): PT, PF				* Turbidity 0 - 5:		4	
Date: 26-27 May 2016		Pond/Cluster No.: 1		No. of traps: 25		Visit: 1 2 3 <u>4</u> 5 6				** Veg cover 0 - 5:		0	
Weather & o/n temp: Mild and humid, 15°C				Pond shape/circumf.:				*** % shore shaded:		100			
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.													
Method used	Torch				Bottle				Net				Egg search
	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	
GCN	0	0	0	0	0	0	0	0					None observed
Smooth	0	0	0	0	0	0	0	0					
<i>Undetermined smooth / palmate newt ?</i>	0	0	0	0			0	0					
Palmate	0	0	0	0	0	0	0	0					
Frog	0		0	0	0		0	0					
Toad	0		0	0	0		0	0					
Species										H S I DONE ?			
Fish													
Waterfowl													
Noteworthy species				Invasive species present ?				Constraints on survey effort ?					
Water shrew		LSWB		New Zealand Pygmyweed		% / m inaccessible shoreline / reason?							
Water vole		Predatory beetles		Azolla (water) fern		% shoreline not trappable due to water depth?							
Otter		Dragonfly larvae		Floating Pennywort		Other constraints ?							
Mink				Least duckweed		Might waterbody dry out <u>this</u> summer?							
Crayfish				Parrot's Feather									
Grass snake				Japanese knotweed									
				Himalayan balsam									



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* Turbidity: 0=completely clear 5=very turbid / **Veg cover: 0=no veg obscuring survey 5=water completely obscured by vegetation / ***Shading by trees/scrub

Site Name: Llay				Job No. AVTU01.1		Surveyor(s): PT, PF				* Turbidity 0 - 5:		4	
Date: 26-27 May 2016		Pond/Cluster No.: 2		No. of traps: N/A		Visit: 1 2 3 <u>4</u> 5 6				** Veg cover 0 - 5:		1	
Weather & o/n temp: Mild and humid, 15 °C				Pond shape/circumf.:				*** % shore shaded:		100			
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.													
Method used	Torch				Bottle (No permission gained)				Net (No permission gained)				Egg search
	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	
GCN	0	0	0	0									None
Smooth	0	0	0	0									
Undetermined smooth / palmate newt ?	0	0	0	0									
Palmate	0	0	0	0									
Frog	0		0	0									
Toad	0		0	0									
Species										H S I DONE ?			
Fish													
Waterfowl													
Noteworthy species				Invasive species present ?				Constraints on survey effort ?					
Water shrew		LSWB		New Zealand Pygmyweed		% / m inaccessible shoreline / reason?							
Water vole		Predatory beetles		Azolla (water) fern		% shoreline not trappable due to water depth?							
Otter		Dragonfly larvae		Floating Pennywort		Other constraints ?							
Mink				Least duckweed		Might waterbody dry out <u>this</u> summer?							
Crayfish				Parrot's Feather									
Grass snake				Japanese knotweed									
				Himalayan balsam									



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* Turbidity: 0=completely clear 5=very turbid / **Veg cover: 0=no veg obscuring survey 5=water completely obscured by vegetation / ***Shading by trees/scrub

Site Name: Llay				Job No. AVTU01.1		Surveyor(s): PT, PF				* Turbidity 0 - 5:		3		
Date: 26-27 May 2016		Pond/Cluster No.: 5		No. of traps: 50		Visit: 1 2 3 <u>4</u> 5 6				** Veg cover 0 - 5:		1		
Weather & o/n temp: Mild and humid, 15 °C				Pond shape/circumf.:				*** % shore shaded:		100				
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.														
Method used		Torch				Bottle				Net				Egg search
		MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	
GCN		9	5	0	0	14	9	0	0	0	0	0	0	
Smooth		0	0	0	0	2	1	0	0	0	0	0	0	
Undetermined smooth / palmate newt ?		0	0	0	0	0		0	0	0		0	0	
Palmate		0	0	0	0	0	0	0	0	0	0	0	0	
Frog		0		0	0	0		0	0	0		0	0	
Toad		0		0	0	0		0	0	0		0		
Species										H S I DONE ?				
Fish														
Waterfowl														
Noteworthy species				Invasive species present ?				Constraints on survey effort ?						
Water shrew		LSWB		New Zealand Pygmyweed		% / m inaccessible shoreline / reason?								
Water vole		Predatory beetles		Azolla (water) fern		% shoreline not trappable due to water depth?								
Otter		Dragonfly larvae		Floating Pennywort		Other constraints ?								
Mink				Least duckweed		Might waterbody dry out <u>this</u> summer?								
Crayfish				Parrot's Feather										
Grass snake				Japanese knotweed										
				Himalayan balsam										



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* Turbidity: 0=completely clear 5=very turbid / **Veg cover: 0=no veg obscuring survey 5=water completely obscured by vegetation / ***Shading by trees/scrub

Site Name: Llay				Job No. AVTU01.1		Surveyor(s): Paul Fisher & Rosie Fisher				* Turbidity 0 - 5:		4			
Date: 1-2 June 2016		Pond/Cluster No.: 2		No. of traps: N/A			Visit: 1 2 3 4 5 <u>6</u>			** Veg cover 0 - 5:		1			
Weather & o/n temp: Mild and clear, 15°C				Pond shape/circumf.:				*** % shore shaded:		100					
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.															
Method used		Torch				Bottle (No permission gained)				Net (No permission gained)				Egg search	
		MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae		
GCN		0	0	0	0									None	
Smooth		0	0	0	0										
Undetermined smooth / palmate newt ?		0	0	0	0										
Palmate		0	0	0	0										
Frog		0		0	0										
Toad		0		0	0										
		Species								H S I DONE ?					
Fish		Lots of coarse fish													
Waterfowl															
Noteworthy species				Invasive species present ?				Constraints on survey effort ?							
Water shrew		LSWB		New Zealand Pygmyweed		% / m inaccessible shoreline / reason?									
Water vole		Predatory beetles		Azolla (water) fern		% shoreline not trappable due to water depth?									
Otter		Dragonfly larvae		Floating Pennywort		Other constraints ?									
Mink				Least duckweed		Might waterbody dry out <u>this</u> summer?									
Crayfish				Parrot's Feather											
Grass snake				Japanese knotweed											
				Himalayan balsam											



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* Turbidity: 0=completely clear 5=very turbid / **Veg cover: 0=no veg obscuring survey 5=water completely obscured by vegetation / ***Shading by trees/scrub

Site Name: Llay				Job No. AVTU01.1		Surveyor(s): Paul Fisher & Rosie Fisher				* Turbidity 0 - 5:		2			
Date: 1-2 June 2016		Pond/Cluster No.: 4		No. of traps: N/A			Visit: 1 2 3 4 <u>5</u> 6			** Veg cover 0 - 5:		2			
Weather & o/n temp: Mild and clear, 15°C				Pond shape/circumf.:				*** % shore shaded:		65					
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.															
Method used		Torch				Bottle - not done as bulls removing/chewing traps				Net				Egg search	
		MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae		
GCN		3	7	0	0					0	0	0	4	Observed	
Smooth		1	1	0	0					0	0	0	0		
Undetermined smooth / palmate newt ?		0	0	0	0							0	0		
Palmate		0	0	0	0					0	0	0	0		
Frog		0		0	0					0		0	0		
Toad		0		0	0					0		0	0		
		Species								H S I DONE ?					
Fish															
Waterfowl															
Noteworthy species				Invasive species present ?				Constraints on survey effort ?							
Water shrew		LSWB		New Zealand Pygmyweed		% / m inaccessible shoreline / reason?									
Water vole		Predatory beetles		Azolla (water) fern		% shoreline not trappable due to water depth?									
Otter		Dragonfly larvae		Floating Pennywort		Other constraints ?									
Mink				Least duckweed		Cows pulling out bottle traps									
Crayfish				Parrot's Feather		Might waterbody dry out <u>this</u> summer?									
Grass snake				Japanese knotweed											
				Himalayan balsam											



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* Turbidity: 0=completely clear 5=very turbid / **Veg cover: 0=no veg obscuring survey 5=water completely obscured by vegetation / ***Shading by trees/scrub

Site Name: Llay				Job No. AVTU01.1		Surveyor(s): Paul Fisher & Rosie Fisher				* Turbidity 0 - 5:		3			
Date: 1-2 June 2016		Pond/Cluster No.: 5		No. of traps: 50			Visit: 1 2 3 4 <u>5</u> 6			** Veg cover 0 - 5:		1			
Weather & o/n temp: Mild and clear, 15°C				Pond shape/circumf.:				*** % shore shaded:		100					
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.															
Method used		Torch				Bottle				Net				Egg search	
		MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae		
GCN		8	11(5)	0	0	6	4(3)	0	0	0	0	0	0		
Smooth		0	1	0	0	2	1	0	0	0	0	0	0		
Undetermined smooth / palmate newt ?		0	0	0	0	0		0	0	0		0	0		
Palmate		0	0	0	0	0	0	0	0	0	0	0	0		
Frog		0		0	0	0		0	0	0		0	0		
Toad		0		0	0	0		0	0	0		0			
Fish		Species								H S I DONE ?					
Waterfowl															
Noteworthy species				Invasive species present ?				Constraints on survey effort ?							
Water shrew		LSWB		New Zealand Pygmyweed		% / m inaccessible shoreline / reason?									
Water vole		Predatory beetles		Azolla (water) fern		% shoreline not trappable due to water depth?									
Otter		Dragonfly larvae		Floating Pennywort		Other constraints ?									
Mink				Least duckweed		Might waterbody dry out <u>this</u> summer?									
Crayfish				Parrot's Feather											
Grass snake				Japanese knotweed											
				Himalayan balsam											



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* Turbidity: 0=completely clear 5=very turbid / **Veg cover: 0=no veg obscuring survey 5=water completely obscured by vegetation / ***Shading by trees/scrub

Site Name: Llay				Job No. AVTU01.1		Surveyor(s): Kate Reed & Rosie Fisher				* Turbidity 0 - 5:		4	
Date: 6-7 June 2016		Pond/Cluster No.: 2		No. of traps: N/A		Visit: 1 2 3 4 5 <u>6</u>				** Veg cover 0 - 5:		1	
Weather & o/n temp: Dry, warm & still 14 degrees				Pond shape/circumf.:				*** % shore shaded:		100			
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.													
Method used	Torch				Bottle (No permission gained)				Net (No permission gained)				Egg search
	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	
GCN	0	0	0	0									None
Smooth	0	0	0	0									
Undetermined smooth / palmate newt ?	0	0	0	0									
Palmate	0	0	0	0									
Frog		0	0	0									
Toad		0	0	0									
Species										H S I DONE ?			
Fish	Lots of coarse fish												
Waterfowl													
Noteworthy species				Invasive species present ?				Constraints on survey effort ?					
Water shrew		LSWB		New Zealand Pygmyweed		% / m inaccessible shoreline / reason?							
Water vole		Predatory beetles		Azolla (water) fern		% shoreline not trappable due to water depth?							
Otter		Dragonfly larvae		Floating Pennywort		Other constraints ?							
Mink				Least duckweed		Might waterbody dry out <u>this</u> summer?							
Crayfish				Parrot's Feather									
Grass snake				Japanese knotweed									
				Himalayan balsam									



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* Turbidity: 0=completely clear 5=very turbid / **Veg cover: 0=no veg obscuring survey 5=water completely obscured by vegetation / ***Shading by trees/scrub

Site Name: Llay				Job No. AVTU01.1		Surveyor(s): Kate Reed & Rosie Fisher				* Turbidity 0 - 5:		2			
Date: 6-7 June 2016		Pond/Cluster No.: 4		No. of traps: N/A			Visit: 1 2 3 4 5 <u>6</u>			** Veg cover 0 - 5:		2			
Weather & o/n temp: Dry, warm & still 14 degrees				Pond shape/circumf.:				*** % shore shaded:		65					
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.															
Method used		Torch				Bottle				Net				Egg search	
		MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae		
GCN		3	7	0	0	2	2	1	0	0	0	0	4	Observed	
Smooth		1	1	0	0	2	2	0	0	0	0	0	0		
Undetermined smooth / palmate newt ?		0	0	0	0	0		0	0	0		0	0		
Palmate		0	0	0	0	0	0	0	0	0	0	0	0		
Frog		0		0	0	0		0	0	0		0	0		
Toad		0		0	0	0		0	0	0		0	0		
Fish		Species								H S I DONE ?					
Waterfowl															
Noteworthy species				Invasive species present ?				Constraints on survey effort ?							
Water shrew		LSWB		New Zealand Pygmyweed		% / m inaccessible shoreline / reason?									
Water vole		Predatory beetles		Azolla (water) fern		% shoreline not trappable due to water depth?									
Otter		Dragonfly larvae		Floating Pennywort		Other constraints ?									
Mink				Least duckweed		Cows pulling out bottle traps									
Crayfish				Parrot's Feather		Might waterbody dry out <u>this</u> summer?									
Grass snake				Japanese knotweed											
				Himalayan balsam											



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* Turbidity: 0=completely clear 5=very turbid / **Veg cover: 0=no veg obscuring survey 5=water completely obscured by vegetation / ***Shading by trees/scrub

Site Name: Llay				Job No. AVTU01.1		Surveyor(s): Kate Reed & Rosie Fisher				* Turbidity 0 - 5:		3		
Date: 6-7 June 2016		Pond/Cluster No.: 5		No. of traps: 50			Visit: 1 2 3 4 5 <u>6</u>			** Veg cover 0 - 5:		1		
Weather & o/n temp: Dry, warm & still 14 degrees				Pond shape/circumf.:				*** % shore shaded:		100				
PLEASE PUT GRAVID FEMALES IN PARENTHESIS e.g. 7 (3) meaning 7 females of which 3 were gravid.														
Method used		Torch				Bottle				Net				Egg search
		MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	MALE	FEMALE	Juv.	Larvae	
GCN		1	2	0	0	1	9(2)	0	0	0	0	0	0	
Smooth		0	0	0	0	2	1	0	0	0	0	0	0	
Undetermined smooth / palmate newt ?		0	0	0	0	0		0	0	0		0	0	
Palmate		0	0	0	0	0	0	0	0	0	0	0	0	
Frog		0		0	0	0		0	0	0		0	0	
Toad		0		0	0	0		0	0	0		0		
Species										H S I DONE ?				
Fish														
Waterfowl														
Noteworthy species				Invasive species present ?				Constraints on survey effort ?						
Water shrew		LSWB		New Zealand Pygmyweed		% / m inaccessible shoreline / reason?								
Water vole		Predatory beetles		Azolla (water) fern		% shoreline not trappable due to water depth?								
Otter		Dragonfly larvae		Floating Pennywort		Other constraints ?								
Mink				Least duckweed		Might waterbody dry out <u>this</u> summer?								
Crayfish				Parrot's Feather										
Grass snake				Japanese knotweed										
				Himalayan balsam										



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ANNEX J.3

Raw Survey Data

Appendix I – GCN Desk Study Returns from COFNOD

Appendix I COFNOD GCN DATA

Distance (m)	Scientific Name	English Name	Welsh Name	Trusted Grid f	Site Name	Date	Year	Abundance
447	<i>Triturus cristatus</i>	Great Crested Newt	Madfall Ddwr Gribog	SJ325574	Llay; Lower Rackery	August 1988 approx	1988	240
596	<i>Triturus cristatus</i>	Great Crested Newt	Madfall Ddwr Gribog	SJ32165716	Near Rackery Hall	1994	1994	Present
728	<i>Triturus cristatus</i>	Great Crested Newt	Madfall Ddwr Gribog	SJ325563	Oth:sa:85:2007	14 records, between 15/03/2007 and 26/09/2007	2007	6 Adult; 13 Adult; 25 Adult; 16 Adult; 21 Adult; 1 Adult; 17 Adult
901	<i>Triturus cristatus</i>	Great Crested Newt	Madfall Ddwr Gribog	SJ31855715		2 records, between 1992 and 15/06/1992	1992	Present
949	<i>Triturus cristatus</i>	Great Crested Newt	Madfall Ddwr Gribog	SJ324561	Oth:sa:10:2007	18/04/2007	2007	
1167	<i>Triturus cristatus</i>	Great Crested Newt	Madfall Ddwr Gribog	SJ32065610	Llay	23/05/2001	2001	4 (Exact)
1188	<i>Triturus cristatus</i>	Great Crested Newt	Madfall Ddwr Gribog	SJ31915620	Llay	19/05/2001	2001	1 (Exact)
1255	<i>Triturus cristatus</i>	Great Crested Newt	Madfall Ddwr Gribog	SJ32235590	Llay	17/05/2001	2001	9 (Exact)
1282	<i>Triturus cristatus</i>	Great Crested Newt	Madfall Ddwr Gribog	SJ31795790	Estyn House, Caeau Farm	2 records, between 1992 and 11/06/1992	1992	Present
1315	<i>Triturus cristatus</i>	Great Crested Newt	Madfall Ddwr Gribog	SJ329557	Llay	4 records, between 29/04/2003 and 09/06/2003	2003	Adult
1619	<i>Triturus cristatus</i>	Great Crested Newt	Madfall Ddwr Gribog	SJ32535865	Shordley; Shordley Hall	August 1988 approx	1988	19
1649	<i>Triturus cristatus</i>	Great Crested Newt	Madfall Ddwr Gribog	SJ323554		2005 approx	2005	
1775	<i>Triturus cristatus</i>	Great Crested Newt	Madfall Ddwr Gribog	SJ33995831	Golly	August 1988 approx	1988	23; 71 Larvae