

Tension Control Bolts Site, Wrexham, LL13 9XS

ECOLOGICAL SURVEY AND ASSESSMENT

May 2019

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ERAP (Consultant Ecologists) Ltd
49a Manor Lane
Penwortham
Preston
Lancashire
PR1 0TA

Tel: 01772 750502

mail@erap.co.uk
www.erap.co.uk



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Document Control

Survey Type:	Surveyors ¹	Survey Date(s)
Phase 1 Habitat, Daylight bat and great crested newt eDNA survey	Amy Sharples B.Sc. (Hons) M.Sc. GradCIEEM	17 th April 2019
Reporting	Personnel	Date
Author	Amy Sharples B.Sc. (Hons) M.Sc. GradCIEEM Ecologist	1 st May 2019
Signature(s)		
Checked by	Brian Robinson B.Sc. (Hons) MCIEEM Senior Ecologist	1 st May 2019
Revised and issued by	Amy Sharples B.Sc. (Hons) M.Sc. GradCIEEM	1 st May 2019
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SUMMARY

Introduction and Scope

- i. This Ecological Appraisal presents the ecological, biodiversity and nature conservation status of the Tension Control Bolts Site, Wrexham. The appraisal was requested in connection with proposals to extend the existing industrial units.
- ii. The appraisal presents the results of a desktop study, extended Phase 1 Habitat Survey, a daylight bat survey and an environmental DNA (eDNA) survey carried out in April 2019. The scope of survey undertaken is appropriate to identify potential ecological constraints, the remit of mitigation required and opportunities for biodiversity associated with the development proposals.
- iii. The site comprises two existing industrial units with associated hard standing, crushed hard standing with sparse colonising vegetation, amenity grassland and unmanaged coarse grassland. A pond lies within the wider site, outside the proposed development area.

Results of Survey and Assessment

- iv. The proposals will have no adverse effect on statutory or non-statutory designated sites for nature conservation.
- v. None of the habitats within the site are of significant interest in terms of their plant species composition; only common and widespread plant species were recorded. None of the habitats present are semi-natural. The National Vegetation Classification (NVC) communities present are typical of the geographical area and site conditions.
- vi. No habitats within the proposed development area are Priority Habitat.
- vii. The presence of great crested newt has been confirmed at Pond 1. Due to the habitats scheduled to be affected by the proposed development at the site, it is considered that Reasonable Avoidance Measures (RAMs) for the protection of amphibians are suitable in this instance. The RAMs are presented at **Section 5.4**.
- viii. No other protected species have been detected.

Recommendations

- ix. The recommendations in **Section 5.0** address all the mandatory measures and ecological recommendations to be applied to ensure compliance with wildlife legislation, Planning Policy Wales (Edition 10) and best practice.
- x. The proposals will secure an opportunity to implement beneficial measures such as habitat management and habitat creation that will safeguard habitats for wildlife such as birds and bats, with the aim of providing a net gain in biodiversity in accordance with the principles of the Planning Policy Wales (Edition 10).

Conclusion

- xi. It is concluded that the proposals are feasible and acceptable in accordance with ecological considerations and relevant planning policy.

1.0 INTRODUCTION

1.1 Background and Rationale

- 1.1.1 ERAP (Consultant Ecologists) Ltd was commissioned by C4 Projects to carry out an ecological appraisal of Tension Control Bolts Site, Wrexham, LL13 9XS (hereafter referred to as the 'site'). The Ordnance Survey (OS) grid reference at the centre of the site is SJ 3702 4940. An aerial image of the site and its surrounding habitats is presented at **Figure 10.1** (source image: Google Maps).
- 1.1.2 The appraisal was requested in connection with a planning application to extend the existing industrial units.

1.2 Scope of Works

- 1.2.1 The scope of ecological works undertaken in April 2019 comprised:
- a. A desktop study for known ecological information at the site and the local area;
 - b. An Extended Phase 1 Habitat Survey and assessment;
 - c. Assessment of the ecological value of the habitats within the site with the use of the National Vegetation Classification (NVC) and the Ratcliffe criteria, as presented in *A Nature Conservation Review* (Ratcliffe, 1977);
 - d. Survey and assessment of all habitats for relevant statutorily protected species and other wildlife including badger (*Meles meles*), barn owl (*Tyto alba*), great crested newt (*Triturus cristatus*), water vole (*Arvicola amphibius*), bird species and reptiles;
 - e. A daylight bat survey of the buildings;
 - f. The identification of any potential ecological constraints on the proposals and the specification of the scope of mitigation and ecological enhancement required in accordance with wildlife legislation, planning policy guidance and other relevant guidance; and
 - g. The identification of any further surveys or precautionary actions that may be required prior to the commencement of any development activities.

2.0 METHOD OF SURVEY

2.1 Desktop Study

- 2.1.1 The following sources of information and ecological records were consulted:
- a. MAGiC: A web-based interactive map which brings together geographic information on key environmental schemes and designations, including details of statutory nature conservation sites;
 - b. Cofnod, the North Wales Environmental Information Service; and
 - c. The Wrexham Biodiversity Action Plan (BAP).

2.2 Vegetation and Habitats

- 2.2.1 An Extended Phase 1 Habitat Survey of the site was carried out by Amy Sharples B.Sc. (Hons) M.Sc. GradCIEEM on 17th April 2019. The weather was overcast with sunny intervals, a light air (Beaufort Scale 1) and 12°C at 10am. The conditions and time of year were suitable for the ecological survey.
- 2.2.2 A habitat and vegetation map was produced for the site and the immediate surrounding area at a scale of 1:1500 (refer to **Figure 10.2**). The mapping is based on the Joint Nature Conservation Committee Phase 1 Habitat Survey methodology (JNCC, 2010) with minor adjustments to illustrate and examine the habitats with greater precision.

- 2.2.3 The plant species within the site boundary were determined with estimates of the distribution, ground cover, abundance and constancy of individual species. The estimation of abundance was based on the DAFOR system, where D = Dominant, A = Abundant, F = Frequent, O = Occasional and R = Rare, this being a widely used and accepted system employed by ecological surveyors. The terms L = Locally and V = Very were additionally used to describe the plant species distributions with greater precision.
- 2.2.4 Stands of vegetation and habitats were described and evaluated using the National Vegetation Classification (NVC). The NVC provides a systematic and comprehensive analysis of British vegetation and is a reliable framework for nature conservation and land-use planning.
- 2.2.5 Searches were made for uncommon, rare and statutorily protected plant species, those species listed as protected in the *Wildlife and Countryside Act 1981* (as amended) and species which are indicators of important and uncommon plant communities. Plant nomenclature follows *New Flora of the British Isles 3rd Edition* (Stace, 2010).
- 2.2.6 Searches were carried out for the presence of invasive species, including those listed on Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended), including Japanese Knotweed (*Fallopia japonica*), Indian Balsam (*Impatiens glandulifera*) and Giant Hogweed (*Heracleum mantegazzianum*).

2.3 Animal Life

Badger

- 2.3.1 The survey area for badger covered the site (as annotated on **Figure 1**) and extended to accessible land within a radius of 50 metres from the site boundary. Private gardens / land were excluded from the survey.
- 2.3.2 The survey was conducted in accordance with guidance presented within *Badgers and Development* (Natural England, 2007) and *Badgers: surveys and mitigation for development projects* (Natural England, 2015).
- 2.3.3 The following signs of badger activity were searched for:
- Sett entrances, e.g. entrances that are normally 25 to 35cm in diameter and shaped like a 'D' on its side;
 - Large spoil heaps outside sett entrances;
 - Bedding outside sett entrances;
 - Badger footprints;
 - Badger paths;
 - Latrines;
 - Badger hairs on fences or bushes;
 - Scratching posts; and
 - Signs of digging for food.
- 2.3.4 Habitats within and surrounding the site were assessed in terms of their suitability for use by foraging and sheltering badger in accordance with their known habitat preferences as detailed in current guidance and *Badger* (Roper, 2010).

Bat Species

Daylight Survey

Survey Personnel

- 2.3.5 The site was assessed for its suitability to support roosting bats by Amy Sharples, acting as an accredited agent under Victoria Burrows' Natural Resources Wales (NRW) licence (Licence number. 78551:OTH:CSAB:2018).
- 2.3.6 The surveyor's qualifications and experience meet the criteria as defined in the *Technical Guidance Series Competencies for Species Survey: Bats* (CIEEM, 2013).
- 2.3.7 No trees are present within the site; the presence of roosting bats at trees is reasonably discounted.

Buildings

- 2.3.8 The surveys were carried out in accordance with standard methodology including the *Bat Mitigation Guidelines* (Mitchell-Jones, 2004), the *Bat Workers' Manual 3rd Edition* (Mitchell-Jones & Mcleish, 2004) and *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn)* (Collins, J. (ed), 2016).
- 2.3.9 An inspection of the external surfaces, walls and roofs of the buildings was carried out to find potential bat roosting habitat or accesses into internal areas where roosts may be present. Searches for evidence of bat presence in the form of droppings, urine stains, feeding signs, grease marks and other evidence were also carried out.
- 2.3.10 The internal survey involved an examination of the accessible internal areas to find roosting bats or evidence of past use of the buildings by bats such as droppings and prey remains.
- 2.3.11 A list of equipment used is detailed at **Table 2.1**, below:

Table 2.1: Survey Equipment used during Daylight Bat Survey

LED Lenser P14 torch
Canon Ixus digital camera
8x20 binoculars

- 2.3.12 The suitability of each building has been assessed in accordance with Table 4.1 of *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn)*, (Collins, J. (ed), 2016), taking into account any presence of gaps suitable for access by bats, features suitable for use by roosting bats within the building (including crevice dwelling species and species which can roost in the open in roof voids), and the suitability of the surrounding habitats for use by foraging and commuting bats.

Habitat Assessment for Commuting / Foraging Bats

- 2.3.13 Habitats within and adjacent to the site were assessed for their value and suitability for commuting and foraging bats in accordance with Table 4.1 of *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn)*, (Collins, J. (ed), 2016). Reference has been made using the following categories and descriptions / examples, presented at **Table 2.2**, below.

Table 2.2: Consideration of Suitability of Foraging and Commuting Habitat for Bats

Suitability	Commuting Habitat	Foraging Habitat
Negligible	Negligible habitat features on site likely to be used by commuting bats.	Negligible habitat features on site likely to be used by foraging bats.
Low	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated i.e. not very well connected to the surrounding landscape by other habitat.	Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree or patch of scrub.
Moderate	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens.	Habitat that is linked to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	Continuous, high-quality habitat that is well connected to the wider landscape and is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. Habitats close to and connected to known roosts.	High-quality habitat that is well-connected to the wider landscape and is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Habitats close to and connected to known roosts.

Bird Species

2.3.14 Bird species observed and heard during the survey were recorded.

2.3.15 Habitats throughout the site and in the immediate surrounding area were assessed for their value to roosting, feeding and nesting birds, as indicated by the amount of shelter, feeding value, woody vegetation structure and species diversity of tree and shrub species in the site.

Great Crested Newt

Desktop Search for Ponds

2.3.16 All ponds within an unobstructed 500 metres of a site have been considered for their suitability to support breeding great crested newts¹, and the potential of the proposed development to impact upon any great crested newt population(s) whose breeding ponds are within 500 metres has been considered.

2.3.17 The search of habitats in the wider area up to a distance of 500 metres from the site boundary revealed the presence of six ponds, as detailed in **Table 2.3**, below.

¹ 'Newts disperse over land to forage for food, and move between ponds. The distances moved during dispersal vary widely according to habitat quality and availability. At most sites, the majority of adults probably stay within around 250m of the breeding pond, so the density of individuals gradually decreases away from the pond' (Langton, et al., 2001). 500 metres has been considered in this instance to be a suitable study area for the species.

Table 2.3: Ponds within 500 metres of the site

Pond Reference	Grid Reference	Distance from Development Boundary	Location (refer to Figure 10.1)
1	SJ 3698 4944	25 metres	Attenuation pond within wider site, but west of the development area
2	SJ 3684 4926	159 metres	Field south-west of site
3	SJ 3686 4902	315 metres	Field south of site
4	SJ 3660 4913	425 metres	Field south-west of site
5	SJ 3663 4950	371 metres	Field west of site
6	SJ 3669 4983	480 metres	Field north-west of site

Access

- 2.3.18 Access to Ponds 2 to 6 was not possible at the time of the survey as landowner permission could not be obtained for the survey. Pond 1 was fully accessible.

Habitat Suitability Index Assessment

- 2.3.19 Pond 1 was assessed using the Habitat Suitability Index (HSI) (Oldham, et al., 2000). The pond was examined with reference to the ten HSI scoring criteria, which are: **SI₁**: Geographical location; **SI₂**: Pond area; **SI₃**: Pond drying; **SI₄**: Water quality (as indicated by the diversity of aquatic plants and invertebrates); **SI₅**: Shade; **SI₆**: Waterfowl; **SI₇**: Fish; **SI₈**: Abundance of other ponds within a 1 kilometre radius; **SI₉**: Quality of terrestrial habitat; and **SI₁₀**: Macrophyte cover (i.e. aquatic and emergent plants). The survey was conducted in accordance with *ARG UK Advice Note 5: Great Crested Newt Habitat Suitability Index. Amphibian and Reptile Groups of the United Kingdom* (ARG UK, 2010).
- 2.3.20 An indication of the aquatic invertebrate diversity was obtained through the use of a fine-mesh, long-handled pond net, which was swept through the ponds at intervals around the margins.
- 2.3.21 The assessment followed guidance in relation to interpreting HSI scores, following the categorical scale shown at **Table 2.4**, below.

Table 2.4: Pond Habitat Suitability Index Categories

HSI Score	Pond Suitability for Great Crested Newt
<0.5	Poor
0.5 – 0.59	Below average
0.6 – 0.69	Average
0.7 – 0.79	Good
>0.8	Excellent

Assessment of Terrestrial Habitat

- 2.3.22 An assessment of the terrestrial habitat within the site for great crested newts was conducted, as informed by the *Great Crested Newt Conservation Handbook* (Langton, et al., 2001).
- 2.3.23 Habitats present within the site were assessed for their value to support foraging, sheltering and hibernating great crested newt. Favourable habitats can comprise rough grassland, scrubland, woodland and sites with underground crevices or cracks, such as mammal holes, voids in tree stumps or banks, and refugia such as rock piles or dead wood.

Great Crested Newt Environmental DNA (eDNA) Analysis

- 2.3.24 Environmental DNA (eDNA) analysis can detect the presence or absence of great crested newt from pond water samples. Pond water samples were collected at the ponds on 17th April 2019 by Amy Sharples acting as an Accredited Agent under the licence of Victoria Burrows (licence number S086006/1). The surveyor has extensive experience of great crested newt surveys.

- 2.3.25 The surveys were carried out in accordance with the sampling protocol in *Appendix 5: Technical Advice Note for field and laboratory sampling of Great Crested Newt (Triturus cristatus) environmental DNA* (DEFRA, 2014) that accompanies Defra's research project and are outlined below:
- 20 x 30 millilitre samples were taken from around the entire perimeter of the pond, and areas most likely to be used by great crested newt were targeted, without entering the water (where possible);
 - Prior to taking the sample the water column was gently mixed at each sampling location, and care was taken to avoid disturbing the sediment on the base of the pond;
 - Once all 20 samples were taken, 15 millilitres of the total sample were pipetted into each of the six sampling tubes containing ethanol, ensuring the water in the sample bag was mixed prior to and after taking each of the 15 millilitre samples; and
 - The six sampling tubes were shaken to mix the sample and preservative.
- 2.3.26 At all times the surveyor ensured the sampling equipment avoided risk of contamination by not placing the ladle or pipet on the ground or otherwise contaminated surfaces and by changing gloves between the initial sampling and the pipetting stages of the method.
- 2.3.27 The equipment was purchased from SureScreen Scientifics and the collected samples were returned to them for qPCR laboratory analysis.

Reptile Species

- 2.3.28 The site and its surroundings were assessed in terms of their suitability for use by reptile species using the important characteristics for reptiles outlined in the *Reptile Habitat Management Handbook* (Edgar, et al., 2010). These habitat characteristics are outlined in **Table 2.5**, below.

Table 2.5: Important Habitat Characteristics for Reptiles

1. Location (in relation to species range)	7. Connectivity to nearby good quality habitat
2. Vegetation Structure	8. Prey abundance
3. Insolation	9. Refuge opportunity
4. Aspect	10. Hibernation habitat potential
5. Topography	11. Disturbance regime
6. Surface geology	12. Egg-laying site potential

Water Vole and Otter

- 2.3.29 The site does not support any watercourses suitable for use by water vole or otter (*Lutra lutra*). The presence of water vole and otter is reasonably discounted, and no further survey is required.

2.4 Survey and Reporting Limitations

- 2.4.1 Access to Ponds 2 to 6 was not possible at the time of the survey. Pond 1 was fully accessible, and lies closest to the proposed development area. It is considered that a reliable assessment of the likely impact of the proposed development on great crested newt has been possible in this instance despite this access restriction; no significant survey limitations were experienced.
- 2.4.2 All measurements within this report are approximate only, and have been either estimated whilst on site or calculated using mapping software (QGIS) or internet-based mapping services such as MAGiC and Google Earth.

2.5 Evaluation Methodology

- 2.5.1 The habitats, vegetation and animal life were evaluated with reference to standard nature conservation criteria as described in *A Nature Conservation Review* (Ratcliffe, 1977) and *Guidelines for the Selection of Biological SSSIs* (Bainbridge, et al., 2013). These are size (extent), diversity, naturalness, rarity, fragility,

typicality, recorded history, position in an ecological or geographical unit, potential value and intrinsic appeal.

- 2.5.2 Habitats have been assessed to determine whether they meet those described in *UK Biodiversity Action Plan: Priority Habitat Descriptions* (Maddock, A (ed), 2008); these lists are used to help draw up the statutory lists of Priority Habitats, as required under Section 7 of the *Environment (Wales) Act 2016* (The National Assembly for Wales, 2016). Where suitable, the ecological value of the habitats present have been assessed using the terms outlined in *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine* (CIEEM, 2018).
- 2.5.3 Government advice on wildlife, as set out in the Planning Policy Wales (Edition 10) (Welsh Government, 2018) and associated government circulars has been taken into consideration. Legislation relating to protected species, such as those listed under Section 6 of the *Environment (Wales) Act 2016* (The National Assembly for Wales, 2016), is referenced where applicable, and any impacts to protected species are evaluated in accordance with current guidance.
- 2.5.4 The presence of any Priority Species, as listed under Section 6 of the *Environment (Wales) Act 2016* (The National Assembly for Wales, 2016) is noted, and habitats are assessed in terms of their suitability and value for these species. The presence of habitats and/or species listed by the Cofnod, the North Wales Environmental Information Service has been taken into account in the evaluation of the site.

3.0 SURVEY RESULTS

3.1 Desktop Study

Designated Sites for Nature Conservation

Statutory Designated Sites for Nature Conservation and SSSI Impact Risk Zones

- 3.1.1 No statutory designated sites lie within a 2 kilometre radius of the site.
- 3.1.2 The site lies within a Site of Special Scientific Interest (SSSI) Impact Risk Zone for the River Dee SSSI, overlapping with the River Dee and Bala Lake Special Area of Conservation (SAC). The SSSI Impact Risk Zone requires the Local Planning Authority to consult with Natural England on likely risks from the following development categories (Ordnance Survey, 2019):

<i>'Infrastructure:</i>	<i>Airports, helipads and other aviation proposals.</i>
<i>Air Pollution:</i>	<i>Any industrial / agricultural development that could cause air pollution (including industrial processes, livestock and poultry units with floorspace greater than 500m², slurry lagoons greater than 750m² and manure stores greater than 3500t).</i>
<i>Combustion:</i>	<i>General combustion processes greater than 50 megawatt energy input. Including energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis / gasification, anaerobic digestion, sewage treatment works, other incineration / combustion.'</i>

Non-statutory Designated Sites for Nature Conservation

3.1.3 There are four non-statutory designated Wildlife Sites (WS) within 2km of the site, presented at **Table 3.1**.

Table 3.1: Non-statutory Designated Sites Within a 2 Kilometre Radius of the Site

Site Name	OS Grid Reference and Distance from Site	Description
Cefn Park (WS)	341 metres SJ367499	This site is a series of broadleaved woodlands within Cefn Park Estate. Big Wood is the largest (8.9ha) and is dominated by Ash (<i>Fraxinus excelsior</i>) with Oak species (<i>Quercus</i> sp.), Sycamore (<i>Acer pseudoplatanus</i>) and an occasional mature Wych Elm (<i>Ulmus glabra</i>). There is a rich ground flora which includes Dog's Mercury (<i>Mercurialis perennis</i>), Bluebell (<i>Hyacinthoides non-scripta</i>), Wood Anemone (<i>Anemone nemorosa</i>) and Ramsons (<i>Allium ursinum</i>).
Wrexham Industrial Estate (WS)	761metres SJ386493	This is a series of sites within the industrial estate which includes unmanaged grassland at Bryn Road and on Cefn Park land and ancient broadleaved woodland, Erlas Black Wood.
Marchwiel Marsh (WS)	1710 metres SJ360478	Marshy field between school and disused railway line. Past improvement has led to it being dominated by rushes; Hard Rush (<i>Juncus inflexus</i>), Soft-rush (<i>Juncus effusus</i>) and Jointed Rush (<i>Juncus articulatus</i>) are all abundant.
Peter's Dingle (WS)	1982 metres SJ389481	An ash/oak woodland along a brook. The understorey is of Wych Elm, Elder (<i>Sambucus nigra</i>), Hawthorn (<i>Crataegus monogyna</i>) and Hazel (<i>Corylus avellana</i>), the latter becoming abundant in areas where it has been coppiced.

Protected and Notable Species

3.1.4 Cofnod, the North Wales Environmental Information Service hold no records of protected and notable species for the site.

3.1.5 Records of protected and notable species for a 2 kilometre radius of the site are presented at **Table 3.2** below.

Table 3.2: Records of Protected Species Within a 2 Kilometre Radius of the Site

Taxon Group	Species Name and Designations ¹ and Notes
Terrestrial Mammals	Common pipistrelle (<i>Pipistrellus pipistrellus</i>) EPS & WCAs5: A total of 10 records, dated between 1981 and 2017, the closest of which is 880m from the site.
	Soprano pipistrelle (<i>Pipistrellus pygmaeus</i>): EPS, WCAs5, PS & WBAP. A total of 5 records, dated between 2013 and 2017, the closest of which is 1030m from the site.
	Pipistrelle species (<i>Pipistrellus</i> sp.) EPS & WCAs5: 2 record, dated between 1985 and 2003, 930m from the site.
	Brown long-eared bat (<i>Plecotus auritus</i>): EPS, WCAs5, PS & WBAP. 1 record, dated 1991, 1120m from the site.
	Noctule bat (<i>Nyctalus noctula</i>) EPS, WCAs5 & PS : A total of 4 records, dated between 2016 and 2016, the closest of which is 880m from the site.
	Myotis bat species (<i>Myotis</i> sp.): A total of 2 records, dated between 2016 and 2016, the closest of which is 1040m from the site.
	Lesser horseshoe bat (<i>Rhinolophus hipposideros</i>): EPS, WCAs5, PS & WBAP. 1 record, dated 2015, 1870m from the site.
	Whiskered bat (<i>Myotis mystacinus</i>) EPS & WCAs5: A total of 4 records, dated between 1998 and 2004, the closest of which is 530m from the site.

	Bat species, EPS & WCAs5: A total of 10 records, dated between 1981 and 2005, the closest of which is 900m from the site. Badger (<i>Meles meles</i>), Protection of Badgers Act 1992 & WBAP: A total of 30 records, dated between 1983 and 2018, the closest of which is 340m from the site. Brown hare (<i>Lepus europaeus</i>), PS & WBAP: A total of 3 records, dated between 2006 and 2019, the closest of which is 1860m from the site. Otter (<i>Lutra lutra</i>), EPS, WCAs5, PS & WBAP: A total of 2 records, dated between 2017 and 2018, the closest of which is 1010m from the site. Polecat (<i>Mustela putorius</i>), PS & WBAP: A total of 3 records, dated between 2013 and 2014, the closest of which is 1640m from the site. Hedgehog (<i>Erinaceus europaeus</i>), PS: A total of 13 records, dated between 2005 and 2018, the closest of which is 610m from the site.
Amphibian	Great crested newt (<i>Triturus cristatus</i>), EPS, WCAs5, PS & WBAP: A total of 132 records, dated between 1992 and 2018, the closest of which is 80m from the site. Smooth newt (<i>Lissotriton vulgaris</i>), WCAs5 (sale only) & WBAP: A total of 65 records, dated between 1992 and 2018, the closest of which is 80m from the site. Palmate newt (<i>Lissotriton helveticus</i>), WCAs5 (sale only) & WBAP: A total of 4 records, dated between 2015 and 2018, the closest of which is 930m from the site. Common toad (<i>Bufo bufo</i>), PS & WBAP: A total of 17 records, dated between 2011 and 2018, the closest of which is 590m from the site. Common frog (<i>Rana temporaria</i>), WCAs5 (sale only): A total of 26 records, dated between 1992 and 2018, the closest of which is 80m from the site.
Reptile	Adder (<i>Vipera berus</i>), WCAs5, PS & WBAP: A total of 2 records, dated between 1999 and 2009, the closest of which is 1000m from the site. Grass snake (<i>Natrix helvetica</i>), WCAs5 & WBAP: A total of 2 records, dated between 2013 and 2018, the closest of which is 1010m from the site. Slow-worm (<i>Anguis fragilis</i>), WCAs5, PS & WBAP: A total of 2 records, dated between 1999 and 2009, the closest of which is 1000m from the site.
Flowering Plants	PS and WBAP Cornflower (<i>Centaurea cyanus</i>), Pennyroyal (<i>Mentha pulegium</i>) WBAP Black-poplar (<i>Populus nigra</i>), Bluebell (<i>Hyacinthoides non-scripta</i> x <i>hispanica</i> = <i>H. x massartiana</i>), Butterbur (<i>Petasites hybridus</i>), Charlock (<i>Sinapis arvensis</i>), Chicory (<i>Cichorium intybus</i>), Common Cornsalad (<i>Valerianella locusta</i>), Corn Mint (<i>Mentha arvensis</i>), Dyer's Greenweed (<i>Genista tinctoria</i>), Field Pepperwort (<i>Lepidium campestre</i>), Grass Vetchling (<i>Lathyrus nissolia</i>), Great Yellow-cress (<i>Rorippa amphibia</i>), Greater Pond-sedge (<i>Carex riparia</i>), Horned pondweed (<i>Zannichellia palustris</i>), Jacob's-ladder (<i>Polemonium caeruleum</i>), Least Duckweed (<i>Lemna minuta</i>), Marsh-orchid (<i>Dactylorhiza fuchsii</i> x <i>praetermissa</i> = <i>D. x grandis</i>), Montbretia (<i>Crocsmia pottsii</i> x <i>aurea</i> = <i>C. x crocosmiiflora</i>), Pepper-saxifrage (<i>Silaum silaus</i>), Rough Hawk's-beard (<i>Crepis biennis</i>), Silky-leaved Osier (<i>Salix viminalis</i> x <i>cinerea</i> = <i>S. x holosericea</i>), Southern Marsh-orchid (<i>Dactylorhiza praetermissa</i>), Spiny Restharrow (<i>Ononis spinosa</i>), Spotted Medick (<i>Medicago arabica</i>), White Stonecrop (<i>Sedum album</i>) and Wood Small-reed (<i>Calamagrostis epigejos</i>)
Insects	PS and WBAP Dingy skipper (<i>Erynnis tages</i>), grizzled skipper (<i>Pyrgus malvae</i>), small heath (<i>Coenonympha pamphilus</i>), wall (<i>Lasiommata megera</i>), white-letter hairstreak (<i>Satyrus w-album</i>), scarce four-dot pin-palp (<i>Bembidion quadripustulatum</i>), grizzled skipper (<i>Pyrgus malvae</i>), small heath (<i>Coenonympha pamphilus</i>), wall (<i>Lasiommata megera</i>), white-letter hairstreak (<i>Satyrus w-album</i>), cinnabar (<i>Tyria jacobaeae</i>), latticed heath (<i>Chiasmia clathrata</i>), oak hook-tip (<i>Watsonella binaria</i>), shaded broad-bar (<i>Scotopteryx chenopodiata</i>), small emerald (<i>Hemistola chrysoprasaria</i>), small phoenix (<i>Ecliptopera silaceata</i>), acanthiophilus helianthi (<i>Acanthiophilus helianthi</i>) and banded general (<i>Stratiomys potamida</i>) WBAP <i>Bembidion obliquum</i>, <i>Cyphon pubescens</i>, <i>Diplapion stolidum</i>, <i>Donacia thalassina</i>, horsetail weevil (<i>Grypus equiseti</i>), <i>Hydaticus seminiger</i>, <i>Neophytobius quadrinodosus</i>, <i>Pseudorchestes pratensis</i>, <i>Stenus fornicatus</i>, <i>Sympetrum sanguineum</i> & <i>Andrena</i> (<i>Poecilandrena</i>) <i>labiata</i>

Birds	WCAs1 <i>Barn owl (Tyto alba)</i>, <i>fieldfare (Turdus pilaris)</i>, <i>goldeneye (Bucephala clangula)</i>, <i>kingfisher (Alcedo atthis)</i> and <i>redwing (Turdus iliacus)</i> PS and WBAP <i>Bullfinch (Pyrrhula pyrrhula)</i>, <i>cuckoo (Cuculus canorus)</i>, <i>curlew (Numenius arquata)</i>, <i>duncock (Prunella modularis)</i>, <i>herring gull (Larus argentatus)</i>, <i>house sparrow (Passer domesticus)</i>, <i>lapwing (Vanellus vanellus)</i>, <i>lesser redpoll (Acanthis cabaret)</i>, <i>marsh tit (Poecile palustris)</i>, <i>reed bunting (Emberiza schoeniclus)</i>, <i>skylark (Alauda arvensis)</i>, <i>song thrush (Turdus philomelos)</i>, <i>spotted flycatcher (Muscicapa striata)</i>, <i>starling (Sturnus vulgaris)</i>, <i>tree sparrow (Passer montanus)</i>, <i>yellow wagtail (Motacilla flava)</i>, <i>yellowhammer (Emberiza citrinella)</i> PS <i>Grasshopper warbler (Locustella naevia)</i> WBAP <i>Black-headed gull (Chroicocephalus ridibundus)</i>, <i>coal tit (Periparus ater)</i>, <i>common gull (Larus canus)</i>, <i>common sandpiper (Actitis hypoleucos)</i>, <i>cormorant (Phalacrocorax carbo)</i>, <i>dipper (Cinclus cinclus)</i>, <i>goldcrest (Regulus regulus)</i>, <i>great black-backed gull (Larus marinus)</i>, <i>green woodpecker (Picus viridis)</i>, <i>house martin (Delichon urbicum)</i>, <i>kestrel (Falco tinnunculus)</i>, <i>lesser black-backed gull (Larus fuscus)</i>, <i>long-tailed tit (Aegithalos caudatus)</i>, <i>meadow pipit (Anthus pratensis)</i>, <i>mute swan (Cygnus olor)</i>, <i>redstart (Phoenicurus phoenicurus)</i>, <i>shelduck (Tadorna tadorna)</i>, <i>snipe (Gallinago gallinago)</i>, <i>swallow (Hirundo rustica)</i>, <i>swift (Apus apus)</i>, <i>teal (Anas crecca)</i>, <i>whitethroat (Sylvia communis)</i>, <i>willow warbler (Phylloscopus trochilus)</i> and <i>woodcock (Scolopax rusticola)</i>.
¹Key to Designation Codes: EPS = European Protected Species under the <i>Conservation of Habitats and Species Regulations 2017</i>. WCAs1 = Species receives full protection under Schedule 1 of the <i>Wildlife and Countryside Act 1981</i> (as amended). WCAs5 = Species receives full protection under Schedule 5 of the <i>Wildlife and Countryside Act 1981</i> (as amended). PS = Priority Species listed under Section 41 of the NERC Act 2006 WBAP = Species listed on the Wrexham Biodiversity Action Plan	

- 3.1.6 The presence of these protected and notable species within the wider area has been taken into account throughout this report.

3.2 Vegetation and Habitats

General Description

- 3.2.1 The approximately 1.5 hectare site lies within an existing industrial estate and comprises two industrial units with associated hard standing, crushed hard standing with sparse colonising vegetation, amenity grassland and unmanaged coarse grassland. 0.37ha of the site will be affected by the proposed development (i.e. the extension of Buildings 1 and 2).
- 3.2.2 The northern, southern and eastern site boundaries are defined by fencing, beyond which lie further industrial units. The western site boundary site boundary is defined by the edge of the hard standing and the north-western elevation of Building 1, beyond which lies unmanaged coarse grassland and Pond 1.
- 3.2.3 A Phase 1 Habitat Survey map is appended at **Figure 10.2**, and can be referred to for all habitat descriptions. Photographs are appended at **Table 8.3**.

Vegetation Colonising Crushed Hard Standing

- 3.2.4 The crushed hard standing adjacent to the north-west elevation of Building 1 (**Photos 1 and 2**) supports sparse colonising vegetation which is characterised by locally abundant Moss species, Dandelion (*Taraxacum officinale* agg.), Creeping Buttercup (*Ranunculus repens*), Daisy (*Bellis perennis*), Annual Meadow-grass (*Poa annua*), Soft-rush (*Juncus effusus*), Common Sorrel (*Rumex acetosa*), Broad-leaved Dock (*Rumex obtusifolius*) and Cowslip (*Primula veris*).

- 3.2.5 The colonising vegetation is not characteristic of an NVC community.
- 3.2.6 Areas of concrete hard standing within the site do not support any colonising vegetation (**Photos 3 and 4**).

Amenity Grassland

- 3.2.7 The amenity grassland within the site is short mown (**Photos 5 and 6**).
- 3.2.8 The vegetation is characterised by constant and abundant Perennial Rye-grass (*Lolium perenne*), frequent Cock's-foot (*Dactylis glomerata*) and Yorkshire-fog (*Holcus lanatus*) with occasional Smooth Meadow-grass (*Poa pratensis*), Rough Meadow-grass (*Poa trivialis*), Creeping Buttercup and White Clover (*Trifolium repens*).
- 3.2.9 The amenity grassland is characteristic of an *MG7 Perennial Rye-grass* ley grassland community of the NVC (Rodwell, 1992). A plant species list is appended at **Table 8.1**.

Coarse Grassland

- 3.2.10 The coarse grassland within the site is unmanaged and tussocky (**Photo 7**).
- 3.2.11 The vegetation is characterised by abundant Common Vetch (*Vicia sativa*) and Bush Vetch (*Vicia sepium*) with frequent Cow Parsley (*Anthriscus sylvestris*) and occasional Daisy, Creeping Buttercup, Dandelion and White Clover.
- 3.2.12 The coarse grassland is not characteristic of an NVC community. A plant species list is appended at **Table 8.2**.

Invasive Species

- 3.2.13 No invasive species listed on Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended) is present at the site.

3.3 Animal Life

Badger

- 3.3.1 No badger or signs of badger were detected within the site. No evidence of badger such as setts / holes, prints, hairs, dung pits or snuffle holes were detected at the site or in the immediate surrounding area. Due to the absence of any field signs of badger, the presence of badger at the site is reasonably discounted. No further survey is required.

Bat Species

Daylight Survey: Buildings

- 3.3.2 Two industrial units (Building 1 and Building 2) are located within the site boundary (**Photos 8 to 14**).
- 3.3.3 Both Building 1 and 2 are of the same construction type; both are constructed on a metal frame, with corrugated metal sheet walls and pitched corrugated metal sheet roofs. The roofs additionally support clear corrugated plastic skylights.
- 3.3.4 Internally the metal frame of the buildings are exposed, and the corrugated metal sheeting walls and roofs are unlined.
- 3.3.5 The buildings support roller shutter doors which are open throughout the day.
- 3.3.6 No evidence of roosting bats was detected at Building 1 or Building 2.

3.3.7 The buildings do not support any features suitable for use by either crevice dwelling species of roosting bats, such as common pipistrelle, or species known to roost in the open in voids, such as brown long-eared bats, and are considered to be of 'negligible' value for use by roosting bats (in accordance with Table 4.1 of the *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn)*, (Collins, J. (ed), 2016)).

3.3.8 The presence of roosting bats is reasonably discounted and no further survey is required.

Habitat Assessment for Commuting and Foraging Bats

3.3.9 The site supports industrial units within an existing industrial estate; the habitats within the site boundary are unlikely to provide an abundance or diversity of invertebrate prey, and are therefore considered to be of low suitability for use by foraging bats.

Bird Species

3.3.10 The buildings within the site support noisy industrial processes and do not provide suitable opportunities for use by nesting birds. No birds were observed at the site during the survey, and no signs of nesting birds were detected at the buildings or the surrounding habitats.

3.3.11 No sign of ground nesting birds were detected within the site.

Great Crested Newt and other Amphibians

3.3.12 Pond 1 lies within the wider site of the Tension Control Bolts Site, 25 metres west of the proposed development area at the site (**Photos 15** and **16**).

3.3.13 The pond is an attenuation pond which lies within an area of unmanaged coarse grassland. The results of the HSI assessment of the pond are given at **Table 3.3**.

Table 3.3: Habitat Suitability Index Assessment for Pond 1

Criteria	Description	Pond 1	Score ¹
SI ₁	Location	A, optimal	1.0
SI ₂	Pond Area	100m ²	0.1
SI ₃	Permanence	Sometimes dries	0.5
SI ₄	Water Quality	Moderate	0.67
SI ₅	Shade	0%	1.0
SI ₆	Waterfowl	Minor impact	0.67
SI ₇	Fish	Absent	1.0
SI ₈	Pond count ²	15	1.0
SI ₉	Terrestrial habitat	Moderate	0.67
SI ₁₀	Macrophyte cover	0%	0.3
Assessment Result:		Below average	0.58
¹ Calculated by $(SI_1 \times SI_2 \times SI_3 \times SI_4 \times SI_5 \times SI_6 \times SI_7 \times SI_8 \times SI_9 \times SI_{10})^{1/10}$			
² Ponds within an unobstructed 1 kilometre radius			

3.3.14 eDNA analysis of the pond has confirmed the presence of great crested newt at Pond 1. The results of the eDNA analysis are presented at **Appendix 2 (Section 9.0)**.

3.3.15 The terrestrial habitats within the proposed development area of the site are considered to be of negligible suitability for use by terrestrial (i.e. foraging and sheltering) great crested newt, as they are composed of compacted hard standing with only sparse vegetation cover, and short-mown amenity grassland. The coarse and unmanaged grassland (within the site but outside the proposed development area) is considered to provide more suitable habitats for foraging and sheltering great crested newt.

3.3.16 The presence of great crested newt within 25 metres of the proposed development area is considered further at **Section 4.4**.

Reptiles

- 3.3.17 The site supports an even topography and supports homogenous vegetation, with little variation in the physiognomy. The habitats within the site are reasonably unlikely to support a large populations or a variety of invertebrate prey, and there are no records of reptile for the site or within 1 kilometre of the site (the closest records, for adder and slow-worm are both 1 kilometre from the site). The site is not located in proximity to or adjacent to more favourable habitats for use by reptile species, and the presence of reptiles within the site is reasonably discounted. No further survey is required.

4.0 EVALUATION AND ASSESSMENT

4.1 Introduction and Description of Proposals

- 4.1.1 In accordance with *Tension Control Bolts Site, Clywedog Road South, Wrexham, Site Plan as Proposed, Drawing Number 18138-C4C-AV-ZZ-DR-A-0508 Rev P3* (C4 Consulting, 2019), hereafter referred to as the 'proposals plan', Buildings 1 and 2 will be extended.
- 4.1.2 **Section 4.2** provides an assessment of any impacts of the proposed development on the designated sites in the wider area. The ecological value of habitats within the site are evaluated at **Section 4.3**, and the presence of protected and notable species is considered at **Section 4.4**.

4.2 Designated Sites for Nature Conservation

- 4.2.1 No statutory designated sites are located within a 2 kilometre radius of the site.
- 4.2.2 The site does not support any habitats that are a primary reason for selection of the non-statutory designated Wildlife Sites in the wider area or any habitats suitable for use by species associated with the statutory designated sites for nature conservation. No potential pathways for direct or indirect impacts or likely significant effects on the integrity and conservation objectives of the non-statutory designated sites in the wider area are identified.
- 4.2.3 The proposals will have no impact upon designated sites within the wider area.

4.3 Vegetation and Habitats

- 4.3.1 None of the habitats within the site are of significant interest in terms of their plant species composition. None of the habitats present are representative of semi-natural habitat. The habitats present are typical of the geographical area and conditions present. The site contains only common and widespread plant species. None of the habitats within the site are of significant interest in terms of their plant species composition. No Priority Habitats are present within the proposed development area.
- 4.3.2 No invasive plant species listed under Schedule 9 of the *Wildlife and Countryside Act 1981* were detected within the site.

4.4 Protected Species and Other Wildlife

- 4.4.1 eDNA analysis has confirmed the presence of great crested newt at Pond 1. Pond 1 lies 25 metres east of the proposed development area.
- 4.4.2 The habitats within the proposed development area comprise two existing industrial units, hard standing, crushed hard standing with sparse colonising vegetation and unmanaged coarse grassland. In accordance with the proposals plan (C4 Consulting, 2019) the proposed extension of the existing industrial units will directly impact the hard standing, the crushed hard standing with sparse colonising vegetation and the amenity grassland.

- 4.4.3 The proposed extension of Building 1 will remove 0.2ha of existing hard standing, 0.13ha of crushed hard standing with sparse colonising vegetation and 0.04 hectares of short mown amenity grassland (0.37ha total). The proposed extension of Building 2 will remove existing hardstanding and crushed hard standing with sparse colonising vegetation. None of the habitats scheduled to be affected by the proposed extension of the buildings are suitable for use by great crested newt.
- 4.4.4 Due to the poor suitability of the habitats scheduled to be affected by the proposals for use by great crested newt, it is considered that the works can be undertaken by implementing Reasonable Avoidance Measures for the protection of amphibian species, including great crested newt.
- 4.4.5 Reasonable Avoidance Measures (RAMs) for the protection of amphibians, including great crested newt, are presented at **Section 5.4**.

5.0 RECOMMENDATIONS AND ECOLOGICAL ENHANCEMENT

5.1 Introduction

- 5.1.1 These recommendations aim to ensure that the development is implemented in accordance with relevant wildlife legislation, Natural England guidance, the principles of the Planning Policy Wales (Edition 10) (Welsh Government, 2018), local planning policy and best practice.
- 5.1.2 The recommendations address the potential impacts identified in **Section 4.0** and are appropriate and proportionate.
- 5.1.3 When determining planning applications, local planning authorities should encourage opportunities to incorporate biodiversity improvements in and around developments, especially where this can secure measurable net gains for biodiversity.
- 5.1.4 Where possible, opportunities to enhance the ecological interest and habitat connectivity and seek biodiversity gain through appropriate landscape planting and habitat creation have been identified, as required by the Planning Policy Wales (Edition 10) (Welsh Government, 2018) and other relevant planning documents.
- 5.1.5 All recommendations are appropriate to the geographical area, the habitats in the wider area, the wildlife present in the local area (and likely to use the site post-construction) and take into consideration the continued industrial use of the site.

5.2 Bats

Construction Phase

- 5.2.1 Any lighting to be used at the site during construction should be directional and screened where possible, this specification should be included within a Construction Environment Management Plan (CEMP), or similar.

Development Lighting Design

- 5.2.2 The lighting scheme to be implemented at the developed site must involve the use of appropriate products and screening, where necessary, to ensure no excessive artificial lighting shines over areas of ecological enhancement and any landscape planting, as lighting overspill may deter use by wildlife such as foraging bats.
- 5.2.3 The lighting scheme will be designed with reference to current guidance, namely:
- Guidance Note 8: Bats and Artificial Lighting in the UK* (Institution of Lighting Professionals & Bat Conservation Trust, 2018); and

b. *Bats and lighting: Overview of current evidence and mitigation guidance* (Stone, 2014).

5.3 Birds

Protection

- 5.3.1 All wild birds are protected under the *Wildlife and Countryside Act 1981* (as amended) while they are breeding. It is advised that any works such as vegetation clearance that will affect habitats suitable for use by nesting birds are scheduled to commence outside the bird nesting season. Commencement of works in the nesting season must be informed by a pre-works nesting bird survey, carried out by a suitably experienced ecologist. The bird breeding season typically extends between March to August inclusive.
- 5.3.2 If breeding birds are detected the ecologist will issue guidance in relation to the protection of the nesting birds in conjunction with the scheduled works. This may involve cordoning off an area of the site until the young birds have fledged.

Enhancing Habitats for Nesting Birds

- 5.3.3 The installation of two general bird boxes is recommended at the site. The boxes will be not be positioned over windows or doorways where droppings may become a nuisance. RSPB advice states that boxes should ideally be sited facing north to east, to avoid exposure to direct sunlight, which may cause overheating of chicks in the nest. An example of a suitable bird box is given below, in Error! Reference source not found., below:



Insert 1: Schwegler 1MR Avianex

- 5.3.4 Such bird boxes are available from the NHBS (www.nhbs.com) or Wild Care Shop (www.wildcareshop.com). ERAP Ltd will advise on the siting of bird boxes.

5.4 Reasonable Avoidance Measures for the Protection of Amphibians

Measures to Be Adopted Prior to the Commencement of Works

- 5.4.1 To ensure habitats within the site do not become more suitable for sheltering amphibians (and other wildlife), it is recommended that the current management of the amenity grassland within the site is continued until immediately prior to the commencement of construction activities.
- 5.4.2 Following mowing, all arisings from the amenity grassland will be removed from site.
- 5.4.3 In the unlikely event of the discovery of a great crested newt whilst the continued management scheme is in progress then all works must cease and ERAP (Consultant Ecologists) Ltd. (01772 750502) or Natural Resources Wales (0300 065 3000) must be contacted immediately for further assistance. No site contractors must handle a great crested newt.

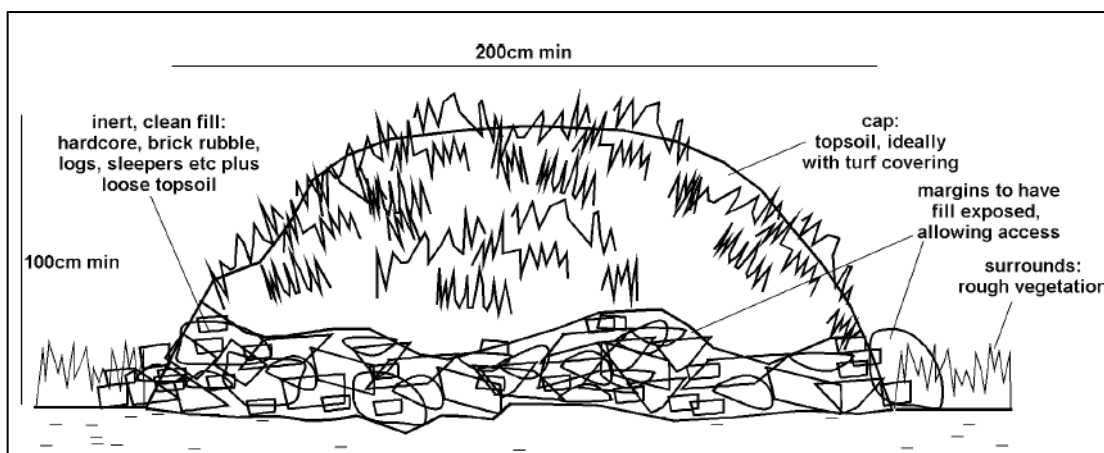
- 5.4.4 If any other amphibian species, such as common toad (*Bufo bufo*), common frog (*Rana temporaria*), palmate newt (*Lissotriton helveticus*) or smooth newt (*Lissotriton vulgaris*) is detected, it must be carefully picked up, placed in a clean bucket and moved to an area of suitable habitat beyond the development area.
- 5.4.5 The low height of the sward will be maintained until the commencement of construction works within the site.

Measures to be Adopted During Construction

- 5.4.6 The following RAMs are to be employed during the site preparation and construction works:
- All site personnel must be made aware of this Amphibian Reasonable Avoidance Measures Method Statement by the Site Manager during their Site Induction;
 - Site personnel must be trained in the identification of amphibian species, particularly in the identification of great crested newt (identification information is appended);
 - All arising waste during construction must be either removed from the area or placed in a skip in order that it does not create suitable habitat and shelter for amphibians;
 - During construction, any holes, trenches or other pits which amphibians could fall into should be covered overnight, or have sloped banks or ramps suitable for their escape;
 - The use of chemicals (such as fertilisers and herbicides) harmful to amphibians should be avoided wherever possible;
 - In the unlikely event of the discovery of a great crested newt whilst any site clearance or construction operations are in progress then all works in the area must cease and ERAP (Consultant Ecologists) Ltd (01772 750502) or Natural resources Wales (0300 065 3000) must be contacted immediately for further assistance;
 - No site contractors must handle a great crested newt; and
 - If any other amphibian species (such as common toad, common frog, palmate newt or smooth newt) is detected, it must be carefully picked up, placed in a clean bucket and moved to an area of suitable habitat beyond the development area (such as the woodland to the west of the site).
- 5.4.7 A copy of this RAMs Method Statement and the Amphibian Identification Chart presented at **Figure 9.2** will be kept in the Site Managers office during the construction period.

Creation of Hibernacula

- 5.4.8 If feasible within the site it is recommended that a total of one amphibian hibernacula will be created (to the north-west of Pond 1). The hibernacula should be created in accordance with the guidance and Figure 3 in the *Great Crested Newt Mitigation Guidelines* (English Nature, 2001). **Insert 2** below shows the recommended guidelines for creating a hibernacula.



Insert 2: Hibernacula design

5.4.9 The above design mimics natural conditions in which great crested newt and other amphibians are known to use for refuge and hibernation. The dimensions should be a minimum of two metres in diameter and one metre in height. Only clean and inert material should be used to form the base of the hibernacula, with a mixture of rubble and woody material, and top soil arising from site earthworks or pond excavation can be used to cover.

5.5 Landscape Planting

5.5.1 It is recommended that the landscape planting within the site is composed from native species and species known to be of value for the attraction of wildlife.

5.5.2 It is recommended that trees which support blossom and fruit which will attract insects are incorporated into the landscape planting. Suitable species are presented at **Table 5.1**, below.

Table 5.1: Suitable Native Species for Tree and Shrub Planting

Scientific Name	Common Name	Scientific Name	Common Name
<i>Acer campestre</i>	Field Maple	<i>Prunus spinosa</i>	Blackthorn
<i>Corylus avellana</i>	Hazel	<i>Rosa arvensis</i>	Field Rose
<i>Crataegus monogyna</i>	Hawthorn	<i>Rosa canina</i>	Dog-rose
<i>Ilex aquifolium</i>	Holly	<i>Sambucus nigra</i>	Elder
<i>Malus sylvestris</i>	Crab Apple	<i>Sorbus aucuparia</i>	Rowan
<i>Prunus avium</i>	Wild Cherry	<i>Ulmus glabra</i>	Wych Elm
<i>Prunus padus</i>	Bird Cherry	<i>Viburnum opulus</i>	Gelder Rose

5.5.3 The understorey and ground cover planting design should be prepared to optimise the attraction of invertebrates such as feeding bumblebees and butterflies. Where possible the use of native species should be maximised but where necessary non-native species known to be attractive to invertebrates should be used.

5.5.4 Planting schemes that include flowering species such as *Viburnum*, *Ceanothus*, *Hebe*, *Lavandula*, *Lonicera*, *Potentilla*, *Rosmarinus* and *Vinca* can maximise opportunities for feeding invertebrates and for the attraction of foraging bats and birds.

5.5.5 For further plants suitable for the attraction of pollinators please refer to the *Perfect for Pollinators Plant List* (Royal Horticultural Society, 2012). It is recommended that the selection of plant species at the site ensures that a variety of flowering species are available throughout the year.

6.0 CONCLUSION

- 6.1 This ecological appraisal has demonstrated that the proposed extension at the site is feasible and acceptable in accordance with ecological considerations and the Planning Policy Wales (Edition 10) (Welsh Government, 2018).
- 6.2 It is possible to implement reasonable actions for the protection and long-term conservation of fauna such as great crested newts and other amphibians associated with the wider area.

7.0 REFERENCES

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8.0 APPENDIX 1: PLANT SPECIES LISTS AND PHOTOGRAPHS

Table 8.1: Plant Species List for the Amenity Grassland

Scientific Name	Common Name	DAFOR ¹	Cover
	Moss species	LA	5%
<i>Achillea millefolium</i>	Yarrow	LA	5%
<i>Agrostis stolonifera</i>	Creeping Bent	LA	2%
<i>Bellis perennis</i>	Daisy	LF	<1%
<i>Cerastium fontanum</i>	Common Mouse-ear	LA	2%
<i>Cirsium arvense</i>	Creeping Thistle	VLF	<1%
<i>Cirsium vulgare</i>	Spear Thistle	VLF	<1%
<i>Dactylis glomerata</i>	Cock's-foot	F	15%
<i>Elytrigia repens</i>	Common Couch	LA	1%
<i>Festuca rubra</i>	Red Fescue	LA	1%
<i>Heracleum sphondylium</i>	Hogweed	VLA	<1%
<i>Holcus lanatus</i>	Yorkshire-fog	F	15%
<i>Lolium perenne</i>	Perennial Rye-grass	A*	30%
<i>Plantago lanceolata</i>	Ribwort Plantain	VLF	<1%
<i>Poa annua</i>	Annual Meadow-grass	LA	2%
<i>Poa pratensis</i>	Smooth Meadow-grass	O	5%
<i>Poa trivialis</i>	Rough Meadow-grass	O	5%
<i>Ranunculus repens</i>	Creeping Buttercup	O	5%
<i>Rumex acetosa</i>	Common Sorrel	LF	<1%
<i>Rumex obtusifolius</i>	Broad-leaved Dock	VLA	<1%
<i>Sagina procumbens</i>	Procumbent Pearlwort	VLF	<1%
<i>Senecio jacobaea</i>	Common Ragwort	VLA	<1%
<i>Stellaria media</i>	Common Chickweed	LA	2%
<i>Taraxacum officinale</i> agg.	Dandelion	LF	<1%
<i>Trifolium repens</i>	White Clover	O	5%
<i>Vicia sepium</i>	Bush Vetch	LA	5%

¹**Key to DAFOR:** D=Dominant, A=Abundant, F=Frequent, O=Occasional, R=Rare, V=Very, L=Local and *denotes a constant species

Table 8.2: Plant Species List for the Unmanaged Coarse Grassland

Scientific Name	Common Name	DAFOR ¹	Cover
	Moss species	LA	<1%
<i>Achillea millefolium</i>	Yarrow	LA	<1%
<i>Agrostis stolonifera</i>	Creeping Bent	LF	<1%
<i>Anthriscus sylvestris</i>	Cow Parsley	F	10%
<i>Bellis perennis</i>	Daisy	O	5%
<i>Cardamine pratensis</i>	Cuckooflower	VLA	<1%
<i>Cerastium fontanum</i>	Common Mouse-ear	LA	<1%
<i>Cirsium arvense</i>	Creeping Thistle	LF	<1%
<i>Cirsium vulgare</i>	Spear Thistle	VLF	<1%
<i>Cytisus scoparius</i>	Broom	R	<1%
<i>Dactylis glomerata</i>	Cock's-foot	LA	5%
<i>Elytrigia repens</i>	Common Couch	LF	<1%
<i>Festuca rubra</i>	Red Fescue	LA	1%
<i>Galium aparine</i>	Cleavers	LA	5%
<i>Holcus lanatus</i>	Yorkshire-fog	LA	5%
<i>Juncus effusus</i>	Soft-rush	VLA	<1%
<i>Lolium perenne</i>	Perennial Rye-grass	LA	10%
<i>Plantago lanceolata</i>	Ribwort Plantain	VLA	<1%
<i>Plantago major</i>	Greater Plantain	VLA	<1%
<i>Poa annua</i>	Annual Meadow-grass	LF	1%
<i>Poa pratensis</i>	Smooth Meadow-grass	LF	1%
<i>Poa trivialis</i>	Rough Meadow-grass	LF	1%
<i>Potentilla reptans</i>	Creeping Cinquefoil	VLF	<1%
<i>Ranunculus acris</i>	Meadow Buttercup	LA	<1%
<i>Ranunculus repens</i>	Creeping Buttercup	O	20%
<i>Rumex acetosa</i>	Common Sorrel	VLA	<1%
<i>Rumex obtusifolius</i>	Broad-leaved Dock	LA	<1%
<i>Senecio jacobaea</i>	Common Ragwort	LF	<1%
<i>Solanum dulcamara</i>	Bittersweet	VLA	<1%
<i>Stellaria media</i>	Common Chickweed	LA	<1%
<i>Taraxacum officinale</i> agg.	Dandelion	O	5%
<i>Trifolium repens</i>	White Clover	O	10%
<i>Vicia sativa</i>	Common Vetch	A	10%
<i>Vicia sepium</i>	Bush Vetch	A	10%

¹**Key to DAFOR:** D=Dominant, A=Abundant, F=Frequent, O=Occasional, R=Rare, V=Very, L=Local and *denotes a constant species

Table 8.3: Table of Photographs



Photo 1: Vegetation colonising compacted hard standing (facing north-east)



Photo 2: Vegetation colonising compacted hard standing (facing south-west)



Photo 3: Hard standing with colonising vegetation beyond (facing north-west)



Photo 4: Hard standing (facing north-east)



Photo 5: Amenity grassland south of Building 1 (facing west)



Photo 6: Amenity grassland south of Building 1 (facing west)



Photo 7: Coarse grassland south of Building 1 (facing west)



Photo 8: Hard standing and northern aspect of Building 1 (facing south-east)



Photo 9: Hard standing and northern aspect of Building 1 (facing west)

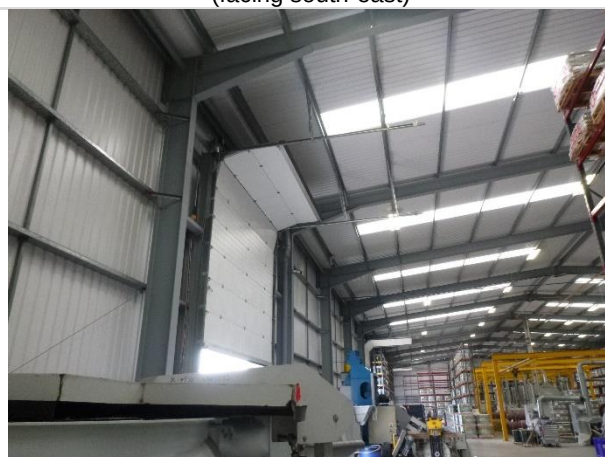


Photo 10: Interior of Building 1 showing northern aspect (facing south-east)



Photo 11: Interior of Building 1 showing southern aspect (facing west)



Photo 12: Hard standing, colonising vegetation and western aspect of Building 2 (facing east)



Photo 13: Interior of Building 2 showing western aspect (facing north-east)

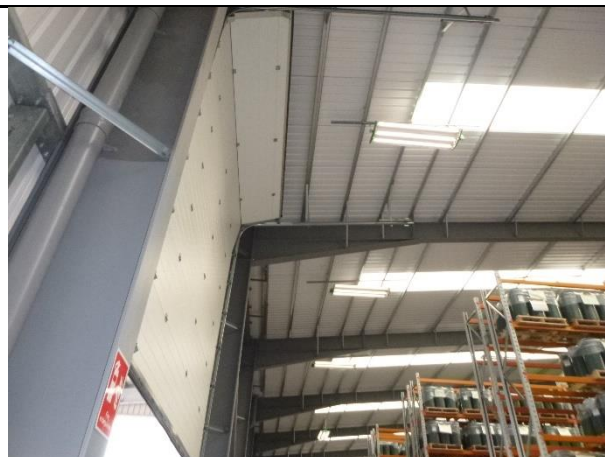


Photo 14: Interior of Building 2 showing western aspect (facing north-east)



Photo 15: Pond 1 (facing north-east)



Photo 16: Pond 1 (facing west)

9.0 APPENDIX 2: GREAT CRESTED NEWT

9.1 eDNA Results



Folio No: E4733
 Report No: 1
 Order No: 2019-079
 Client: ERAP LTD
 Contact: Amy Sharples
 Contact Details: amy.sharples@erap.co.uk
 Date: 29/04/2019

TECHNICAL REPORT

ANALYSIS OF ENVIRONMENTAL DNA IN POND WATER FOR THE DETECTION OF GREAT CRESTED NEWTS

Date sample received at Laboratory: 26/04/2019
 Date Reported: 29/04/2019
 Matters Affecting Results: None

RESULTS

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
1144	Pond 1, Tension Control Bolts Wrexham	SJ36983 49445	Pass	Pass	Pass	Positive	11

SUMMARY

When Great Crested Newts (GCN); *Triturus cristatus* inhabit a pond, they deposit traces of their DNA in the water as evidence of their presence. By sampling the water, we can analyse these small environmental DNA (eDNA) traces to confirm GCN habitation, or establish GCN absence.

The water samples detailed below were submitted for eDNA analysis to the protocol stated in DEFRA WC1067 (Latest Amendments). Details on the sample submission form were used as the unique sample identity.

RESULTS INTERPRETATION

Lab Sample No.- When a kit is made it is given a unique sample number. When the pond samples have been taken and the kit has been received back in to the laboratory, this sample number is tracked throughout the laboratory.

Forensic Scientists and Consultant Engineers
 SureScreen Scientifics Division Ltd, Morley Retreat, Church Lane, Morley, Derbyshire, DE7 6DE
 UK Tel: +44 (0)1332 292003 Email: scientific@suresscreen.com
 Company Registration No. 08950940

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Site Name- Information on the pond.

O/S Reference - Location/co-ordinates of pond.

SIC- Sample Integrity Check. Refers to quality of packaging, absence of tube leakage, suitability of sample (not too much mud or weed etc.) and absence of any factors that could potentially lead to results errors. Inspection upon receipt of sample at the laboratory. To check if the Sample is of adequate integrity when received. Pass or Fail.

DC- Degradation Check. Analysis of the spiked DNA marker to see if there has been degradation of the kit since made in the laboratory to sampling to analysis. Pass or Fail.

IC- Inhibition Check- PCR inhibitors can cause false results. Inhibitors are analysed to check the quality of the result. Every effort is made to clean the sample pre-analysis however some inhibitors cannot be extracted. An unacceptable inhibition check will cause an indeterminate sample and must be sampled again.

Result- NEGATIVE means that GCN eDNA was not detected or is below the threshold detection level and the test result should be considered as no evidence of GCN presence. POSITIVE means that GCN eDNA was found at or above the threshold level and the presence of GCN at this location at the time of sampling or in the recent past is confirmed. Positive or Negative.

Positive Replicates- To generate the results all of the tubes from each pond are combined to produce one eDNA extract. Then twelve separate analyses are undertaken. If one or more of these analyses are positive the pond is declared positive for the presence of GCN. It may be assumed that small fractions of positive analyses suggest low level presence but this cannot currently be used for population studies. In accordance with Natural England protocol, even a score of 1/12 is declared positive.

METHODOLOGY

The laboratory testing adheres to strict guidelines laid down in WC1067 Analytical and Methodological Development for Improved Surveillance of The Great Crested Newt, Version 1.1

The analysis is conducted in two phases. The sample first goes through an extraction process where all six tubes are pooled together to acquire as much eDNA as possible. The pooled sample is then tested via real time PCR (also called q-PCR). This process amplifies select part of DNA allowing it to be detected and measured in 'real time' as the analytical process develops. qPCR combines PCR amplification and detection into a single step. This eliminates the need to detect products using gel electrophoresis. With qPCR, fluorescent dyes specific to the target sequence are used to label PCR products during thermal cycling. The accumulation of fluorescent signals during the exponential phase of the reaction is measured for fast and objective data analysis. The point at which amplification begins (the Ct value) is an indicator of the quality of the sample. True positive controls, negatives and blanks as well as spiked synthetic DNA are included in every analysis and these have to be correct before any result is declared so they act as additional quality control measures.

The primers used in this process are specific to a part of mitochondrial DNA only found in GCN ensuring no DNA from other species present in the water is amplified. The unique sequence appropriate for GCN analysis is quoted in DEFRA WC 1067 and means there should be no detection of closely related species. We have tested our system exhaustively to ensure this is the case in our laboratory. We can offer eDNA analysis for most other species including other newts.

Analysis of eDNA requires scrupulous attention to detail to prevent risk of contamination. Kits are manufactured by SureScreen Scientifics to strict quality procedures in a separate building and with separate staff, adopting best practice from WC1067 and WC1067 Appendix 5. Kits contain a 'spiked' DNA marker used as a quality control tracer (SureScreen patent pending) to ensure any DNA contained in the sampled water has not deteriorated in transit. Stages of the DNA analysis are also conducted in different buildings at our premises for added security.

Forensic Scientists and Consultant Engineers
SureScreen Scientifics Division Ltd, Morley Retreat, Church Lane, Morley, Derbyshire, DE7 6DE
UK Tel: +44 (0)1332 292003 Email: scientifics@suresscreen.com
Company Registration No. 08950940

Page 2 of 3



SureScreen Scientifics Ltd also participate in Natural England's proficiency testing scheme and we also carry out inter-laboratory checks on accuracy of results as part of our quality procedures.

Reported by: Troy Whyte

Approved by: Chris Troth

End Of Report

Forensic Scientists and Consultant Engineers
SureScreen Scientifics Division Ltd, Morley Retreat, Church Lane, Morley, Derbyshire, DE7 6DE
UK Tel: +44 (0)1332 292003 Email: scientifics@surescreen.com
Company Registration No. 08950940

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9.2 Amphibian Identification Information

Amphibian Identification

Common frog

Adults 6-7 cm.
Smooth skin, which appears moist.

Coloration variable, includes brown, yellow and orange. Some females have red markings on lower body.

Usually has a dark 'mask' marking behind the eye.

Breeding male
Grey/pale blue throat.
Thick front legs.
Dark (nuptial) pad on inner toes of the front feet.

Markings also variable, including varying amounts of black spots and stripes.

Spawn is laid in gelatinous clumps.

Young froglets look like smaller versions of the adults.

Common toad

Adults 5-9 cm. Rough skin. Brown with darker markings. Less commonly, some individuals are very dark, almost black, others are brick-red.

Breeding pair

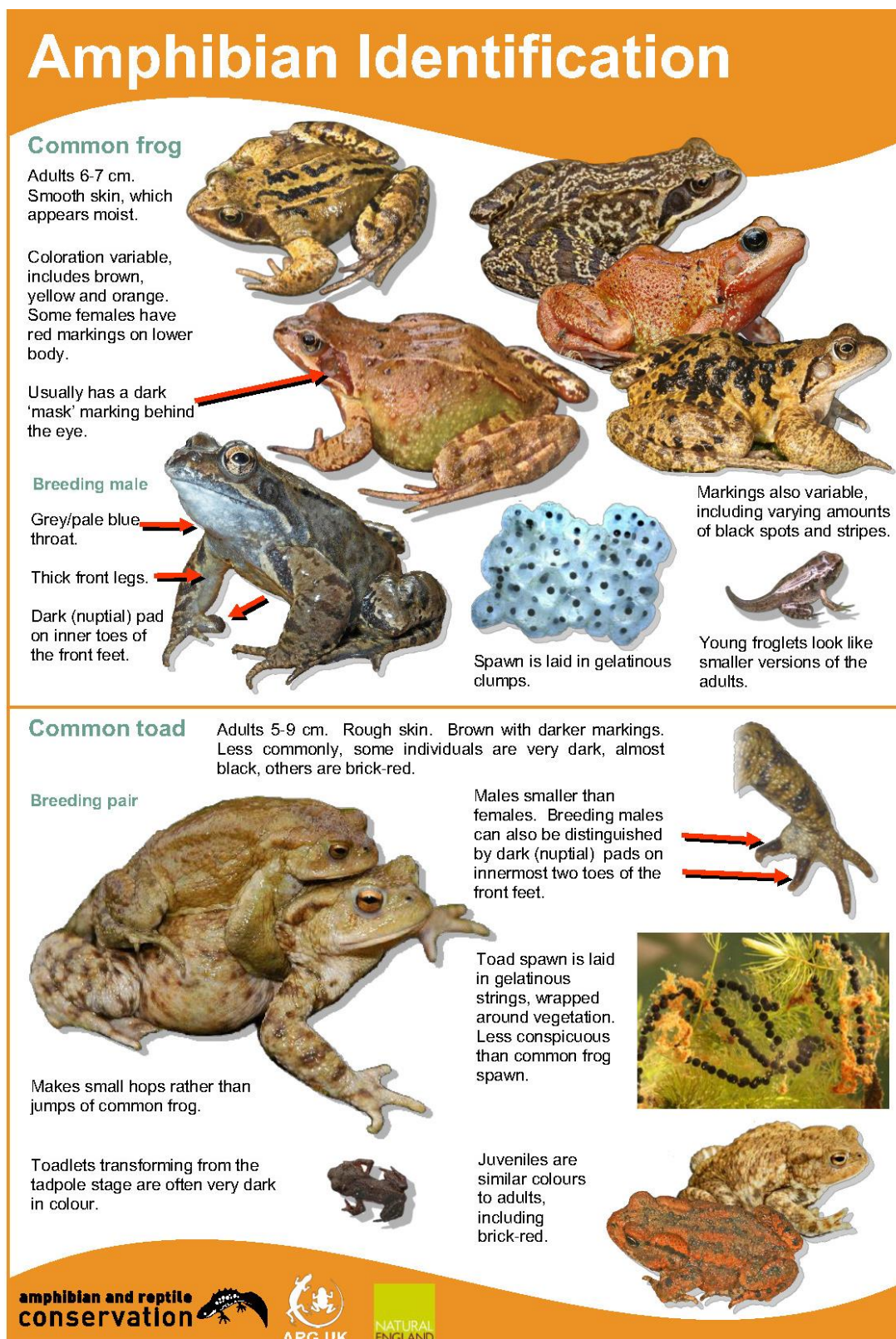
Males smaller than females. Breeding males can also be distinguished by dark (nuptial) pads on innermost two toes of the front feet.

Toad spawn is laid in gelatinous strings, wrapped around vegetation. Less conspicuous than common frog spawn.

Makes small hops rather than jumps of common frog.

Toadlets transforming from the tadpole stage are often very dark in colour.

Juveniles are similar colours to adults, including brick-red.



The illustrations show various stages and forms of amphibians. For Common frogs, there are several adult frogs with different color patterns (brown, yellow, orange, and black spots), a breeding male with a grey/pale blue throat and thick front legs, a cluster of blue gelatinous spawn with black spots, and a small young froglet. For Common toads, there is a large illustration of a breeding pair (male on top of female), a single toad with dark nuptial pads on its front feet, a string of black toad spawn wrapped around green vegetation, a small dark toadlet, and a brick-red juvenile toad.

Natterjack toad

Similar in size and appearance to common toad, but with a pale stripe running along the back.



Strictly protected species, requiring a licence to handle or disturb.



This is a rare species, unlikely to be found outside specific dune and heathland habitats.

Tadpoles

On hatching common frog and toad tadpoles are black. As they develop, common frog tadpoles become mottled with bronze, whereas toad tadpoles remain uniformly dark until the last stages of development.

Common frog and toad tadpoles generally complete development in the summer, but development rates are variable; some tadpoles may not transform until later in the year, or they may even remain as tadpoles over winter, becoming much larger than normal.

Tadpoles of water/green frogs grow larger than native frog and toad tadpoles. There are usually mottled markings on the base of the tail and the belly is usually white.

Frog



Toad



Water frog



Water/green frogs

This is a group of non-native frogs, including pool, edible and marsh frogs (although there is one population of pool frogs which is native). There is considerable variation in colour and markings within each species, so identification by eye can be difficult. Water frogs breed in late spring/early summer. Males call loudly at this time and sporadically later in the summer. The calls are a useful way of distinguishing the species and can be heard on the *Alien Encounters* website (www.alienencounters.org.uk).



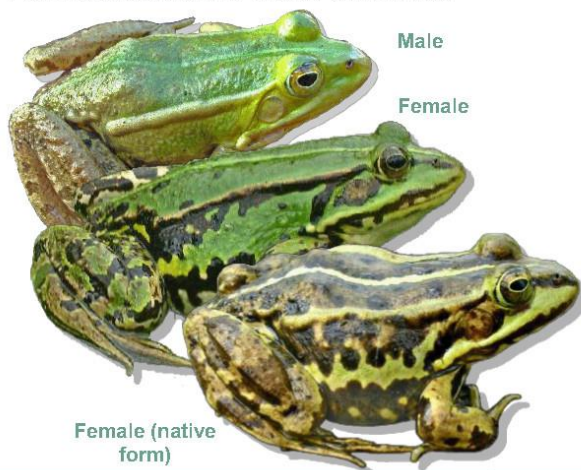
Calling marsh frog

Calling pool frog

Calling male water frogs inflate a pair of balloon-like vocal sacs, one either side of the head. These sacs are dark grey in marsh frogs, white in pool frogs and pale grey in edible frogs.

Pool frog

Pool frogs are similar in size to the common frog.



Male

Female

Female (native form)

Edible frog

Grows to a little larger than the common frog.



Marsh frog

A large frog growing to 13 cm (much larger than the common frog). Variable coloration and markings. May, or may not, have pale dorsal stripe. Marsh frogs usually have some vivid green coloration, but some can be predominantly brown.



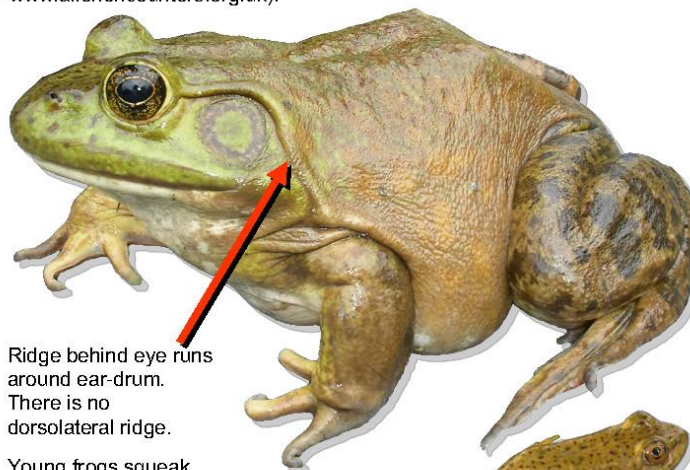
Sometimes mistaken for North American bullfrog, but marsh frogs have dorsolateral ridges and calling males have paired vocal sacs, either side of the head (both features absent in bullfrogs).

North American bullfrog

A very large, non-native frog growing to 15 cm. Calls loudly and breeds during the summer (call can be heard on the *Alien Encounters* website www.alienencounters.org.uk).



Black spots on body of tadpole. The tadpole stage can last several years and tadpoles grow to a large size, exceeding 10 cm.



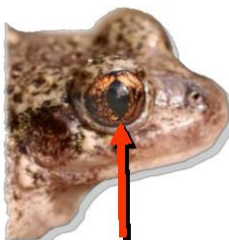
Young frogs squeak when disturbed.

Unlikely to be found (there is only one known population in the UK) but vigilance is important to identify any additional released animals.



Froglet with remains of tail

Midwife toad



A small non-native species, growing up to 5 cm. Rough skin, so potentially mistaken for a juvenile common toad. Midwife toads, however, have vertical pupils (horizontal in common toad) and males carry the eggs.

Few established populations, which are usually associated with gardens.

Secretive, but has a distinctive call, a single, repeated tone, like an electronic bleep, given on warm summer evenings (can be heard on www.alienencounters.org.uk).



Male carrying eggs

Smooth newt

A widespread species which breeds in a variety of water bodies. Often found in garden ponds.



Male

Female

Both sexes have an orange or yellow belly stripe and rounded spots, which are larger in the male.



Male

Female

Grows to about 10 cm. Breeding male has an undulating crest running from head to tail tip.



Non-breeding male

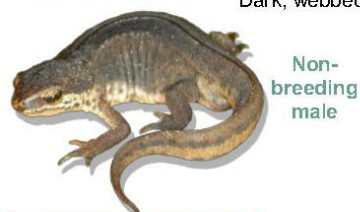
Non-breeding adults live mostly on land. Juveniles live entirely on land.



Juvenile (eft)

Palmate newt

Grows to 9 cm. Breeding male has a ridge running along the back, rather than a crest. Dark, webbed hind feet, and tail ends in filament.



Non-breeding male



There are two pale coloured nodules on the underside of the hind feet of the female.

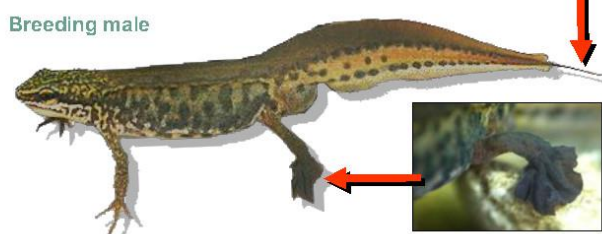


Palmate



Smooth

Throat of palmate newt has no pigment (looks pink). Throat of smooth newt is off-white and usually spotted.



Breeding male



Female

Female looks similar to smooth newt.



Underside (male)

Juveniles live on land.



Juvenile (eft)

Great crested newt

Grows to 16 cm, but usually smaller. Crest in male has break at base of tail. Silvery-white stripe towards rear of tail conspicuous.

Both sexes have rough, granular skins and yellow/orange bellies with irregular black spots.

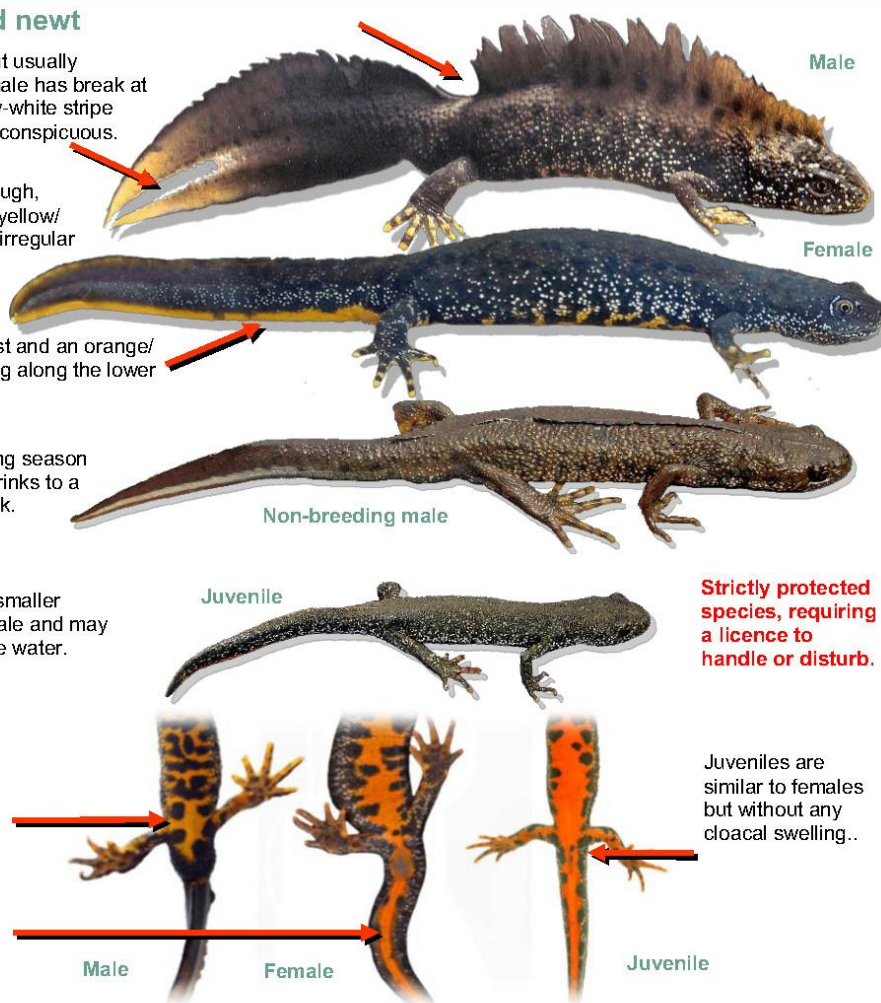
Female has no crest and an orange/yellow stripe running along the lower edge of the tail.

Outside the breeding season the male's crest shrinks to a ridge along the back.

Juveniles look like smaller versions of the female and may live on land or in the water.

Orange/yellow coloration on underside extends to flanks (not confined to central stripe). This continues along lower edge of tail in females.

Strictly protected species, requiring a licence to handle or disturb.



Alpine newt

Adults 8-11 cm, females often much larger than males. A non-native species restricted to few sites, but becoming increasingly common. Most likely to be found in garden ponds, or ponds near to gardens.

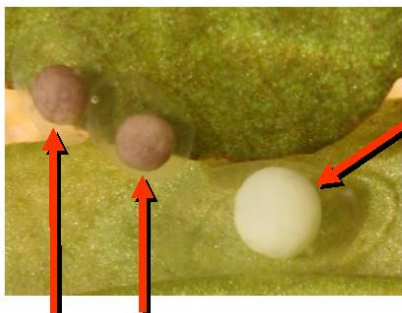
Females have a marbled pattern on the back.

Underside is bright orange, without spots (although there may be black spots on the throat in some cases).



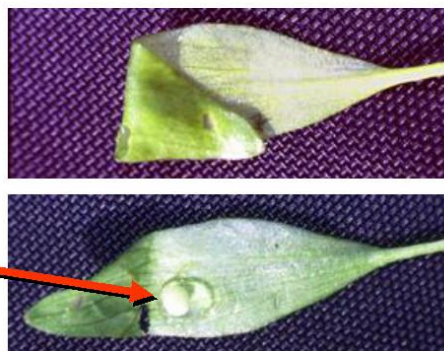
Newt eggs

Newt eggs are usually wrapped, singly, in vegetation. Leaves folded around great crested newt eggs are particularly conspicuous. To identify, unfold the leaf. Identification of undeveloped eggs is easiest.



Eggs of smooth and palmate newts cannot be distinguished by eye, but they are smaller (jelly capsule 3 mm) than great crested newt eggs and are grey or beige when newly laid.

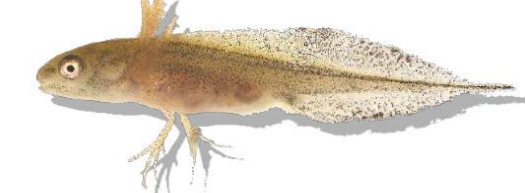
Great crested newt eggs are white, sometimes with a tint of green or orange (jelly capsule 5 mm).



Several great crested newt eggs folded into a single blade of flote grass, giving a 'concertina' effect.

Newt larvae

Examine well-developed larvae (late May to July, or to August for great crested newts).



Great crested newt larvae (above) have long toes and blotches of dark pigmentation on tail fins. Grow to approximately 5 cm.



Palmate and smooth newt larvae (above) are indistinguishable in the field—but do not have the long toes or spotted tail fins of great crested newt larvae. Grow to approximately 3 cm.

Overwintering and neoteny



Young newts usually leave the water in late summer or autumn, although sometimes they remain as larvae over the winter (e.g. smooth newt, right).

Neotenuous smooth newt



Exceptionally newt larvae grow to adult size, able to breed, but retaining their gills.

Further information Howard Inns (2009, reprinted 2011). *Britain's Reptiles and Amphibians*. WILDGuides.

Amphibian and Reptile Conservation & Fred Holmes (2014)

Additional photographs courtesy of Jon Cranfield, Ray Cranfield, Chris Glead-Owen, Howard Inns, Mark Jones, Phyl King, Liam Russell, Duncan Sweeting and Rose Tichiner.

Revised with financial assistance from Natural England.

Amphibian and Reptile Conservation www.arc-trust.org

**amphibian and reptile
conservation**



10.0 APPENDIX 3: FIGURES

Figure 10.1: Google Earth Image to Illustrate the Site Boundary and Pond Locations

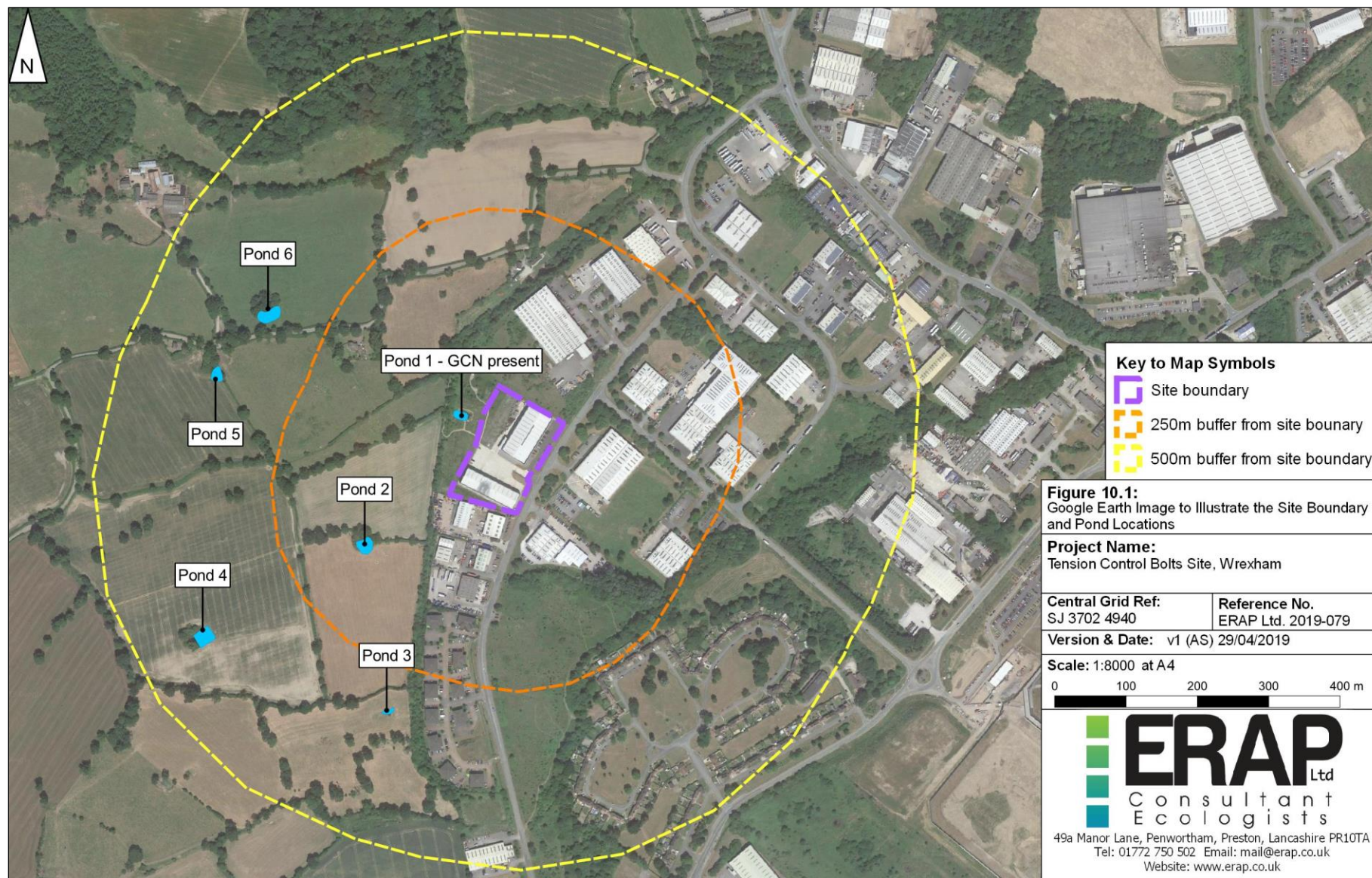


Figure 10.2: Phase 1 Habitat and Vegetation Map

