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Land South of Holt
Road, Wrexham

Ecological
Assessment Report

Report Number: 10581_R02c_GP_HB

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Contents

Summary	
Section 1: Introduction.....	4
Section 2: Methodology.....	5
Section 3: Ecological Resources and Evaluation.....	8
Section 4: Potential Impacts and Requirements for Mitigation.....	19
Section 5: Conclusions.....	27
References	

Appendices

- Appendix 1: Legislation and Planning Policy
- Appendix 2: Proposed Site Layout (drawing 661B-04C)

- Appendix 4: Bat surveys methodology and results
- Appendix 5: GCN survey methodology and results
- Appendix 6: GCN Precautionary Working Method Statement (PWMS)
- Appendix 7: Reptile survey methodology and results

Plans

- Habitat Features Plan: 10581 / P01a May 2018 GP / JM
- Transect route and static detector locations: 10581 / P03 May 2018 SJC / GP
- Bat activity transect results: 10581 / P04 May 2018 SJC / GP
- Great crested newt survey results and pond locations: 10581 / P06 May 2018 GP / JM
- Ground based assessment of trees results: 10581 / P07 June 2018 GP / JM

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Summary

- S.1. This report has been prepared by Tyler Grange LLP on behalf of Barratt Homes and Bloor Homes North West. It sets out the findings of an ecological assessment of a parcel of land to the south of Holt Road (A534), Wrexham (OS Grid Reference SJ 36121 51534), hereinafter referred to as the 'site'.
- S.2. This assessment has been completed to support an outline application for residential development of up to 600 dwellings with associated landscape works, public open space and on-site infrastructure, with all matters reserved except for access.
- S.3. The findings of phase I and phase II surveys, as well as a desk study were used to assess the following:
- Potential effects to statutory and non-statutory conservation designations:
 - a) The site is not covered by, or adjacent to, any areas which are subject to a statutory designation. However, there are four European designated statutory sites within 10km of the site, and 6 local wildlife sites within 2km of the site. Given the residential nature of development proposals, the potential size of the development, the habitats present on site, and the proximity to the designated sites, no impacts are anticipated;
 - Potential effects arising from habitat loss:
 - b) Development proposals will mainly affect arable land which is of negligible ecological importance. However, small areas of broadleaved/plantation woodland and defunct hedgerows with field margins, scattered trees, scattered scrub, and ruderal will also be affected (all of site ecological importance). It is anticipated any losses would be mitigated through the planting of woodland as well as native trees and shrubs which will form the landscaping of the new development;
 - Potential effects on protected and priority species:
 - c) Great crested newt (GCN) *Triturus cristatus*: surveys conducted in spring 2018 identified a medium population of GCN in an offsite pond, approximately 100m from the site boundary. The development has been designed to retain opportunities for these species and compensate for the loss of habitats involved. A licence from Natural Resources Wales will be required, and mitigation strategy implemented, before works proceed;



 - e) Bats: Low levels of bat foraging activity have been recorded along the interior and exterior field boundaries. The majority of the woodland, hedge and trees on site is being retained, and new planting and SuDS pond creation in retained areas that currently comprise arable land will enhance foraging opportunities for bats on site. A sensitive lighting design shall be incorporated, to reduce the impacts to foraging bats by maintaining dark corridors and directional lighting along retained and newly created habitats. Three trees with moderate potential



to support roosting bats were identified, but will not be affected by development; any of the trees affected by development and identified as having low potential should be subject to soft felling under ecological supervision;

- f) Breeding birds: trees and hedgerows affected by development should be checked for nesting birds (if works are during the breeding bird season, March – August inclusive), before works commence; and
- g) Reptiles: Reptile surveys were conducted in summer 2017 on land to the north of the site, but no reptiles were recorded, therefore no mitigation will be required.

S.4. Design proposals include the retention / enhancement of ponds, woodland, hedgerow, and the creation of seven SuDS ponds, native tree and woodland planting, and creation / enhancement of wildflower meadows on existing arable / grassland. Bird and bat box installation has also been recommended to provide enhanced opportunities for species on site; a sensitive lighting scheme for foraging and commuting bats, and hedgehog-friendly fencing are also recommended.

S.5. With the implementation of the mitigation and enhancement strategy described, the proposed development would be in conformity with relevant planning policy and legislation, as set out at **Appendix 1**. The strategy could be controlled by appropriately worded planning conditions and obligations including:

- Secure a suitable design to avoid impacts to retained ecological resources of importance on, or adjacent to site (habitats, badgers, bats, nesting birds, GCN, hedgehog), including detailed lighting design and amphibian-friendly drainage and road design;
- Secure an appropriate landscape design to provide sufficient mitigation and compensation for the loss of habitats and for the enhancement of retained ecological features;
- Secure a Construction Ecological Management Plan (CEMP) for protection of ecological features at the site during construction;
- Secure a Landscape and Ecology Management Plan (LEMP) for the long-term management of the existing, enhanced and newly created ecological features at the site;
- Secure follow up badger survey and secure the design of a detailed mitigation strategy for badger that would be submitted in due course with an EPS licence application, if deemed necessary after the update survey; and
- Secure the design of a detailed mitigation strategy for GCN based on the principles outlined in this report that would be submitted in due course with an EPS licence application.



Section 1: Introduction

Introduction

- 1.1. This report has been prepared by Tyler Grange LLP on behalf of Barratt Homes and Bloor Homes North West. It sets out the findings of an ecological assessment of a parcel of land to the south of Holt Road (A534), Wrexham, Wales (OS Grid Reference SJ 36121 51534), hereinafter referred to as the 'site'.

Context

- 1.2. This ecological assessment has been completed to support an outline application for residential development of up to 600 dwellings with associated landscape works, public open space and on-site infrastructure, with all matters reserved except for access.

Purpose

- 1.3. This report:
- Uses available background data and results of field surveys, to describe and evaluate the ecological resources present within the likely 'zone of influence' (Zoi)¹ of the proposed development;
 - Describes the actual or potential ecological issues and opportunities that might arise as a result of the site's future development; and
 - Where appropriate, provides details of any mitigation of impacts required, and recommends ecological enhancement opportunities, to ensure conformity with policy and legislation listed in **Appendix 1**.
- 1.4. This assessment and the terminology used are consistent with the 'Guidelines for Ecological Impact Assessment' (CIEEM, 2018).

¹ Defined as the area over which ecological features may be subject to significant effects as a result of activities associated with a project (CIEEM 2018)



Section 2: Methodology

Definitions

- 2.1. The 'site' is defined by the application red-line boundary, shown on **Plan 10581 / P01a**. The 'study area' extends to a 2km radius for bat records and nationally-designated statutory sites and a 10km radius for international statutory site designations.

Scoping

- 2.2. The scope of the assessment was determined by undertaking a desk-based assessment of available records and published sources, together with an initial site survey. With this information, the zone of influence (Zoi) of the proposed development was established, and the requirement for further work necessary to inform the assessment of impacts was determined.

Data Search

- 2.3. The aim of the data search is to collate existing ecological records for the site and adjacent areas. Obtaining existing records is an important part of the assessment process as it provides information on issues that may not be apparent during a single survey, which by its nature provides only a 'snapshot' of the ecology of a given site.
- 2.4. The data search covered the study area using the distances defined in paragraph 2.1. The following organisations and resources were contacted and consulted:
- The North Wales Environmental Information Service, Cofnod, for protected and priority species records and details of non-statutory designated sites;
 - Multi-Agency Geographic Information for the Countryside (MAGIC) Interactive Maps (www.magic.gov.uk), for locations of statutory sites;
 - Joint Nature Conservation Committee website (www.jncc.org.uk) for citations of internationally designated sites;
 - Matthew Ellis (Natural Resources Wales) and Emma Broad (Wrexham County Borough Council) regarding the scope of GCN surveys and mitigation on site;
 - Environment (Wales) Act 2016² and Wrexham County Borough Council (WCBC) website³ for priority habitats and species subject to conservation action, to assist with the evaluation of ecological resources and to inform site enhancement strategies; and
 - WCBC website⁴ for details of relevant local planning policies and supplementary planning guidance, and Welsh Government website⁵ for national planning policies.

² <https://www.biodiversitywales.org.uk/Environment-Wales-Act>

³ www.wrexham.gov.uk/assets/pdfs/planning/framework_en.pdf

⁴ http://www.wrexham.gov.uk/english/planning_portal/plan_policy/planning_policy.htm, accessed 07/06/18

⁵ <https://beta.gov.wales/sites/default/files/publications/2018-12/planning-policy-wales-edition-10.pdf>, accessed 12/12/18.



Extended Phase I Habitat Survey

- 2.5. An extended Phase I habitat survey of the site was undertaken on the 22th May 2017 by Georgina Palmer and Kyle Mellish, experienced ecological consultants. The habitat survey methodology was based on guidance set out in the 'Handbook for Phase I habitat survey' (JNCC, 2010). This entailed recording the main plant species and classifying and mapping broad habitat types present.
- 2.6. Note was taken of the more conspicuous fauna, and any evidence of, or potential for the presence of protected/notable flora and fauna.
- 2.7. A basic inventory of the habitats and a representative species list was produced. Where access allowed, adjacent habitats were also considered, to assess the site within the wider landscape and to provide information with which to assess possible impacts within the context of the site boundary.
- 2.8. The weather was dry and sunny (30% cloud cover), warm (20°C) and with a gentle breeze (Beaufort scale 3).

Detailed Phase II Surveys

- 2.9. Table 2.1 below lists the Phase II surveys conducted, together with dates. The respective Appendix should be referred to for further information concerning survey methods, surveyors and rationale. All surveys were conducted in accordance with best practice.

Table 2.1. Detailed surveys undertaken to inform the assessment

Survey	Date	Appendix	Notes
Badger	May 2017 updated June 2018	3	The site plus an area 30m from the boundary was assessed, where access permitted.
Bats	June – October 2017 (statics/activity) June 2018 (PRAs)	4	• Activity survey – Statics; • Activity survey – Transects; • Preliminary roost assessment (PRA) of trees.
GCN	April - June 2018	5	
Reptiles	June - July 2017	7	

Evaluation

- 2.10. The evaluation of habitats and species is defined in accordance with published guidance (CIEEM, 2016). The level of importance of specific ecological receptors is assigned using a geographic frame of reference, with international importance being highest, then national, regional, county, local and lastly, within the site boundary only.
- 2.11. Judgements are based on various characteristics that can be used to identify ecological resources or features likely to be important in terms of biodiversity. These include site designations (such as SSSIs), or for undesignated features, the size, conservation status (locally, nationally or internationally), and the quality of the ecological resource. In terms of the latter, quality can refer to habitats (for instance if they are particularly diverse, or a good example of a specific habitat type), other features (such as wildlife corridors or mosaics of habitats) or species populations or assemblages.



Limitations

- 2.12. Limitation regarding individual species specific or species group surveys are reported within the relevant appendices.
- 2.13. The species data collated during the data search are only those records submitted to Cofnod and therefore should not be taken as a definitive list of the protected and priority fauna to occur within the study area.

Quality Control

- 2.14. Ecologists at Tyler Grange LLP abide by CIEEM's Code of Professional Conduct.



Section 3: Ecological Resources and Evaluation

Context

- 3.1. The site covers a parcel of land approximately 28.52ha in size to the south of Holt Road (A534), Wrexham (OS Grid Reference SJ 36121 51534), which is approximately 3km north-east of Wrexham town centre.
- 3.2. The site is bordered to the west by existing residential development, a golf course to the north, a rugby club and the Erilas Walled Garden to the south, and agricultural land in the wider area.

Protected Sites

Statutory Sites

- 3.3. The site is not covered by, or adjacent to, any areas which are subject to a statutory designation. However, there are four European designated statutory sites within 10km of the site, one of which is also a nationally-designated site, as detailed in Table 3.1:

Table 3.1: European, national and local statutory designated sites within the search radius.

Site Name	Designation	Distance and Direction from Site (km – N/S/W/E)	Summary of Reason for Designation
Midland Meres & Mosses Ramsar ⁶ and Vicarage Moss SSSI	RAMSAR, SSSI	2km N	Network of sites made up of nutrient rich open water bodies (meres) and nutrient poor peat bogs (mosses), supporting nationally important species including five nationally-scarce plant species (<i>Elatine hexandra</i> , <i>Eleocharis acicularis</i> , <i>Cicuta virosa</i> , <i>Thelypteris palustris</i> , <i>Carex elongate</i>) and rare wetland invertebrates (three endangered insects and five other red data book invertebrate species).
River Dee and Bala Lake SAC ⁷	SAC	4.7km NE (SAC)	Site designated for its important habitat ('water courses of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation') and species (Atlantic salmon <i>Salmo salar</i> , and floating water-plantain <i>Luronium natans</i>). The site also supports populations of otter <i>Lutra lutra</i> , bullhead <i>Cottus gobio</i> , and river, brook and sea lamprey (<i>Lampetra</i>

⁶ <https://rsis.ramsar.org/ris/891> and <http://jncc.defra.gov.uk/pdf/RIS/UK11043.pdf>

⁷ <http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?euocode=UK0030252>

Site Name	Designation	Distance and Direction from Site (km – N/S/W/E)	Summary of Reason for Designation
			<i>fluviatilis</i> , <i>L. planeri</i> , <i>Petromyzon marinus</i> , respectively).
Johnstown Newt Sites SAC ⁸	SAC	6km SW	Two sites where coal and clay have been extracted, providing habitats which support one of the largest populations of great crested newt <i>Triturus cristatus</i> in Great Britain.
Berwyn a Mynyddoedd De Clwyd / Berwyn and South Clwyd Mountains SAC ⁹	SAC	8.6km W	Site designated for its important habitats of blanket bogs and European dry heaths – the site includes the largest stands of upland dry heath and tract of near-natural blanket bog in Wales.
River Dee SSSI Impact Risk Zone	N/A	Within	No consultation required for residential development.
Abbreviations: LNR – Local Nature Reserve SAC – Special Area of Conservation SPA – Special Protected Area SSSI – Site of Special Scientific Importance			

- 3.4. All SACs and Ramsar sites are selected on account of the fact that they represent part of the European network of important, high-quality conservation sites that will make a significant contribution to conserving the 189 habitat types and 788 species identified in Annexes I and II of the Habitats Directive (as amended) and Annex I of the Birds Directive. Consequently, being included within the above European Conservation designations the above areas are of **international ecological importance**. SSSIs are of **national ecological importance**.
- 3.5. Given the residential nature of development proposals, the potential size of the development, the habitats present on site, and the proximity to the statutory designated sites, no direct impacts are anticipated.
- 3.6. The site lies within the River Dee SSSI impact risk zone, however, residential development is not identified as a proposal likely to cause impacts, and so this is not considered further.

⁸ <http://jncc.defra.gov.uk/ProtectedSites/SACselection/sac.asp?EUCode=UK0030173>

⁹ <http://jncc.defra.gov.uk/ProtectedSites/SACselection/sac.asp?EUCode=UK0012926>

Non-Statutory (Local) Sites

- 3.7. The site is not covered by, or adjacent to, any areas that are subject to a non-statutory nature conservation designation. However, six local wildlife sites (LWS) lie within 2km of the site – the nearest is Borrass Bog, which is located approximately 0.8km north-west of the site, and is designated for its acid bog habitat¹⁰. The other five LWS are:
- Cefn Park, 1.1km south of the site;
 - Pant-yr-Ochain, 1.3km north-west of the site;
 - Borrass Wood North, 1.4km north-west of the site;
 - Wrexham Industrial Estate 1.6km south-east of the site; and
 - Vicarage Gorse, 1.8km north of the site.
- 3.8. There are 23 parcels of ancient woodland within 2km of the site; the nearest is located 180m north of the site, across the dual carriageway.
- 3.9. LWS are selected and designated locally for their nature conservation or geological importance – they are considered to be of **county ecological importance**.
- 3.10. Given the residential nature of development proposals, the potential size of the development, the habitats present on site, and the proximity to the local wildlife sites, no direct impacts are anticipated.

Habitats and Flora

- 3.11. At the time of undertaking the survey the site supported the following habitats:
- arable;
 - broad leaved woodland;
 - ephemeral / short perennial;
 - ruderal vegetation;
 - scattered trees;
 - scrub;
 - semi-improved grassland;
 - species poor defunct hedgerow; and
 - waterbodies.
- 3.12. For ease of reference, habitat types have been described alphabetically, below. All the features described are shown on **Plan 10581 / P01a**.

¹⁰ <https://safleol.lercwales.org.uk/Public?ID=3137>

Arable

- 3.13. The site is dominated by arable fields. During the initial site visit, one field at the north of the site was ploughed, with the rest planted (e.g. **Photograph 1**). Arable vegetation is considered to be of **negligible ecological importance**.



Photograph 1: View of arable land on site.

Broad-leaved woodland (plantation and semi-natural)

- 3.14. The site contains areas of mature semi-natural broadleaved woodland to the north-west of the site (**Photograph 2**). The woodland contains species such as willows *Salix sp.*, poplars *Populus sp.*, elder *Sambucus nigra* and ash *Fraxinus excelsior*, rowan *Sorbus aucuparia* and sycamore *Acer pseudoplatanus*, with ground flora dominated by nettle *Urtica dioica*, cleavers *Galium aparine*, rosebay willowherb *Chamerion angustifolium* and bramble *Rubus fruticosus*.
- 3.15. There is also an area of plantation woodland to the north of the site, planted as part of the development of the new A534 road which runs along the north of the site. Species in this area include immature hawthorn *Crataegus monogyna*, silver birch, oak *Quercus sp.*, rowan, holly *Ilex aquifolium* and cherry *Prunus avium*.



(a)



(b)

Photograph 2: View of (a) broad-leaved woodland in the centre of the site, and (b) plantation woodland near the roundabout at the north of the site.

- 3.16. Broadleaved woodland is a habitat of principal importance, listed in Section 7 of the Environment (Wales) Act 2016. The woodland forms a well-developed green corridor across the site, providing a connection between onsite and offsite habitats. Woodland is considered to be of **local ecological importance**.

Ephemeral / short perennial

- 3.17. During the initial site visit the south-eastern edge of site was cleared and being used to dump manure (**Photograph 3a**); by a site visit on the 5th June 2018, much more manure had been dumped so that this area had extended west along the site boundary and supported ephemeral/ short perennial vegetation as shown on **Photograph 3b**.



Photograph 3: Looking towards the south-eastern corner of site.

- 3.18. Ephemeral vegetation scattered throughout the site is relatively recent with a low botanical diversity, isolated from the surrounding landscape and supporting common and widespread species. It is therefore considered to be of **negligible ecological importance**.

Ruderal vegetation

- 3.19. Small amounts of ruderal vegetation are present around the western and northern site boundary. These areas are dominated by rosebay willowherb, bramble *Rubus fruticosus* and bracken *Pteridium* sp. Ruderal vegetation scattered throughout the site supports common and widespread species and is considered to be of **negligible ecological importance**.

Scattered trees

- 3.20. The site contains mature scattered trees along the field margins and within the arable field to the north-east (**Photograph 1**). Species include: oak, sycamore, elm *Ulmus minor*, holly, beech, copper beech *Fagus sylvatica*, and elder.
- 3.21. Mature trees are considered to have at least **local ecological importance** being not replaceable in the short to medium term. Younger and semi-mature trees can be replaced in the short term and are considered to be of **site ecological importance**.

Scrub

- 3.22. Scattered scrub is present across the site, but mostly among the field of semi-improved grassland at the north of the site. Species recorded include hawthorn, bramble and gorse *Ulex europaeus* (**Photograph 4**). Scrub is a common and widespread habitat locally and nationally, and is therefore considered to have **site ecological importance**.



Photograph 4: Semi-improved grassland and scrub at the north-east of the site, looking west.

Semi-improved grassland

- 3.23. There are two fields of semi-improved grassland in the north of the site, which are dominated by grasses including Yorkshire fog *Holcus lanatus*, cock's-foot *Dactylis glomerata*, and perennial ryegrass *Lolium perenne* (**Photograph 5**). Other species recorded in this habitat include: white campion *Silene latifolia* creeping buttercup *Ranunculus repens*,
- 3.24. Field margins containing grasses are also present – ‘arable field margins’ are a habitat of principal importance, listed in Section 7 of the Environment (Wales) Act 2016. However, the grassland on site is species-poor, supporting common and widespread species, and is therefore considered to have **site ecological importance**.



Photograph 5: Semi-improved grassland and scrub at the north-west of the site, looking west.

Species poor defunct hedgerow

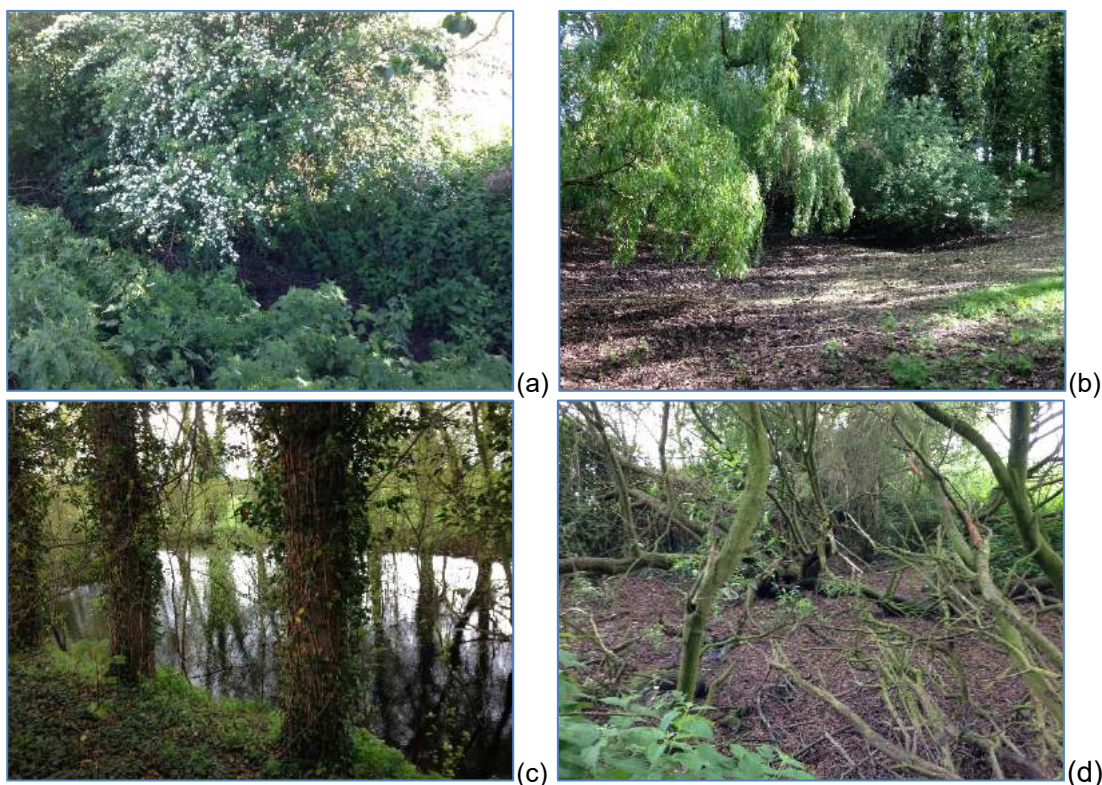
- 3.25. The fields across the site are bordered by defunct hedgerow which is dominated by hawthorn (**Photograph 6a**) but with some holly on the eastern boundary. Bramble, ivy *Hedera helix*, hazel *Corylus avellana* and dog rose *Rosa canina* are found along its length, in places, as well as some scattered trees.
- 3.26. The hedgerows are defunct and may offer suitable foraging, nesting and commuting habitat for a range of wildlife, including birds, bats and small mammals. Hedgerows are a habitat of principal importance, listed in Section 7 of the Environment (Wales) Act 2016, and they are considered to be of **site ecological importance**.



Photograph 6: Examples of hedgerows on site.

Waterbodies

- 3.27. There is a ditch at the north-west of the site. During the initial site visit in 2017, a very small area (~2m x 0.4m) at the western edge was damp, but the rest was dry. The ditch is heavily shaded by trees (**Photograph 7**) and was completely dry during a site visit on the 5th June 2018.
- 3.28. There are two ponds in the middle of the woodland on site (see **Plan 10581 / P01a**). During the initial site visit in 2017, these ponds were dry. At the start of the newt surveys in April 2018, both ponds were wet, but the smaller of the two had dried out by late May 2018 (see GCN survey in **Appendix 5**).
- 3.29. Ponds are considered a habitat of principal importance, listed in Section 7 of the Environment (Wales) Act 2016. Although ephemeral in nature, the ponds provide a stepping-stone between offsite habitats – they are considered to have **local ecological value**.



Photograph 7: Views of (a) shaded ditch on site, (b) pond 1a dry in 2017 and (c) pond 1a wet during GCN surveys in 2018, and (d) pond 1b dry in June 2018 during GCN surveys.

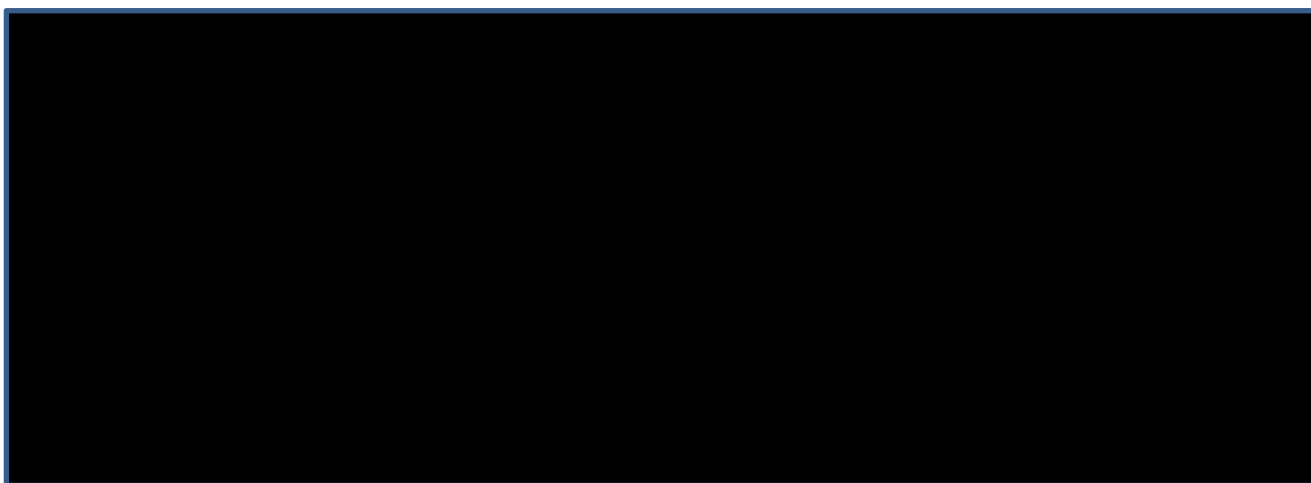
Habitats on adjacent land

- 3.30. The site is bordered to the west by existing residential development, while the land adjacent to the rest of the site is dominated by a golf course to the north, a rugby club and the Erlas Walled Garden to the south, and agricultural land in the wider area.
- 3.31. Along with the two onsite ponds, there are four additional ponds within 250m of the site, to the south (see **Plan 10581 / P06**). The nearest is approximately 100m from the southern site boundary, within the Erlas Walled Garden.

Fauna

- 3.32. For ease of reference, descriptions of the fauna have been described alphabetically, below. This includes data provided by Cofnod (www.cofnod.org.uk) in 2017, and GCN data accessed through the Cofnod website member area in July 2018.

Badger



Bats

- 3.36. The local records centre provided records of five bat species within 2km of the site, as detailed in **Table 3.2**.

Table 3.2: Bat species recorded within 2km of the site – data provided by Cofnod.

Common name	Latin name	Most recent record (number of records)	Nearest record to site (distance and direction)
<i>Pipistrellus pipistrellus</i>	Common pipistrelle	2016 (12)	0.3km west
<i>Plecotus auritus</i>	Brown long-eared bat	1999 (3)	1km west
<i>Myotis mystacinus</i>	Whiskered bat	1999 (1)	1.3km south-east
<i>Nyctalus noctula</i>	Noctule bat	2016 (2)	1.6km south-east
<i>Pipistrellus pygmaeus</i>	Soprano pipistrelle	2016 (4)	1.6km south-east

- 3.37. Suitable habitat for foraging, roosting and commuting was recorded onsite in the form of woodland and trees, hedgerows, grassland, ruderal vegetation and ponds. Therefore, further surveys to determine their presence as well as levels of activity were undertaken in 2017 and 2018; the methodology and results of the detailed bat surveys are shown in **Appendix 4** and summarised below.
- 3.38. Bat activity transects and static bat activity surveys recorded five species at the site. These were:
- Common pipistrelle;
 - Soprano pipistrelle;
 - Brown long-eared bat;
 - Noctule; and
 - An unidentified *Myotis* species.
- 3.39. Bat activity was recorded across the whole site in both the interior and exterior field boundaries; the activity levels at the site are considered to be from an individual or a small number of bats. Some small clusters of activity were recorded but were only created by a small number of repeated passes.
- 3.40. The PRA identified three trees with moderate bat potential (T28, T29 and T31 on **Plans 10581 / P02a** and **P07**). Eight trees were classified as having low potential to support roosting bats, and the rest of the trees surveyed had negligible potential.
- 3.41. **Table 3.2** below illustrates the categorisation of bat species identified on the site by distribution and rarity (Wray et al. 2010).

Table 3.2: Categorisation by rarity of bat species identified on the site

Rarity within range	Bat species recorded at the site
Rarest	N/A
Rarer	Noctule Most myotis species including: Daubenton's and Natterer's
Common	Common pipistrelle Soprano pipistrelle Brown long-eared

- 3.42. Guided by the methodology for valuing commuting routes and foraging areas taken from 'Valuing Bats in Ecological Impact Assessment' (Wray et al., 2010) along with professional judgement, each bat species recorded on the site is determined to be of **local ecological importance**.

Birds

- 3.43. The local record centre provided records of 122 bird species within 2km of the site, including a number of priority species such as lapwing *Vanellus vanellus*, cuckoo *Cuculus canorus*, yellowhammer *Emberiza citrinella*, and song thrush *Turdus philomelos*.
- 3.44. The woodland and arable fields present within the site are likely to provide nesting and foraging habitat for a range of species, including priority species (including, but not exclusive to those listed above). Chiffchaff *Phylloscopus collybita*, magpie *Pica pica*, blackbird *Turdus merula*, starling *Sturnus vulgaris*, buzzard *Buteo buteo*, lesser spotted woodpecker *Dryobates minor* and wood pigeon *Columba palumbus* were recorded during the initial site visit.
- 3.45. The site is unlikely to be important for ground nesting birds such as skylark *Alauda arvensis* and lapwing due to its relatively small size, the abundance of other habitats locally. These species were not recorded on site during any of the subsequent site visits (listed in **Table 2.1**).

Great crested newt and other amphibians

- 3.46. The Cofnod data search returned no records of great crested newt (GCN) *Triturus cristatus* on site, but provided the following records offsite:
- 5 juveniles in a manhole at the northern boundary of the site at SJ359517 in March 2009;
 - Male and female GCN in pond 2 (see **Plan 10581 / P06**) in woodland 200m south of the site in 2001; and
 - GCN eggs in pond 4 (see **Plan 10581 / P06**) in pasture 240m south of the site in 2003.
- 3.47. Cofnod also provided records of smooth newt *Lissotriton vulgaris*, common frog *Rana temporaria* and common toad *Bufo bufo* within 2km of the site.
- 3.48. The site falls within what is termed the 'northern area' of the Wrexham Industrial estate by Cofnod; the member's area of the Cofnod website returned peak counts of GCN in this area of 19 GCN from 49 occupied ponds – this peak count dates back to 2014. These data suggested the waterbodies closest to and on site have zero counts of GCN. Other areas of the Industrial estate had the following peak GCN counts (across multiple ponds):
- Central area: 126 GCN in 2016;
 - Eastern area: 93 in 2015;
 - Southern area: 107 in 2001; and
 - Western area: 27 in 2000.
- 3.49. Potential terrestrial habitat for GCN is present within the site. The majority of the habitat is low quality, due to agricultural disturbance. However, areas of scrub, hedgerows, woodland edges, and grassland all provide high quality GCN habitat.
- 3.50. There are two ponds on site, which were dry during the initial site visit in 2017, but wet at the start of the newt surveys in spring 2018. There are an additional four ponds within 250m of the site, all located south of the site boundary.
- 3.51. Six ponds were surveyed for GCN during spring 2018. Two ponds (P1a and P1b) lie within the boundary of the site, and the other four ponds (P2, P3, P4, and P5) lie within 250m of the site boundary, to the south of the site (see **Plan 10581 / P06**). Habitat suitability indices of the two onsite ponds indicated they had average (Pond 1a) and poor (Pond 1b) suitability for GCN.
- 3.52. No GCN or their eggs were recorded on site during the newt surveys, but offsite Pond 5 was assessed as supporting a small GCN population; a maximum count of 6 individuals (5 male and one female, plus eggs) were recorded there during the newt surveys. Based on these survey results it is evident that while no GCN breeding ponds are present on site, they are present approximately 100m from the site boundary (see buffer on **Plan 10581 / P06**), and therefore GCN could occur terrestrially in suitable habitats within the site.
- 3.53. Smooth newt were recorded in Pond 1a on site (small population), as well as in ponds 2 and 4 (small populations) and pond 5 (medium population) (**Table A5.3**). No frogs or toads were recorded on site, but low numbers of common frog and/or their tadpoles were recorded in ponds 3, 4 and 5 during the surveys, and one toad was recorded in pond 2.

Reptiles

- 3.54. The local record centre provided records of adder *Vipera berus* 0.4km north of the site in 2009, and grass snake *Natrix natrix* 0.9km north-west of the site in 2016.
- 3.55. The initial site visit identified some suitable habitat for reptiles in the north of the site (tussocky grassland and woodland edge). Subsequently, surveys for reptiles were undertaken in 2017, but no reptiles were recorded.

Otter and water vole

- 3.56. Cofnod provided:
- two water vole *Arvicola amphibius* records, the nearest from the Borrass bog LWS 0.8km north-west of the site, in 1999; and
 - two otter *Lutra lutra* records, the nearest 0.9km east of the site in 2011.
- 3.57. The ditch on site was dry and heavily shaded during site visits in 2017 and 2018, and therefore has limited suitability for water vole, and no suitability for otter. These species are not considered further.

Hedgehog

- 3.58. Cofnod provided 17 hedgehog *Erinaceus europaeus* records, the nearest 0.3km east of the site in 2003.
- 3.59. The site provides suitable habitat for hedgehog in the form of hedgerows, grassland and woodland, but no hedgehog were recorded during any of the site visits (listed in **Table 2.1**).

Section 4: Potential Impacts and Requirement for Mitigation

Proposed Development

- 4.1. This ecological assessment has been completed to support an outline planning application that will be submitted to Wrexham County Borough Council. Proposals comprise for residential development of up to 600 dwellings with associated landscape works, public open space and on-site infrastructure, with all matters reserved except for access.
- 4.2. An indicative masterplan is provided in **Appendix 2**, which shows the extent of the mitigation and landscaping as part of the application and includes:
 - Retention of the vast majority of existing hedgerows around the boundaries of the site;
 - Retention of the vast majority of broadleaved woodland within the site;
 - Provision of SuDS ponds;
 - Provision of POS in the north-eastern corner of the site;
 - Replacement and supplementary planting of grassland, hedgerows, woodland trees and shrubs; and
 - Use of native species where possible in the landscaping design.
- 4.3. The potential consequences with respect to development of the site are set out below, with reference to relevant legislation and planning policy, which is summarised in **Appendix 1**.

Potential Impacts and Mitigation Requirements

- 4.4. Both the Countryside and Rights of Way (CRoW) Act 2000 and the Natural Environment and Rural Communities (NERC) Act 2006 give the importance of conserving biodiversity a statutory basis, requiring government departments (which includes Local Planning Authorities) to have regard for biodiversity in carrying out their obligations (which includes determination of planning applications) and to take positive steps to further the conservation of listed species and habitats. These articles of legislation require Wrexham County Borough Council to take measures to protect species or habitats from the adverse effects of development, where appropriate, by using planning conditions or obligations. Planning authorities should refuse permission where harm to the species or their habitats would result, unless the need for, and benefits of, the development clearly outweigh the harm.
- 4.5. The indicative layout has been designed to maintain and protect those features of highest ecological value, wherever possible. Where there are potential impacts to the ecological resources described and evaluated in **Section 3**, during either construction or operation of the proposed development, these are described below. Where impacts would trigger legislation or planning policy (as set out in **Appendix 1**), the requirement for mitigation is noted.

Protected Sites

- 4.6. There are four European designated statutory sites within 10km of the site, one of which is also nationally designated. Given the residential nature of development proposals, the potential size of the development, the habitats present on site, and the proximity to the statutory designated sites, no direct impacts are anticipated on habitats/species for which these sites are designated. Similarly, no impact



on local wildlife sites or ancient woodland are anticipated. Therefore, no mitigation for impacts on protected sites is required.

Existing Habitats

- 4.7. The development is likely to result in the following impacts:
- Loss of 24ha of arable land of **negligible ecological value**;
 - Loss of 0.75ha of semi-improved grassland at the north-west of the site, of **site ecological value**;
 - Loss of 0.04ha broad leaved woodland (some within groups G7/G10) and 0.19ha of plantation woodland at the north of the site of **site/local ecological value**;
 - Loss of scattered trees (T17 and trees within G3/G5) of **site ecological value**;
 - Loss of approximately 60m of species-poor defunct hedgerow of **site ecological value**.
- 4.8. Semi-improved grassland at the north of the site will be lost to facilitate access to the site. Some broadleaved woodland, plantation woodland and scattered trees will also be lost to facilitate access. These habitat losses are minor and will be more than compensated by replacement planting of similar species around the site, as shown on the indicative site layout plan (see **Appendix 2**). However, local planning authorities are required to consider the potential impacts of proposed development on important habitat features such as hedgerows and scattered trees, and these habitats should be retained where possible; where losses are unavoidable, these will be mitigated through replacement tree/woodland planting both within development offsets around the boundary of the site and also within the main layout.
- 4.9. Hedgerows provide wildlife corridors throughout the site and connect to the wider landscape. Aside from the portions of hedgerow intersected by new roads/paths, the majority of hedgerows on site have been incorporated in to the sites green infrastructure layout. Hedgerow losses will be compensated through planting restoration of existing hedgerows, through planting up gaps with appropriate species and the application of appropriate management (hedge laying).
- 4.10. Although no specific mitigation is required for other losses incurred, compensation will be made through replacement planting to recreate similar habitats and promote connections to the wider landscape, using native species where possible. Such measures would also provide a biodiversity gain for the development in accordance with national and local planning policy (see **Appendix 1**) – see **paragraph 4.46**.
- 4.11. Enhancement of existing habitats at the site include planting up of hedgerows as described in paragraph 4.9, and retention / enhancement of the two onsite ponds through clearance of overhanging trees and branches, as well as dredging of accumulated silt and leaf litter which will also restore aquatic habitat for amphibians. Creation / enhancement of *new* habitats is described in **paragraph 4.46**.
- 4.12. To ensure the retained features of site and local value are adequately protected from damage as a result of machinery or storage of materials during the construction period, protective fencing (where appropriate in line with British Standards e.g. BS5837:2012 ‘Trees in relation to design, demolition and construction – Recommendations’) would be installed along the hedgerows, around trees and retained woodland and around ponds / ditch for the duration of the construction period.
- 4.13. The above measures should be detailed in a construction ecological management plan (CEMP) and a landscape and habitat management plan (LHMP) which would expand on the measures provided above and help to secure their implementation and future aftercare.



Fauna

Badger



Bats

- 4.17. Five species of bat were recorded on the site. Four were identified to the species level which were: common pipistrelle, soprano pipistrelle, noctule and brown long-eared bat, which are all considered common species (BCT 2016). The unidentified *Myotis* species is considered likely to be either Daubenton's or Natterer's bat which are also considered common species (BCT 2016).
- 4.18. Activity levels of bats were relatively low on the site and distributed with the central tree line and boundary features providing the features of most importance. Replacement native tree planting within the design will be incorporated, therefore no adverse impact to foraging or commuting bats is anticipated.
- 4.19. The PRA identified 3 trees with moderate bat potential, which will be unaffected by development so therefore no mitigation is required for those. However, several trees with low potential to support roosting bats will be affected by development (see **Plan 10581 / P07**) – these should be subject to soft felling under ecological supervision; if during felling / pruning, any bats or their roosts are confirmed present in those trees, then works should stop immediately. Appropriate mitigation may need to be devised before works re-commence, which may require a licence from Natural Resources Wales. Other trees surveyed had negligible potential to support roosting bats therefore no adverse impact to roosting bats is anticipated in those.
- 4.20. Where possible, lighting should be designed to avoid the new tree planting and where it is required in proximity to the trees, the lighting will be designed to minimise disturbance to bats (e.g. use of hoods and cowls on lamps and use of low pressure sodium or, where glass glazing is preferred, use of high pressure sodium instead of metal halide lamps – Collins, 2016; BCT and Institute of Lighting Engineers, 2009). Some species, such as common pipistrelle are relatively tolerant of ambient lighting and have been known to swarm around street lighting to feed on insects attracted to the light (BCT, 2009).
- 4.21. The newly created and enhanced habitats described above will provide an overall improvement in the

quality of foraging habitat available to bats on the site. Provision of artificial bat boxes on retained trees would further enhance the roosting opportunities for bats on site. These should be sited by a suitably qualified ecologist to ensure they offer the most opportunity to bats.

- 4.22. All features intended to provide habitat for roosting, foraging and commuting bats will be subject of a LEMP.

Birds

- 4.23. All wild birds, their nests and eggs are afforded protection under the WCA 1981 (as amended). Although the vast majority of suitable habitat (hedgerows, scrub and woodland) for breeding birds is being retained on site, any removal of woody vegetation during the breeding bird season could trigger this legislation, which protects birds while actively nesting.
- 4.24. To avoid breaching the Wildlife and Countryside Act 1981 (as amended), any necessary removal of these habitats should be timed to avoid the bird nesting season (March to August, inclusive). Any necessary clearance of woody vegetation during the nesting season should be preceded by a check for active nests by a suitably experienced ecologist. Should any active nests be found an appropriate buffer should be maintained until the chicks have fledged, as confirmed by the ecologist.
- 4.25. The loss of woodland / scattered trees will result in a loss of suitable nesting opportunities for common woodland birds. However, the scale of the loss is minor – many other suitable nest sites for these species are being retained and are available in the wider area, and the habitat creation and enhancement described above will provide enhanced foraging and potentially nesting habitat for birds. This could be enhanced further through the provision of general bird boxes (e.g. Schwegler 1B or equivalent) on suitable retained, mature trees as sited by a suitably qualified ecologist.

Great crested newt (and other amphibians)

- 4.26. The wider Wrexham Industrial Estate site is known to support an internationally (European) important population of GCN.
- 4.27. No GCN were recorded on site, but Pond 5 – located 100m from the south of the site within the Erlas Walled Garden – supports a small GCN breeding population. **Plan 10581 / P06** indicates 100m and 250m zones around that pond, showing no significant barrier to dispersal between the pond and the development site.
- 4.28. A small section of hedgerow (~20m) likely to provide terrestrial suitability for GCN is being lost for access, but the majority of habitat on site and within 250m of the breeding pond being lost to development comprises arable land of low suitability for GCN.
- 4.29. Although the scale of habitat loss is relatively minor, it is considered that minor disturbance of GCN is likely as a result of development proposals – given these factors, the risk to GCN is considered to be 'moderate'. As such, in order to allow the development to proceed, a development licence from Natural Resources Wales will be required once planning consent is granted. When considering a planning application where a species protected under the Habitats Regulations (a European Protected Species or EPS) is present and would be affected by development proposals, the Local Planning Authority (LPA) must have regard of the three derogation tests set out in the Habitats Regulations, which are considered by NRW when deciding whether a licence should be granted. Where the LPA considers that the three tests are not met (and therefore that NRW are unlikely to grant a licence), they should refuse planning permission.



4.30. In respect of development, the three tests are that:

- There are 'imperative reasons of over-riding public interest' for the development;
- There are 'no satisfactory alternatives'; and
- The 'favourable conservation status' of the species would be maintained.

Mitigation for Terrestrial Habitat Loss

4.31. Mitigation for habitat loss is required on a like-for-like basis (Wrexham County Council¹¹, 2018). The development has been designed to retain habitats suitable for GCN where possible, including woodland, ponds and hedgerows. Development offsets around the boundaries of the site and woodland have also been designed into the layout, which will avoid habitat fragmentation by maintaining connections to other offsite habitats. The soft landscaping proposals include new native hedgerow, trees and wildflower meadow, all of which will provide mitigation for proposed terrestrial habitat losses. Other proposals for the site include:

- Retention of rough grassland and light scrub mosaic in the north of the site, managed to continue to provide cover and foraging resource for the species;
- Creation of a wetland meadow mixture around SuDS ponds which will be designed to maximise its importance to GCN, including marshy grassland;
- Newly constructed hibernacula to provide hibernation habitat, created using arisings from habitat clearance elsewhere on the site. The hibernacula will be of a standard design (e.g. English Nature, 2001, Pg. 42, Figure 3);
- Creation of habitat piles comprising log and brash piles, within the retained grassland and close to the ponds, which will provide a refuge for GCN as well as their invertebrate prey and in turn other wildlife;
- Appropriate management of pathways and provision of interpretation material to control public access and prevent disturbance of newt habitat by users of the development; and
- Management to secure the future of the newt habitat in the long term. This will include remedial measures in the event that habitats are disturbed and to prevent, for instance, introduction of fish (which can predate newt larvae) to the ponds.

4.32. A study undertaken by Fletcher and Wilkinson in 2013¹² identified an important north-south linkage on the site, between other identified GCN populations. Where fragmentation of this north-south linkage will occur (for example by the strategic link road shown in **Appendix 2**), measures to prevent harm to amphibians will be incorporated into the site's design. These measures include the use of amphibian-friendly drainage, dropped kerbs and/or an amphibian tunnel under the road (as discussed with Emma Broad, LPA ecologist, 16th May 2018). Such measures will help maintain corridors for dispersal through the site (as mentioned in 'The Spatial Action Plan for Great Crested Newts in Wrexham' by Russell, Starnes & Wilkinson, 2017).

4.33. The above measures more than compensate for the losses and, when combined with management of existing ponds, enhance retained habitats on site for GCN, helping to ensure that they are able to establish / maintain a viable population on site and as such improve the conservation status of the population. Mitigation / enhancement measures for GCN should be secured through a dedicated GCN

¹¹ Wrexham County Council (2018) *GCN Mitigation Requirements*. Accessed from https://www.wrexham.gov.uk/assets/pdfs/planning/consultations/draft_spg35.pdf, 13/08/18.

¹² Fletcher DH and Wilkinson JW (2013) Options for GCNs in Wrexham – Comparative impact modelling to inform planning.

mitigation strategy.

Enhancement of Breeding Habitat

- 4.34. Mitigation for habitat loss is required on a like-for-like basis (Wrexham County Council, GCN Mitigation Requirements, 2018). No breeding habitat is due to be lost at the site; proposals include the retention and enhancement of the existing on-site ponds, which currently do not support breeding GCN. At present, the ponds are becoming progressively less suitable for GCN due to over-shading and leaf litter deposition from overhanging trees. Works proposed will therefore consist of clearance of overhanging trees and branches, as well as dredging of accumulated silt and leaf litter to restore aquatic habitat for GCN.
- 4.35. The new SuDS ponds will provide enhanced aquatic opportunities for GCN and other amphibians on the site. Such enhancement measures for GCN should be secured through a dedicated GCN mitigation strategy.

Avoidance of Killing and Injury

- 4.36. In order to avoid killing or injuring GCN during the construction phase, a mitigation strategy will be required. Although the precise details of mitigation are not known at this time, this is likely to include capture and translocation of GCN into suitable retained or newly created habitats outside of the construction area, which is likely to include the following measures:
- Installation of a temporary GCN exclusion fence to enclose the footprint of the development. In this way migration pathways would not be affected, with GCN able to migrate to offsite habitats surrounding the site. HERAS fencing, or similar, would be installed on the inside of the exclusion fence along the edge of the site with the retained habitat to the west and south to protect the fence from damage and to deter use of the excluded area for material storage during the construction period. It will remain in place until completion of the construction period;
 - Installation of drift fencing, pitfall traps and refugia within the excluded site area would divide it into compartments in order to maximise the chances of catching newts that may be moving within the development area;
 - Installation of fences in the period March to October (weather dependent) when newts are active, in order to avoid the possibility of disturbing hibernating newts;
 - Daily checking of pitfall traps and refugia (in suitable conditions) and any individuals captured will be moved and released into the receptor area. As a small population has been identified, trapping is likely to be required for a minimum of 30 days (English Nature, 2001) in suitable weather conditions (night-time temperature above 5°C with rain in the preceding few days), and will cease once there has been a period of 5 days of nil captures;
 - Removal of drift fencing and pitfall traps on completion of the translocation and hand searches/destructive searches of areas of high value habitat to be lost (e.g. mixed plantation woodland and understorey vegetation, and scattered trees) under the supervision of a licensed ecologist;
 - Release of land for development and monthly checks of the exclusion fence for the period of construction with any damage repaired; and
 - Removal of the exclusion once construction is complete to allow newts to re-enter suitable habitats within the development between March and October to avoid harm to hibernating newts that can crawl into crevices along the fence line to hibernate.



Precautionary Method of Working (see Appendix 6)

4.37. Any preliminary enabling works which may be required prior to obtaining a NRW EPSL licence will be undertaken under a Precautionary Method of Working (PMW). These works will only be undertaken in areas of low quality GCN habitat (arable land) and as such would pose a low risk to GCN. The PMW will be subject to a separate method statement which will include details on:

- Watching brief – works to be supervised by a suitably qualified ecologist. Additionally, all contractors will be given a tool box talk prior to works commencing, outlining the issues associated with GCN within the site;
- Timing of works – any works which could disturb GCN will not be conducted if night-time temperatures have dropped below 5°C; and
- Storage of materials – to avoid unintentional creation of features that could be used by GCN, no materials to be left on the ground during construction.

Disturbance

4.38. Once the development is completed, impacts to habitats that could be used by GCN resulting from human disturbance may occur, although appropriate planting and interpretation will help to control these impacts. Prescriptions for management and maintenance of those habitats designed for GCN will be included in the LEMP for the site.

Timing of Works

4.39. Whilst the timing of construction works is not known at this stage, the following principles would be applied to inform how the GCN mitigation fits into the overall development strategy:

- Remove the main trunks of trees in areas of tree loss outside of the breeding bird season (which runs March to August inclusive), but ensure that rootballs and understorey vegetation are retained and left in-situ to ensure that any hibernating GCN are not disturbed;
- Fence installation and translocation in the period March to October, to avoid harm to hibernating GCN;
- Removal of drift fencing once translocation complete (i.e. end of October);
- Creation of suitable habitat features six months prior to the start of development works;
- Maintain exclusion fencing around the development area for the duration of construction;
- Removal of exclusion fencing post completion of development work during the period March to October;
- Given the scale of impacts are considered to be medium level and the population is of a medium size, monitoring surveys of the population comprising presence/absence surveys may be required; and
- Management of GCN habitats in the long term.

Post-development Management and Mechanism for Delivery of the Great Crested Newt Strategy

4.40. All habitats intended to support GCN (including retained, enhanced and newly created habitat) will be subject of a LEMP. This could be secured through planning controls and will be required for the NRW licence. The management plan will include prescriptions to maintain pond and terrestrial habitats in the optimal condition for newts e.g. removal of fish (which can predate newt larvae) from onsite ponds.

4.41. In order to satisfy the three tests and maintain favourable conservation status in the long-term, areas of mitigation/compensation must be secured in perpetuity, including financial and legal provision for



the future management of the mitigation/compensation areas (Wrexham County Council, 2018).

- 4.42. Suitably worded planning conditions would secure the design and detail of the above.

The 'Three Tests'

- 4.43. It is considered that the above strategy provides sufficient information for the LPA to be satisfied that the favourable conservation status test within the Habitats Regulations could be met. The documentation that has been submitted in support of the planning application, including the Planning Design and Access Statement, demonstrates that the other two tests have been met (no satisfactory alternative and reasons of over-riding public interest). In summary, the development is required to meet both current and future housing requirements within Wrexham. The proposals accord with relevant emerging planning policy, and will help deliver much needed market and affordable housing on a strategic housing site.

Other Amphibians

- 4.44. Common toads were recorded during GCN surveys and although not afforded legislative protection from killing and injury, they are a SoPI; hence regard must be had for their conservation.
- 4.45. The majority of the habitats affected are of low importance to common toad, although they are likely to utilise the woodland, hedgerows and grassland habitats during their terrestrial phase. However, given no large numbers were recorded and the proposed habitat creation and enhancement described above will provide enhanced opportunities for the species, no significant adverse effects are anticipated and hence no specific mitigation is required.

Hedgehog

- 4.46. Development proposals will result in some loss of habitats suitable for commuting and foraging hedgehog. However, replacement and supplementary planting of grassland, scrub, woodland and hedgerows will more than compensate for the losses expected, so no specific mitigation is required in relation to this species.
- 4.47. Fences to ground level around the boundary of the site should be avoided, or be designed to include regularly spaced gaps at ground level (approximately 15cm²), to maintain access through the site for commuting hedgehog.

Ecological Design Principles and Enhancement Opportunities

- 4.48. The proposed development layout has been designed to enhance the overall biodiversity of the site by adopting design principles informed by local conservation strategies. Delivery of such biodiversity gain is in accordance with PPW9 which encourages development to provide net gains in biodiversity, where possible.
- 4.49. Central to the mitigation and enhancement strategy is the retention of habitat features of ecological importance, and the provision of multi-functional green infrastructure as detailed below:
- Retention and enhancement of existing hedgerow across the site;
 - Retention and enhancement of the existing on-site ponds and provision of new SuDS ponds;
 - Creation of hibernacula and refuge areas for GCN;
 - Provision of POS in the north-eastern corner of the site;



- Replacement and supplementary planting of grassland, hedgerows, and shrubs;
- Planting of new native trees, grassland, and shrubs to connect new or existing habitats and provide nesting, foraging habitat and cover for a range of species;
- Use of other native species in landscape designs to benefit a range of wildlife;
- Use of hedgehog-friendly fencing; and
- Provision of artificial bat and bird boxes on trees across site.



Section 5: Conclusions

- 5.1. With the implementation of the mitigation and enhancement strategy described above, the proposed development would be in conformity with relevant planning policy and legislation (see **Appendix 1**).
- 5.2. The mitigation and enhancement strategy could be controlled by appropriately worded planning controls devised to:
- Secure a suitable design to avoid impacts to retained ecological resources of importance on, or adjacent to site (habitats, badgers, bats, nesting birds, GCN, hedgehog), including detailed lighting design and amphibian-friendly drainage and road design;
 - Secure an appropriate landscape design to provide sufficient mitigation and compensation for the loss of habitats and for the enhancement of retained ecological features;
 - Secure a CEMP for protection of ecological features at the site during construction;
 - Secure a LEMP for the long-term management of the existing, enhanced and newly created ecological features at the site including the provision of bat and bird boxes, and hedgehog-friendly fencing;
 - Secure follow up badger survey and if necessary, secure the design of a detailed mitigation strategy for badger that would be submitted in due course with an EPS licence application; and
 - Secure the design of a detailed mitigation strategy for GCN based on the principles outlined in this report that would be submitted in due course with an EPS licence application.



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Appendix 1: Legislation and Planning Policy



Appendix 1: Legislation and Planning Policy

A1.1. This section summarises the legislation and national, regional and local planning policies, as well as other reference documents, relevant to the baseline ecology results.

Legislation

A1.2. Specific habitats and species receive legal protection in the UK under various pieces of legislation, including:

- The Conservation of Habitats and Species Regulations 2017;
- The Wildlife and Countryside Act 1981 (as amended) (WCA);
- The Countryside and Rights of Way Act 2000 (CRoW Act);
- The Natural Environment and Rural Communities Act 2006;
- The Environment (Wales) Act 2016;
- The Hedgerows Regulations 1997; and
- The Protection of Badgers Act 1992.

A1.3. The European Council Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna, 1992, often referred to as the 'Habitats Directive', provides for the protection of key habitats and species considered of European importance. Annexes II and IV of the Directive list all species considered of community interest. The legal framework to protect the species covered by the Habitats Directive has been enacted under UK law through The Conservation of Habitats and Species Regulations 2017.

A1.4. In Britain, the WCA 1981 (as amended) is the primary legislation protecting habitats and species. SSSIs, representing the best examples of our natural heritage, are notified under the WCA 1981 (as amended) by reason of their flora, fauna, geology or other features. All breeding birds, their nests, eggs and young are protected under the Act, which makes it illegal to knowingly destroy or disturb the nest site during nesting season. Schedules 1, 5 and 8 afford protection to individual birds, other animals and plants.

A1.5. The CRoW Act 2000 strengthens the species enforcement provisions of the WCA 1981 (as amended) and makes it an offence to 'recklessly' disturb a protected animal whilst it is using a place of rest or shelter or breeding/nest site.

A1.6. Section 41 and 42 of the Natural Environment and Rural Communities (NERC) Act 2006 lists UK priority species and habitats subject to conservation action and are referred to as Species of Principal Importance (SoPIs) or Habitats of Principal Importance (HoPIs). Section 42 of the NERC Act required the National Assembly for Wales to publish lists of priority species and habitats, but this requirement has been superseded by those habitats and species listed in section 7 of the Environment (Wales) Act 2016¹³.

A1.7. The Environment (Wales) Act 2016 introduced a Section 6 Duty which applies to public authorities to help maximise contributions to well-being goals. As stated in Planning Policy 10: *"The Nature Recovery Action Plan supports this legislative requirement to reverse the decline in biodiversity,*

¹³ <https://www.biodiversitywales.org.uk/Environment-Wales-Act>

address the underlying causes of biodiversity loss by putting nature at the heart of decision-making and increasing the resilience of ecosystems by taking specific action focused around the 6 objectives for habitats and species”.

- A1.8. The Protection of Badgers Act 1992 consolidates the previous Badger Acts of 1973 and 1991. The legislation aims to protect the species from persecution, rather than being a response to an unfavourable conservation status. As well as protecting the animal itself, the 1992 Act also makes the intentional or reckless destruction, damage or obstruction of a badger sett an offence. A sett is defined as 'any structure or place which displays signs indicating current use by a badger'. In addition, the intentional elimination of sufficient foraging area to support a known social group of badgers may, in certain circumstances, be construed as an offence by constituting 'cruel ill treatment' of a badger. Badgers are not the subject of conservation action.

Planning Policy

National Planning Policy Framework

National Planning Policy - Planning Policy Wales (NPP10)

- A1.9. The Welsh Government sets out in paragraph 6.4.3 of Planning Policy Wales the following objectives for the conservation and improvement of biodiversity and ecological networks – *“development plan strategies, policies and development proposals must consider the need to:*
- Support the conservation of biodiversity, in particular the conservation of wildlife and habitats;*
 - ensure action in Wales contributes to meeting international responsibilities and obligations for biodiversity and habitats;*
 - ensure statutorily and non-statutorily designated sites are properly protected and managed;*
 - safeguard protected and priority species and existing biodiversity assets from impacts which directly affect their nature conservation interests and compromise the resilience of ecological networks and the components which underpin them, such as water and soil, including peat; and*
 - secure enhancement of and improvements to ecosystem resilience by improving diversity, condition, extent and connectivity of ecological networks.”*
- A1.10. Section 6.4.4 states: *“all reasonable steps must be taken to maintain and enhance biodiversity and promote the resilience of ecosystems and these should be balanced with the wider economic and social needs of business and local communities”.*
- A1.11. Section 6.2.11 states: *“Planning authorities must encourage the appropriate management of features of the landscape which are of major importance for wild flora and fauna in order to complement and improve the ecological coherence of the Natura 2000 network. The features concerned are those which, because of their linear and continuous structure or their function as ‘stepping stones’ or ‘wildlife corridors’, are essential for migration, dispersal or genetic exchange. The development of networks of statutory and non-statutory sites and of the landscape features which provide links from one habitat to another can make an important contribution to ecosystem resilience and the maintenance and enhancement of biodiversity and the quality of the local environment, including enabling adaptation to climate change.”*



Wales Spatial Plan

- A1.12. The Wales Spatial Plan – People, Places, Futures – was originally adopted by the National Assembly for Wales in November 2004 and was updated in 2008 (Welsh Assembly Government, 2008¹⁴). In Wales, spatial planning is the consideration of what can and should happen where. It investigates how policies and practice interact in specific areas as well as the role of places in a wider context. It goes well beyond traditional land-use planning and sets out a strategic framework to guide future development and policy interventions. The importance of the natural environment is reflected through its vision:

“We will sustain our communities by tackling the challenges presented by population and economic change. We will grow in ways which will increase Wales’ competitiveness while assisting less well-off areas to catch up on general prosperity levels and reducing negative environmental impacts. We will enhance the natural and built environment and we will sustain our distinctive identity.”

- A1.13. It is a principle of the Wales Spatial Plan that development should be sustainable. Sustainable development is about improving wellbeing and quality of life by integrating social, economic and environmental objectives in the context of more efficient use of natural resources. The Wales Spatial Plan aims to deliver sustainable development through its Area Strategies in the context of the Welsh Assembly Government’s statutory Sustainable Development Scheme. The site falls within the North East Wales - Border and Coast Area Strategy.

Local Planning Policy

- A1.14. The site falls within the administrative borough of Wrexham. Wrexham County Borough Council’s planning policies are set out in the Unitary Development Plan (UDP) which was adopted in February 2005. It will be replaced by the Local Development Plan (LDP 2, 2013 – 2028), which is currently being prepared.

Wrexham County Borough Unitary Development Plan (adopted 14th Feb 2005)¹⁵

- A1.15. Local Policies relating to ecology that will need to be considered as part of any development proposals include:
- Policy PS2: *“Policy PS2 Development must not materially detrimentally affect countryside, landscape/townscape character, open space, or the quality of the natural environment.”*
 - Policy PS11: *“Encouragement will be given to proposals which improve the biodiversity value of sites and to the establishment of local nature reserves where the nature conservation and landscape interest of the land will be protected and enhanced.”*
 - Policy GDP1: All new development should:
 - *“Ensure the safety and amenity of the public and safeguard the environment from the adverse effects of pollution of water, land or air, hazards from industry and quarrying, and associated noise, odour or vibration arising from development.”*
 - *“Safeguard sites and areas of nature conservation and wildlife interest, and to provide new habitats where there is an unavoidable loss of existing habitats and areas of wildlife interest.”*
 - Policy EC4: *“Development proposals should provide for the conservation and management of hedgerows, trees, orchards, woodland, wildlife and other natural landscape and water features, and include new planting in order to enhance the character of the landscape and*

¹⁴ Welsh Assembly Government. (2008). *The Wales Spatial Plan – People, Places, Futures*. Produced in 2004, updated in 2008.

¹⁵ https://www.wrexham.gov.uk/assets/pdfs/planning/udp/written_statement_e.pdf

townscape. Development which results in the loss or significant damage to valuable trees, important hedgerows or ancient woodland sites will not be permitted.”

- Policy EC6: “Development either within or close to sites of biodiversity interest will only be permitted where it can be clearly demonstrated that the need for the development outweighs the need to safeguard the intrinsic nature conservation value of the site. Where such development is permitted, damage should be kept to a minimum, and compensatory measures should be provided. Measures to improve the biodiversity value of sites and enhance their natural conservation interest and landscape quality including the establishment of local nature reserves, will be supported.”

Wrexham Local Development Plan 2 (LDP2) 2013 – 2028

A1.16. Wrexham County Borough Council is preparing LDP2, which will replace the current adopted UDP. Policies in the preferred strategy of the LDP span economic, social and environmental objectives¹⁶. The environmental objectives include:

- Objective SO9: protect, manage and enhance the natural and historic environment and landscapes;
- Objective SO10: reduce carbon emissions and maximise our resilience to and mitigate and adapt to the impact of climate change;
- Objective SO11: ensure development meets the needs of society and industry, now and in the future, through ensuring adequate protection and supply of high quality minerals; and
- Objective SO12: facilitate the provision of an integrated network of waste facilities which enable waste to be managed in a sustainable way.

Biodiversity Action Plans

Species and Habitats of Principal Importance and the UK Biodiversity Action Plan

- A1.17. The UK Post-2010 Biodiversity Framework succeeded the UK BAP partnership in 2011 and covers the period 2011 to 2020. However, the lists of Priority Species and Habitats agreed under the UKBAP still form the basis of much biodiversity work in the UK. The current strategy for Wales was published by Natural Resources Wales in their ‘State of Natural Resources Report (SoNaRR)¹⁷’, dated October 2016. Although the UK BAP has been succeeded, SAPs developed for the UK BAP remain valuable resources for background information on priority species under the UK Post-2010 Biodiversity Framework.
- A1.18. Priority Species and Habitats identified under the UKBAP were also referred to as Species and Habitats of Principal Importance for the conservation of biodiversity in England and Wales within Sections 41 (England) and 42 (Wales) of the Natural Environment and Rural Communities (NERC) Act 2006. The commitment to preserving, restoring or enhancing biodiversity is further emphasised for England and Wales in Section 40 of the NERC Act 2006. In Wales, species and habitats of importance are now listed in section 7 of the Environment (Wales) Act 2016.

¹⁶ <http://moderngov.wrexham.gov.uk/documents/s4045/Draft%20Preferred%20Strategy%20141215.pdf>, accessed 15/08/18.

¹⁷ <https://naturalresources.wales/evidence-and-data/research-and-reports/the-state-of-natural-resources-report-assessment-of-the-sustainable-management-of-natural-resources/?lang=en>



Appendix 2: Proposed site layout





LANDSCAPE ARCHITECTURE
ENVIRONMENTAL PLANNING
MASTERPLANNING
URBAN DESIGN

**RANDALL
THORP**

Canada House, 3 Chepstow Street, Manchester M1 5FW
0161 228 7721 mail@randallthorp.co.uk www.randallthorp.co.uk

Key:

- Site boundary
- Open space
- Undevelopable sloping land
- Potential residential development
- Primary access point (as per CBO Site Access plan ref CBO-0322-011)
- Potential secondary link
- Strategic link road
- Primary roads
- Secondary roads
- Tertiary roads
- Footpaths
- Strategic cycle link
- Existing pedestrian and cycle routes
- Existing vegetation
- Existing pond to be retained
- Proposed woodland
- Proposed trees
- Play area
- Indicative SuDs attenuation areas (if required)

**BARRATT
HOMES**
built around you

BLOOR HOMES

Land South of Holt Road, Wrexham

Draft Illustrative Concept Layout

Drwg No: 661B-04 C

Drawn by: SB

Rev by: SB

QM Status: Checked

Scale: 1:2500 @ A3

Date: 30.01.18

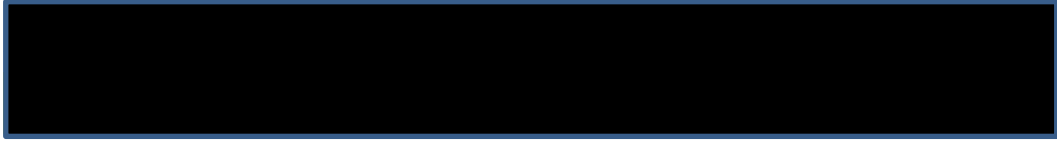
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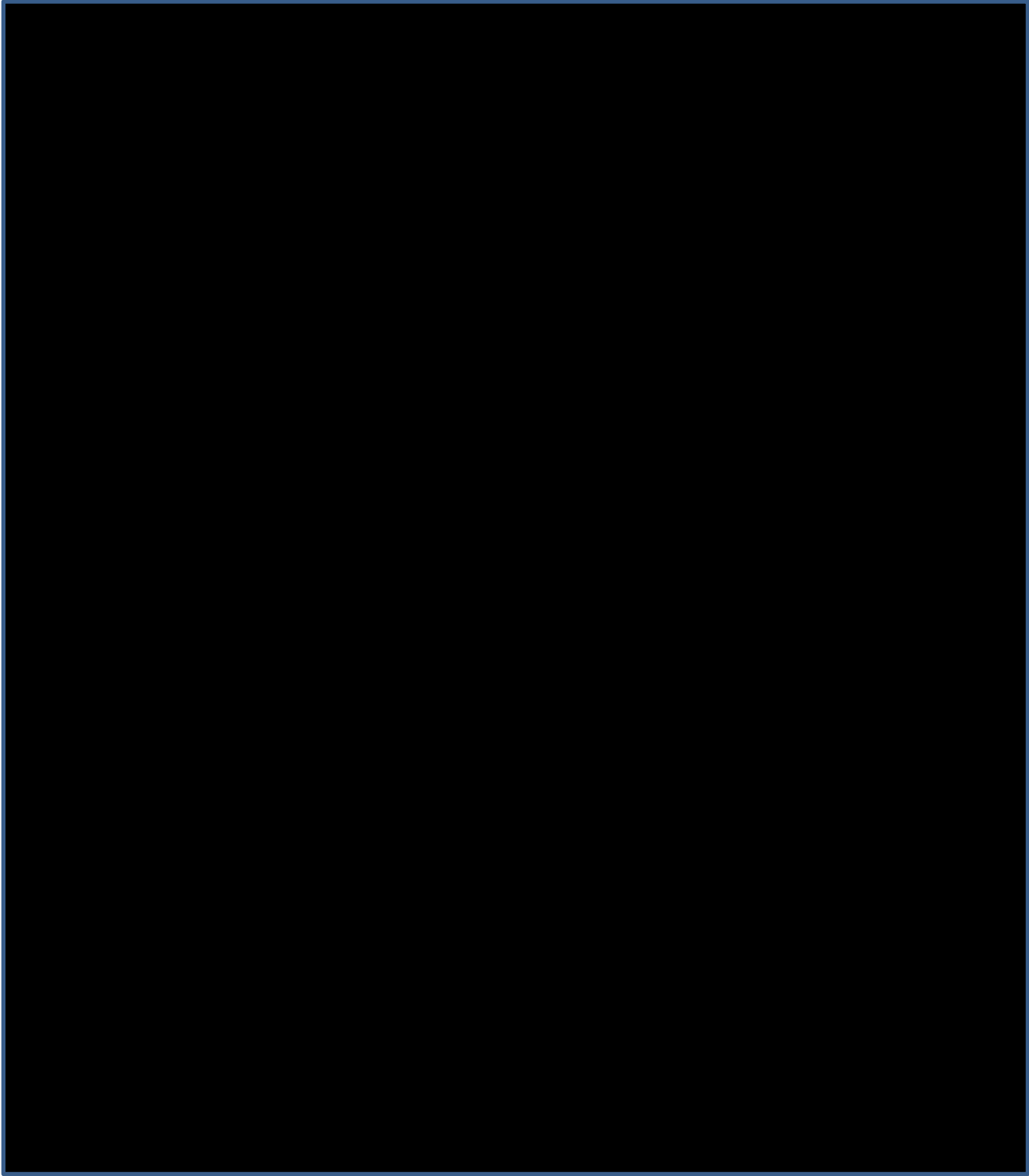
Rev checker: DL

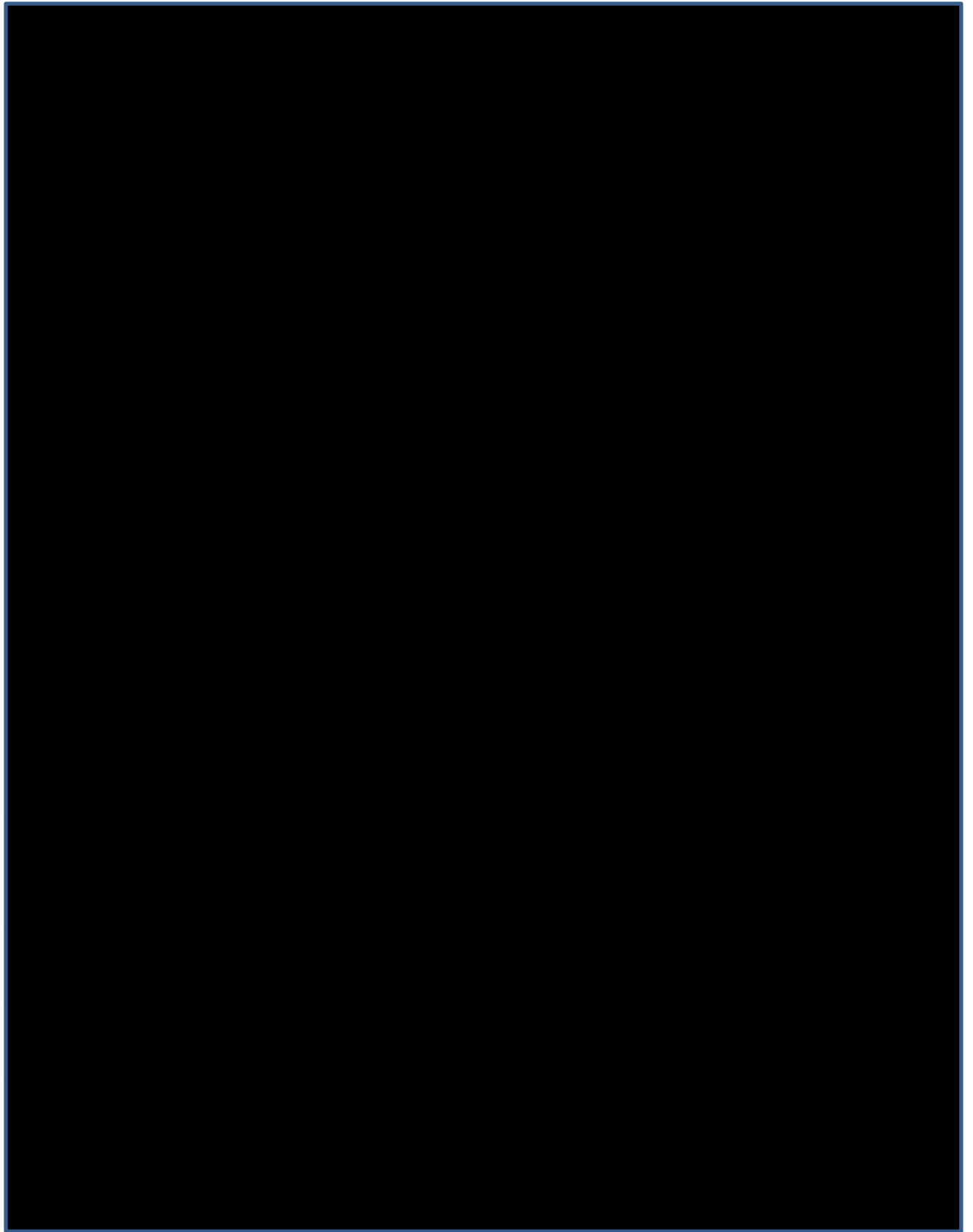
Product Status: Issue

Illustrative Land Use Summary:

Site area:	28.52 ha
Residential development:	15.55 ha
Visually prominent land:	1.99 ha
Undevelopable land (open space):	3.28 ha
SuDS ponds:	0.65 ha
Woodland buffers:	1.35 ha
Other informal open space:	5.70 ha









Appendix 4: Bat survey methodology and results



Land south of Holt Road, Wrexham
Ecological Assessment Report

10581_R02c_19 December 2018_GP_HB

Appendix 4: Bat survey methodology and results

Legislation and Conservation Status

- A4.1 As European protected species, all UK bats receive legal protection under the Conservation of Habitats and Species Regulations 2017 and the Wildlife and Countryside Act 1981 (as amended). In addition, planning policy set out in the PPW9 requires planning authorities to consider bats when determining planning applications and to ensure that development proposals do not lead to an adverse effect on the conservation status of bats.
- A4.2 All British species of bat are listed on Schedule 2 of the Conservation of Habitats and Species Regulations 2017 as a European protected species (EPS) of animal. Regulation 41 (1) makes it an offence to:
- Deliberately capture, injure an EPS;
 - Deliberately disturb an EPS; or
 - Damage or destroy a breeding site or resting place of an EPS.
- A4.3 All British bats are listed in Schedule 5 of the WCA and in England and Wales are protected under Section 9 subsections 4b, 4c and 5 which makes it an offence to:
- Disturb any bat while it is occupying a structure or place which it uses for shelter or protection;
 - Obstruct access to any structure or place which any such animal uses for shelter or protection;
 - Sell, offer or expose for sale, or have in possession or transport for the purpose of sale (any live or dead wild Schedule 5 animal or any part or anything derived from such an animal); or
 - Publish or cause to be published any advertisement likely to be understood as conveying that he buys or sells, or intends to buy or sell, any of those things.
- A4.4 All British bats are also listed at Schedule 6. Section 11 of the WCA states that bats cannot be killed or taken by certain methods, such as traps and nets, poisons, automatic weapons, electrical devices, smoke / gases etc.
- A4.5 Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006, which states that decision-makers such as Local Planning Authorities must have regard to Species of Primary Importance (SoPI) in all their activities, including when making decisions on planning applications.

Previous Records

- A4.6 The local records centre provided records of five bat species within 2km of the site, as detailed in **Table A4.1**.



Table 4.1: Bat species recorded within 2km of the site – data provided by Cofnod.

Common name	Latin name	Most recent record (number of records)	Nearest record to site (distance and direction)
<i>Pipistrellus pipistrellus</i>	Common pipistrelle	2016 (12)	0.3km west
<i>Plecotus auritus</i>	Brown long-eared bat	1999 (3)	1km west
<i>Myotis mystacinus</i>	Whiskered bat	1999 (1)	1.3km south-east
<i>Nyctalus noctula</i>	Noctule bat	2016 (2)	1.6km south-east
<i>Pipistrellus pygmaeus</i>	Soprano pipistrelle	2016 (4)	1.6km south-east

Methodology

Scope of bat surveys

- A4.7 Bat activity transects, and static surveys were undertaken to assess the species assemblage present at the site and to identify significant commuting routes and foraging locations. Trees directly affected by development were also assessed for their potential to support roosting bats (see *Ground-based Tree Assessments* section below). The surveys followed standard methodologies set out in Bat Surveys - Good Practice Guidelines (Collins, 2016).

Activity survey (transects)

- A4.8 To determine the species present and general activity across the whole dusk activity surveys were undertaken; three site visits were undertaken between June 2017 and October 2017.
- A4.9 Surveyors used a combination of direct visual observation and echolocation detection techniques to identify any bat activity on the site. The surveys started approximately at sunset and ended up to two hours after sunset.
- A4.10 The route covered all field boundaries and potential features of interest on the site such as hedgerows and field boundaries (see **Plan 10581 / P03** for transect routes).
- A4.11 Anabat Express and Batbox Duet detectors were used throughout each survey; the Duet detector was used for active monitoring and Anabat detectors for recording in zero crossing format. AnalookW software was used to confirm the identification of bat calls recorded in the field.
- A4.12 Details of the timings and the weather conditions for the activity surveys are shown in **Table A4.2**.

Activity Survey (static detectors)

- A4.13 Further activity data was obtained from the deployment of one static bat detector per transect per visit.
- A4.14 The detectors were placed in the same location during each deployment (see **Plan 10581 / P03**) and were set to record for a minimum of five consecutive nights.
- A4.15 The static detectors were programmed to begin recording 30 minutes before sunset and continue to record until 30 minutes after sunrise.



A4.16 The dates and weather conditions for the automated survey are shown in **Table A4.3**.

Table A4.2: Weather conditions and timings of bat activity surveys.

Survey	Date	Survey times	Weather conditions	Surveyors
1	01/06/17	Start: 21:27 Sunset: 21:27 End: 23:27	Wind (Beaufort): 2-2 Temp (°C) 19-17 Precipitation: Dry Cloud (Octas): 7-8	Kyle Mellish Lisa Davies
2	13/07/17	Start: 21:33 Sunset: 21:28 End: 23:33	Wind (Beaufort): 5-5 Temp (°C) 17-16 Precipitation: None Cloud (Octas): 7-7	Georgina Palmer Laura Dennis
3	02/10/17	Start: 18:47 Sunset: 18:47 End: 20:47	Wind (Beaufort): 3-2 Temp (°C) 14-12 Precipitation: None Cloud (Octas): 2-1	Steven Coyne Georgina Palmer

Table A4.3. Overnight weather conditions during static detector deployment.

Visit Number	Start Date	End Date	Weather conditions (Temp, Wind, Precipitation*)
1 (Spring)	15/06/17	19/06/17	11-21°C 0-16 km/h Dry
2 (Summer)	13/07/17	17/07/17	8-20°C 3-29 km/h Dry – Light rain
3 (Autumn)	18/09/17	22/09/17	5-16°C 2-24 km/h Dry - Light rain

**Data taken from wunderground.com for nearest weather station in Hawarden, United Kingdom*

Ground-based Tree Assessment

- A4.17 A daytime assessment of trees was made on the 5th June 2018. The purpose of the survey was to assess trees on site for bat roosting potential that may be subject to potential future loss. This ground-based survey was aided by the use of binoculars, a high-powered torch, telescopic inspection camera and digital video endoscope.
- A4.18 Survey visits were undertaken by Georgina Palmer (Senior Ecologist) and Steven Coyne MCIEEM (Consultant Ecologist; NE bat survey licence CL18).
- A4.19 **Table A4.4** and **Table A4.5** show the tree features assessed and inspected during the surveys and the categorisation of trees regarding their potential to be used by roosting bats.



Table A4.4: Common features used by bats for roosting and fields signs that may indicate use by bats as detailed in Hundt (2012)

Features of Trees Used as Bat Roosts	Signs Indicating Possible Use by Bats
Natural holes	Tiny scratches around entry points.
Woodpecker holes	Staining around entry points.
Cracks/splits in major limbs	Flies around entry points.
Loose bark	Smoothing of surfaces around cavity.
Behind dense, thick stemmed ivy	Bat droppings in / around / below entrance.
Hollows/cavities	Audible squeaking at dusk or in warm weather.
Within dense epicormic growth	Distinctive smell of bats.
Bird & bat boxes	

Table A4.5: Classification of trees modified from Hundt (2012)

Tree Category	Description
Category 1	High Potential - Trees with multiple highly suitable features for bat roosts.
Category 2	Moderate potential - Trees with definite bat potential but supporting fewer features than a category 1 tree.
Category 3	Low potential - Trees with limited potential or with no obvious potential but are of an age and size that may mean that there are cracks and cavities that could be used that are not visible from ground level.
N/A	Negligible potential - Trees present on the plan but have no category were considered to be of negligible potential to support bat roosts.

Survey Limitations

- A4.20 Bat surveys are subject to numerous variables. The echolocation calls of species such as brown long-eared bats *Plecotus auritus* are of low amplitude and may not always be picked up on bat detectors. Survey results represent a sample of bat activity during the surveys. It is possible that bats may use the site at other times.
- A4.21 Bat calls cannot always be identified to species level, either due to distant contacts or the similarity between some types of bats. Where this occurs, it is recorded as 'unidentified bat species' (Unid), or will show which bat species it is likely to be (e.g. *Pipistrelle* sp. / *Myotis* sp.).
- A4.22 The weather was optimal during all surveys and a high level of confidence is placed on the results.
- A4.23 The spring transect and static detector visit were both undertaken outside of the spring period. These visits were undertaken as close to the period as possible. Due to the low levels of activity across all survey periods it is not considered a constraint to the overall assessment of the bats populations using the site.



Results

Activity survey (transects)

- A4.24 A total of 79 bat passes were recorded during the transect survey visits.
- A4.25 These passes were from four species which were common pipistrelle (48 passes), soprano pipistrelle (17 passes) noctule (13 passes) and myotis species (1 pass).
- A4.26 **Figure A4.1** shows the number of passes recorded for each species on each visit and **Plan 10581 / P04** shows the spatial distribution of these bat records.

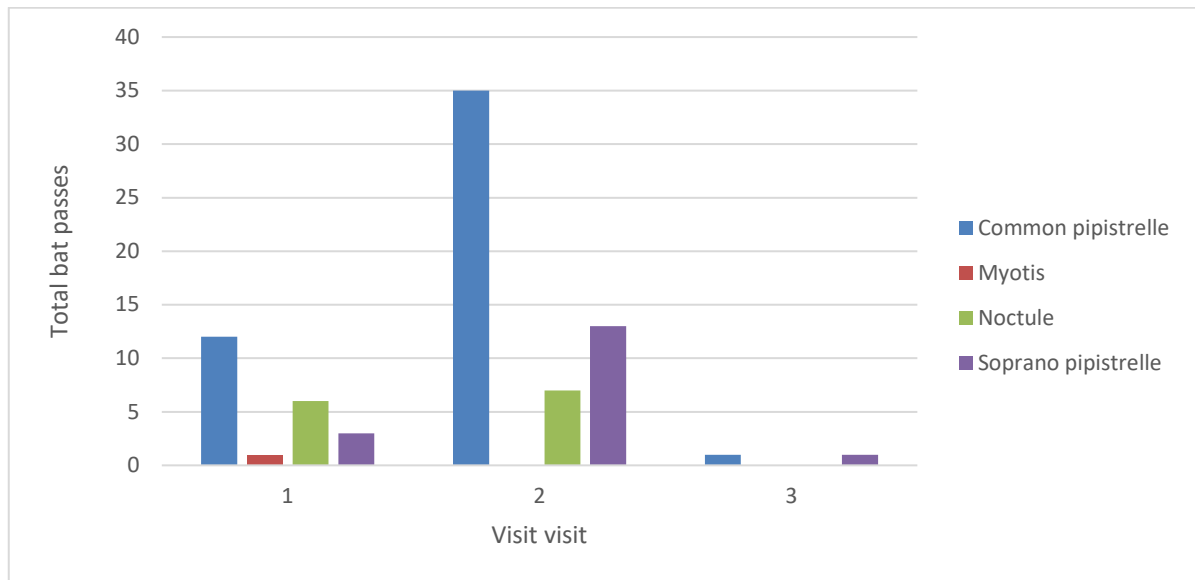


Figure A4.1. Summary of bat passes and species during bat activity transect surveys.

- A4.27 Bat activity was recorded across the whole site along both exterior and interior field boundaries.
- A4.28 Small clusters of activity were recorded in several places, which were created by multiple passes from a single bat or single passes by small number of bats. Sustained foraging behaviour was not observed in these locations.

Activity survey (static detectors)

- A4.29 In total 297 bat passes were recorded from common pipistrelle (195 passes, 66%), soprano pipistrelle (51 passes, 17%), myotis genus bats (28 passes, 9%), noctule (22 passes, 7%), and brown long-eared bat (1 pass, 1%).
- A4.30 **Figure A4.2** shows a summary of the bat passes for each species during all survey periods.

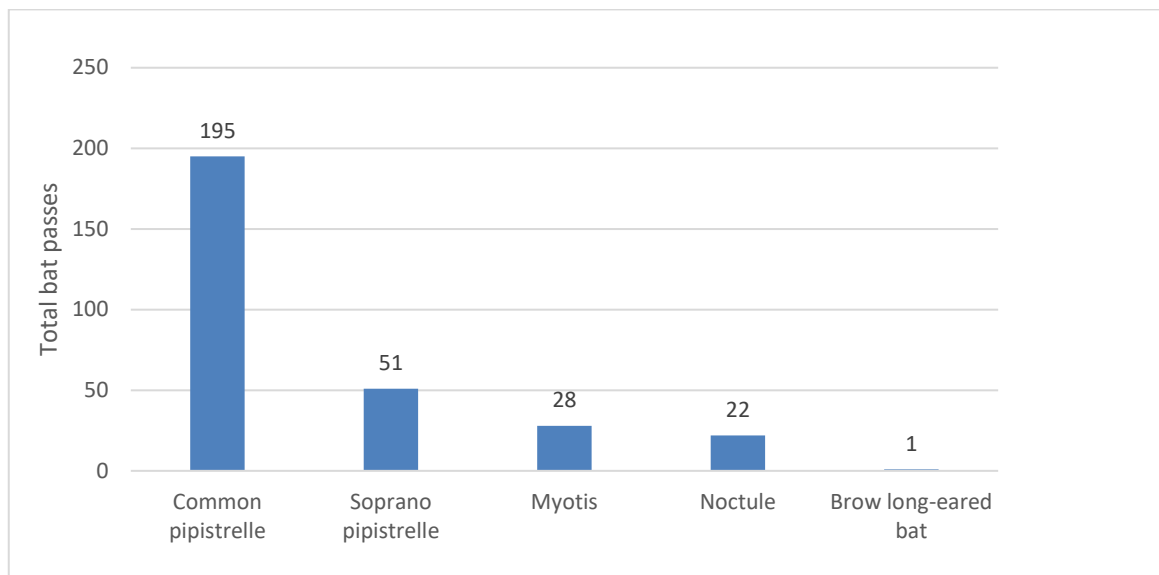


Figure A4.2 Summary of bat passes and species during bat activity static surveys

A4.31 The highest level of bat activity was recorded during deployment period 3 (Autumn) with 190 bat passes with an average of 38 passes per night for all species.

A4.32 **Figure A4.3** shows the total bat passes per night for each static detector deployment.

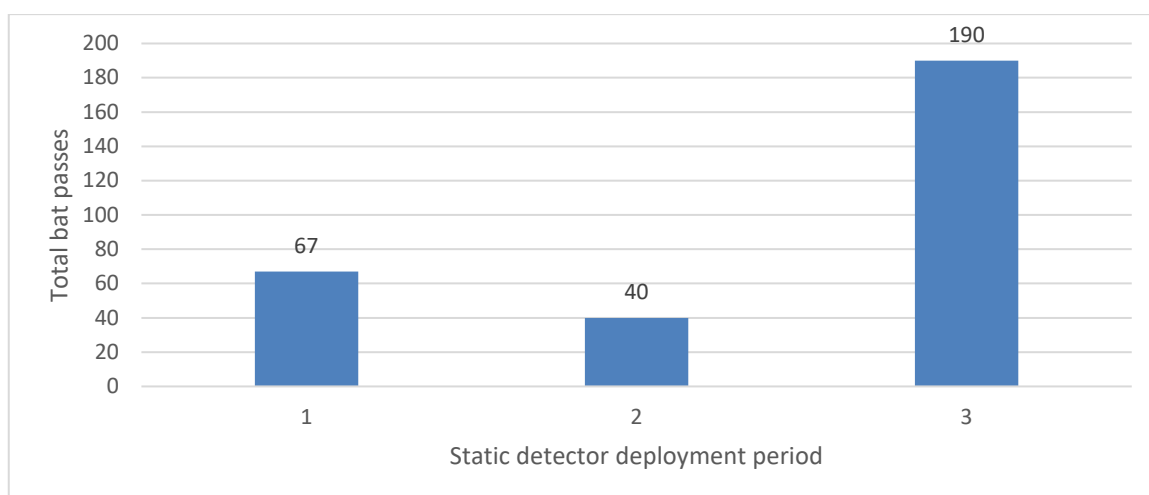


Figure A4.3 Summary of total bat passes during each static detector activity period

A4.33 Common pipistrelle was the most frequently recorded species across all deployment periods accounting for more than 50% of all activity recorded in each period.

A4.34 **Table A4.6** shows the average bat passes per night for each species in each location together with the relative contribution of that species to the total of all activity during each deployment period.

Table A4.6 Average bat passes per species at each location*.

Visit Number	Common pipistrelle	Soprano pipistrelle	Myotis bats	Noctule	Brown long-eared	Total
1 (Spring)	55 (82.1%)	2 (3.0%)	0	10 (14.9%)	0	67
2 (Summer)	20 (50%)	19 (47.5%)	1 (2.5%)	0	0	40
3 (Autumn)	120 (63.2%)	30 (15.8%)	27 (14.2%)	12 (6.3%)	1 (0.5%)	190

*The figures in parentheses are the relative proportion of activity for the individual species for all activity at that location.

Ground-based Tree Assessment

- A4.35 The findings of the ground-based tree assessment are summarised in **Table A4.7**; trees which were assessed as having negligible potential to supporting roosting bats are summarised in **Table A4.8**. Tree locations are shown on **Plan 10581 / P07**. Tree numbers refer to coding used in the Tyler Grange Arboricultural Impact Assessment for this site.
- A4.36 All other trees within the development footprint will not be impacted by development, so were not subject to ground-based tree assessment.

Table A4.7. Trees lost within the development footprint with potential to support roosting bats.

Tree ref.	Species	Grid ref.	BCT Category*	Notes
T24	Oak	SJ35945165	Low	Knarly oak with some ivy cover, potentially obscure potential roost features, but none directly seen.
G7	Poplar	SJ35995164	Low	Majority are peppered with ivy, potentially obscure potential roost features, but none directly seen.
T33	Sycamore	SJ36035166	Low	Light ivy cover, potentially obscure potential roost features, but none directly seen.
T12	Ash	SJ35975127	Low	Crack/splits on south face, widespread damage from a tear out.
T27	Sycamore	SJ36195148	Low	Crack/splits on east face, some major damage.
T28	Oak	SJ36205149	Moderate	Crack/split on east face (no features seen) and base is also cracked.
T29	Sycamore	SJ36215151	Moderate	Broken limb on western face.
T31	Oak	SJ36215160	Moderate	Crack/split on east face on side branch
T35	Oak	SJ36285165	Low	Crack/splits on west face, but they are open. Large hole at base but can see back of it.
G4	Sycamore	SJ36205127	Low	Peppered with ivy, potentially obscure potential roost features.
G3	Hybrid black poplars	SJ36245127	Low	Peppered with ivy, potentially obscure potential roost features
* Conf = Confirmed roost, high= high potential, mod = moderate potential; low = low potential				



Table A4.8. Trees lost within the development footprint with negligible potential to support roosting bats.

Tree ref.	Species	Grid reference
G14	Holly	SJ36085145
T17	Sycamore	SJ35845139
T11	Sycamore	SJ35955127
T10	Ash	SJ35945127
T13	Elm	SJ35975129
G5	Sycamore	SJ35855123
G3	Copper beech	SJ36245127
G10	Field maple, oak, ash, sycamore	SJ36025164

References

Collins, J. (ed.) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn).

Hundt, L. (2012). Bat Surveys: Good Practice Guidelines. Second Edition. Bat Conservation Trust, London.

Mitchell-Jones, A.J. (2004). Bat Mitigation Guidelines. English Nature, Peterborough.

Mitchell-Jones, A.J. and McLeish, A.P. (2004). Bat Workers' Manual. 3rd Edition. JNCC, Peterborough.



Appendix 5: GCN survey methodology and results



Appendix 5: GCN survey methodology and results

Legislation and Conservation Status

- A5.1 As a European protected species, great crested newts (GCN) *Triturus cristatus* receive legal protection under the Conservation of Habitats and Species Regulations 2017 and the Wildlife and Countryside Act 1981 (as amended). In addition, planning policy set out in PPW9 requires planning authorities to consider GCN when determining planning applications and to ensure that development proposals do not lead to an adverse effect on the conservation status of GCN.
- A5.2 GCN are listed on Schedule 2 of the Conservation of Habitats and Species Regulations 2017 as a European Protected Species (EPS). Regulation 41(1) makes it an offence to:
- Deliberately capture, or injure an EPS;
 - Deliberately disturb an EPS;
 - Deliberately take or destroy the eggs of an EPS; or
 - Damage or destroy a breeding site or resting place of an EPS.
- A5.3 Although GCN still maintain a widespread distribution, they are in decline, notably through loss of breeding ponds. A greater decline has been noted across the European range of the GCN, and now the UK holds a large proportion of the world population of the species, and the Wrexham Industrial Estate holds an internationally important population. GCN is listed on the UK Biodiversity Action Plan (BAP) and is a Species of Principal Importance (SoPI)¹⁸.

Previous Records

- A5.4 The local records centre, Cofnod, were consulted for protected and priority species records within 1km of the site, from within the past 20 years.
- A5.5 Cofnod provided no records of GCN on site, but provided the following records offsite:
- 5 juveniles in a manhole at the northern boundary of the site at SJ359517 in March 2009;
 - Male and female GCN in pond 2 (see **Plan 10581 / P06**) in woodland 200m south of the site in 2001; and
 - GCN eggs in pond 4 (see **Plan 10581 / P06**) in pasture 240m south of the site in 2003.
- A5.6 Potential terrestrial habitat for GCN is present within the site. The majority of the habitat is low quality, due to agricultural disturbance. However, areas of scrub, hedgerows, woodland edges, and grassland all provide high quality habitat.
- A5.7 The local records centre also provided records of smooth newt *Lissotriton vulgaris*, common frog *Rana temporaria* and common toad *Bufo bufo* within 2km of the site.

¹⁸ UK priority species and habitats are those subject to conservation action and referred to as Species of Principal Importance (SoPIs) or Habitats of Principal Importance (HoPIs). They are listed at Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. Section 40 of the NERC Act states that local planning authorities must have regard for the conservation of both SoPIs and HoPIs.



- A5.8 Surveys on the onsite pond were due to be carried out in the 2017 survey season, but the onsite ponds (P1a and P1b) were dry when the first visit was scheduled, on the 22nd May 2017. No surveys were undertaken in 2017, but a full survey was carried out in 2018, as described from **Paragraph A5.10**.
- A5.9 A study undertaken by Fletcher and Wilkinson in 2013¹⁹ looked at the impacts of proposed development on GCN populations in Wrexham. This study identified an important north-south linkage on the site, between other identified GCN populations. However, it should be noted that the population to the north of the site was based on a record of GCN found in a manhole cover (see **paragraph A5.5**), and not an identified breeding pond.

Survey Methodology

Scope of GCN survey

- A5.10 Six ponds were surveyed for GCN during the 2018 season. Two ponds (P1a and P1b) lie within the boundary of the site, and the other four ponds (P2, P3, P4, and P5) lie within 250m of the site boundary, to the south of the site (see **Plan 10581 / P06**).

Habitat Suitability Index (HSI)

- A5.11 A Habitat Suitability Index (HSI) was calculated for each waterbody in accordance with recommended methodology (Oldham et al., 2000). The HSI assigns a score to the pond based upon various factors including, size of pond, aquatic vegetation, shading, geographic location, proximity to other ponds, and potential presence of fish. A score is given to each waterbody between 0 and 1, with scores closer to 0 having lower probability of GCN occurrence. The HSI cannot be used as confirmation of GCN presence or absence, but is used as a guide to assess the habitat in terms of its potential to support great crested newts. It also provides useful information that can inform pond management and enhancement programmes.
- A5.12 A HSI score was calculated for each pond; the HSI classifications are provided below:
- < 0.5 Poor;
 - 0.5 – 0.59 Below average;
 - 0.6 – 0.69 Average;
 - 0.7 – 0.79 Good; and
 - 0.8 Excellent.

GCN Population Assessment Survey

- A5.13 A GCN survey of ponds P1 to P5 was carried out by experienced ecologists between the 23rd April and 4th June 2018 in accordance with recommended guidelines (English Nature, 2001²⁰). The guidance recommends that four survey visits should be undertaken between mid-March and mid-June, and that at least two of the visits should be undertaken between mid-April and mid-May.
- A5.14 Surveys were carried out under Natural Resource Wales [NRW] GCN licence number 77862a:OTH:SA:2018.

¹⁹ Fletcher DH and Wilkinson JW (2013) Options for GCNs in Wrexham – Comparative impact modelling to inform planning.

²⁰

<http://webarchive.nationalarchives.gov.uk/20150303044555/http://publications.naturalengland.org.uk/publication/810429>



A5.15 Ponds found to contain GCN during the first four visits received two additional visits i.e. are visited a total of six times, in order assess the 'Population Size Class', and based on the maximum number of individuals recorded during any survey visit, using any one method:

- 1 – 10 small;
- 11 – 100 medium;
- >100 large.

A5.16 Each pond was surveyed using three different methods (see **Table A5.1** for which):

- Bottle Trapping: Setting of bottle traps (where waterbody conditions allow). This involved the use of funnel traps (made from 2 litre clear plastic bottles) that were secured in the water at 2m intervals around the pond margin in the evening before dark, and left overnight to be checked the following morning;
- Egg searching: Although the data cannot be used to estimate population size it can indicate the presence of breeding adults. All suitable submerged vegetation was searched for GCN eggs which are characteristically wrapped individually in the submerged leaves of aquatic vegetation;
- Netting: The accessible margins of the waterbody were surveyed using a long-handled dip-net; and
- Torch survey: The accessible margins of the waterbody were slowly walked once, searching the margins by torchlight (one million candlepower) for GCN.

A5.17 All amphibians observed were counted and where possible identified to species, sex and life stage. Survey dates and weather conditions are detailed in **Table A5.1** below.

Table A5.1. Survey dates and weather conditions.

Visit	Ponds surveyed	Date	Weather Conditions Cloud cover / precipitation / wind	Air Temp During torching	Lead surveyor	Notes
1	1a, 1b, 2, 3, 4, 5	23.04.18	85%, dry, calm	11°C	Georgina Palmer	
2	1a, 1b, 2, 3, 4, 5	26.04.18	50%, dry, calm	8°C	Georgina Palmer	Ponds 3 and 4 not netted this visit as bull/calves in field during survey
3	1a, 1b, 2, 3, 4, 5	02.05.18	15%, dry, light air	8°C	Kyle Mellish	
4	1a, 2, 3, 4, 5	21.05.18	Dry but slight rain at end of survey, light air	14°C	Kyle Mellish	Pond 1b dry
5	5	31.05.18	80% cloud, dry, light air,	19°C	Kyle Mellish	
6	5	04.06.18	90% cloud, dry, light air	17°C	Georgina Palmer	



Visit	Ponds surveyed	Date	Weather Conditions Cloud cover / precipitation / wind	Air Temp During torching	Lead surveyor	Notes
7	3, 4	08.06.18	100% cloud, dry, light air	16°C	Kyle Mellish	Pond 3 and 4 netted and egg searched only

Survey limitations

- A5.18 Pond 5 was lined, and so was netted rather than bottle trapped to ensure the pond lining was not punctured. Netting may be less effective at detecting adult GCN than bottle trapping, but torching was also carried out to determine population size, which is an effective way of detecting GCN (English Nature, 2001).
- A5.19 Cows were present in the fields where ponds 3 and 4 were located, and so, as above (paragraph A5.19) these ponds were netted rather than bottle trapped, for animal welfare reasons.

Survey Results and Summary

HSI of Ponds

- A5.20 Detailed pond descriptions and HSI calculations for the ponds within 250m and how the scores were derived can be found at the end of this appendix and were used in combination with conditions observed during the GCN surveys. **Table A5.2** below shows the summary HSI results for each pond.

Table A5.2. Summary of HSI scores.

Pond No.	HSI Score	Pond suitability for GCN	On or Off Site	Survey methods
1a	0.63	Average	on	Egg search, bottle trap, torch
1b	0.48	Poor	on	Egg search, bottle trap, torch
2	0.77	Good	off	Egg search, bottle trap, torch
3	0.41	Poor	off	Egg search, net, torch
4	0.48	Poor	off	Egg search, net, torch
5	0.73	Good	off	Egg search, net, torch



Population assessment survey results

- A5.21 Table A5.2 below presents the results of the survey visits undertaken between 23rd April 2018 and 8th June 2018.
- A5.22 GCN and their eggs were recorded only in Pond 5, with a maximum count of 6 individuals (5 male and one female, plus eggs) during the first survey visit. Based on these findings, pond 5 was assessed as supporting a small population.
- A5.23 No GCN or their eggs were found in Ponds 1a, 1b, 2, 3 or 4 during the first four visits to each pond, therefore no additional survey visits of these ponds were required. Based on these survey results it is evident that while GCN are absent on the site, they are present within 100m of the site boundary (see buffer on **Plan 10581 / P06**).
- A5.24 One female smooth newt and smooth newt eggs were recorded onsite, in Pond 1a, while male and female smooth newt were also recorded in ponds 2, 4 and 5 during the surveys; pond 5 supports a medium population of smooth newt, and ponds 1a, 2 and 4 support small populations of smooth newt (**Table A5.3**).
- A5.25 Low numbers of common frog and/or their tadpoles were recorded in ponds 3, 4 and 5 during the surveys, and one toad was recorded in pond 2.

Table A5.3. Great crested newt survey results showing maximum count.

Pond Ref.	Great Crested Newt Maximum Count							GCN Eggs	Smooth newt max. count	Limitations
	V1	V2	V3	V4	V5	V6	V7	(Y/N)		
1a	0	0	0	0	n/a	n/a	n/a	N	1 plus eggs	
1b	0	0	0	dry	dry	dry	n/a	N	0	Dry from visit 4
2	0	0	0	0	n/a	n/a	n/a	N	2	Pond poached by cattle, waterfowl present
3	0	0*	0	0	n/a	n/a	**	N	0	Pond poached by cattle
4	0	0*	0	0	n/a	n/a	**	N	1	
5	6	2	5	1	1	1	n/a	Y	43	

*torched only; **egg search and net only



Table A5.4. HSI survey results tables.

Pond 1a			Pond 1b		
Indices			Indices		
Grid Reference	SJ 35986 51513		Grid Reference	SJ 35974 51474	
Description	Onsite area of inundation, seasonally dry, shaded by broadleaved trees including willow and poplars. Large accumulations of leaf litter, and lots of mosquito larvae.		Description	Onsite area of inundation, dry after 3 visits, shaded by broadleaved trees. Large accumulations of leaf litter, and lots of mosquito larvae.	
Distance to Site	Onsite		Distance to Site	Onsite	
Photo(s)			Photo(s)		
SI ₁ - Location	A	1	SI ₁ - Location	A	1
SI ₂ - Pond area	770 sq m	0.99	SI ₂ - Pond area	140 sq m	0.3
SI ₃ - Pond drying	Sometimes dries	0.5	SI ₃ - Pond drying	dries annually	0.1
SI ₄ - Water quality	poor	0.33	SI ₄ - Water quality	poor	0.33
SI ₅ - Shade	95%	0.3	SI ₅ - Shade	90%	0.4
SI ₆ - Fowl	absent	1	SI ₆ - Fowl	absent	1
SI ₇ - Fish	absent	1	SI ₇ - Fish	absent	1
SI ₈ - Ponds	6 / π	0.8	SI ₈ - Ponds	6 / π	0.8
SI ₉ - Terrestrial habitat	moderate	0.67	SI ₉ - Terrestrial habitat	moderate	0.67
SI ₁₀ - Macrophytes	5%	0.35	SI ₁₀ - Macrophytes	0%	0.3
HSI Scores	average	0.63	HSI Scores	poor	0.48

Pond 2				Pond 3		
Indices				Indices		
Grid Reference	SJ 36203 51068			Grid Reference	SJ 36259 51075	
Description	Large pond, surrounded by shrubs and mature trees, including rhododendron, bamboo and Japanese knotweed. Heavy leaf litter. Lots of mosquito larvae recorded during surveys.			Description	Seasonal pond in field of pasture, heavily poached with no aquatic vegetation but some pasture grasses submerged during the visits.	
Distance to Site	200m			Distance to Site	200m	
Photo(s)				Photo(s)		
SI ₁ - Location	A	1		SI ₁ - Location	A	1
SI ₂ - Pond area	1414 sq m	0.9		SI ₂ - Pond area	67 sq m	0.1
SI ₃ - Pond drying	rarely dries	1		SI ₃ - Pond drying	Sometimes dries	0.5
SI ₄ - Water quality	poor	0.33		SI ₄ - Water quality	bad	0.01
SI ₅ - Shade	60%	1		SI ₅ - Shade	40%	1
SI ₆ - Fowl	minor	0.67		SI ₆ - Fowl	absent	1
SI ₇ - Fish	absent	1		SI ₇ - Fish	absent	1
SI ₈ - Ponds	10 / π	0.9		SI ₈ - Ponds	11 / π	0.95
SI ₉ - Terrestrial habitat	good	1		SI ₉ - Terrestrial habitat	good	1
SI ₁₀ - Macrophytes	10%	0.4		SI ₁₀ - Macrophytes	0%	0.3
HSI Scores	good	0.77		HSI Scores	poor	0.41

Pond 4				Pond 5		
Indices				Indices		
Grid Reference	SJ 36318 51053			Grid Reference	SJ 36019 51142	
Description	Seasonal pond in field of pasture, heavily poached with no aquatic vegetation but some pasture grasses submerged during the visits.			Description	Lined pond in the Victorian walled garden, with a boardwalk over the middle.	
Distance to Site	240m			Distance to Site	100m	
Photo(s)				Photo(s)		
SI ₁ - Location	A	1		SI ₁ - Location	A	1
SI ₂ - Pond area	212 sq m	0.4		SI ₂ - Pond area	130 sq m	0.2
SI ₃ - Pond drying	Sometimes dries	0.5		SI ₃ - Pond drying	Never (supplemented watering by walled garden staff)	0.9
SI ₄ - Water quality	bad	0.01		SI ₄ - Water quality	good	1
SI ₅ - Shade	0%	1		SI ₅ - Shade	0%	1
SI ₆ - Fowl	absent	1		SI ₆ - Fowl	absent	1
SI ₇ - Fish	absent	1		SI ₇ - Fish	possible	0.67
SI ₈ - Ponds	16 / π	1		SI ₈ - Ponds	5 / π	0.75
SI ₉ - Terrestrial habitat	good	1		SI ₉ - Terrestrial habitat	good	1
SI ₁₀ - Macrophytes	0	0.3		SI ₁₀ - Macrophytes	15%	0.45
HSI Scores	poor	0.48		HSI Scores	good	0.73

Appendix 6: GCN precautionary working method statement (PWMS)



Appendix 6: GCN precautionary working method statement (PWMS)

A6.1 To manage the low risk to GCN during the development, the following PWMS are outlined below:

- Prior to commencing development at the site, a suitably experienced ecologist should be appointed to ensure that the amphibian PWMS is successfully implemented;
- **Timing of Works** - The winter hibernation period for amphibians is between November to mid-February. Any work which is likely to result in the disturbance of a potential amphibian shelter/hibernation site (such as hedgerow removal) should not be scheduled or undertaken between November and mid-February or during any periods of cold or frosty weather outside of this period; when amphibians are likely to be hibernating/dormant. Instead it is recommended that hedgerows to be removed are to be cut down to a low level, without being removed or disturbing the root bed during the winter (thereby being outside of the breeding bird season). The subsequent removal of root balls and ground breaking should be undertaken in spring/summer when GCN will be active and unlikely to be dormant within the hedge roots;
- Prior to any development related works commencing at the site, a tool box talk should be given to all developers and contractors working within the site to ensure they are able to recognise GCN; are aware of the possibility that GCN could be present within the site; the implications involved if GCN are found within the site; and the need to implement GCN PWMS. Details of the PWMS should be kept on site for reference during development;
- Prior to any site clearance and/or ground disturbance works commencing at the site, the extent of works should be agreed by the appointed ecologist and the developer/contractors;
- The appointed ecologist and the developer/contractors should ensure that no adjacent areas of potential GCN habitat are inadvertently damaged as a consequence of the development works. This would be achieved by fencing off these areas with Heras or post and wire fences;
- Following the site induction/tool box talk, a search of potential places of refuge within the development site should be carried out by the appointed ecologist to check for sheltering amphibians and any items of potential refuge should be removed from the development site immediately following the search to prevent amphibians from seeking shelter either beneath or within them;
- The development site should be kept clear of any debris, rubble or other arisings and stored materials should be kept off the ground on pallets to prevent GCN from potentially using them as refuges;
- Any rubble or other debris resulting from ground clearance should be removed from the development site; it should be taken off-site at the earliest opportunity for appropriate disposal;
- Any excavations should not be left open where possible. Where they are to be left for any reason, the excavation should be searched / checked for sheltering amphibians before works recommence. Ideally open excavations should incorporate 'ramps' at either end to allow any amphibians and small mammals falling into them to escape;
- Wherever practicable, excavations should be in-filled and made good to ground level at the earliest opportunity, to remove any hazard to amphibians. If spoil/materials are left on the ground overnight, they may require searching for sheltering amphibians before they are moved;



- If any other amphibians or reptiles are found during construction i.e. common toad, smooth newt or slowworm they should be carefully moved into suitable cover such as within a hedgerow, preferably close the hedgerows that would offer cover and connections to offsite habitats; and
- These PWMS do not allow for the capture of GCN or their removal from the site. If GCN are found within the development site at any point work should stop and the appointed ecologist and/or Natural Resources Wales immediately contacted for advice on how to proceed.



Appendix 7: Reptile survey methodology and results



Appendix 7: Reptile survey methodology and results

Legislation and Conservation Status

A7.1 All native reptiles in the UK are protected under the Wildlife and Countryside Act 1981 (as amended) (WCA). The four, common species of reptile: adder *Vipera berus*, grass snake *Natrix natrix*, slow-worm *Anguis fragilis* and common lizard *Zootoca vivipara* are listed on Schedule 5, Section 9, Parts 1 and 5, of the WCA and as such, it is an offence to:

- Intentionally kill, injure or take reptiles; and
- Sell, offer, or advertise for sale any live or dead specimen or anything derived from reptiles.

Previous Records

A7.2 The local record centre provided records of adder *Vipera berus* 0.4km north of the site in 2009, and grass snake *Natrix natrix* 0.9km north-west of the site in 2016. No other reptile records were provided.

Survey Methodology

A7.3 A reptile survey was undertaken during June and July 2017; the survey concentrated on suitable habitats within the site with potential to support common reptile species.

A7.4 The survey was conducted in line with Froglife Advice Sheet 10 (Froglife, 1999) and the Herpetofauna Workers' Manual (Gent & Gibson, 1998). This involved laying artificial refuge mats (squares of roofing felt approximately 0.5m²) in suitable areas across the site. A total of 25 refuge mats were set out on 1st June 2017 in the field at the north of site (see red asterisk on **Plan 10581 / P01a**). Following a 'bedding in' period of 14 days, seven surveys of the artificial refuge mats and natural refuges were undertaken during suitable weather conditions (see **Table A7.1**).

Table A7.1. Survey dates and weather conditions.

Survey Visit	Date	Weather Conditions	Air Temp.	Lead surveyor
1	15/06/17	Dry, light breeze, 80% cloud cover	17.5°C	Kyle Mellish
2	27/06/17	Dry (rain earlier in day), light breeze, 80% cloud cover	17°C	Georgina Palmer
3	10/07/17	Dry (heavy rain overnight), light breeze, 100% cloud cover	15°C	Georgina Palmer
4	12/07/17	Dry, sunny, 40% cloud cover, light breeze	14°C	Georgina Palmer
5	18/07/17	Dry, hazy, light breeze, 30% cloud cover	15°C	Georgina Palmer
6	24/07/17	Dry (rain previous day), moderate breeze, 85% cloud cover	16°C	Georgina Palmer



Survey Visit	Date	Weather Conditions	Air Temp.	Lead surveyor
7	31/07/17	Dry (rain earlier), 40% cloud cover, light breeze	17°C	Georgina Palmer

Survey Limitations

- A7.5 No limitations were encountered during the survey, but the scope of the survey was limited to the eastern side of the semi-improved grassland on site as the western field was mown for hay.

Survey Results

- A7.6 No reptiles (or amphibians) were recorded during the surveys.

References

Froglife (1999). *Reptile survey: an introduction to planning, conducting, and interpreting surveys for snake and lizard conservation*. Froglife Advice Sheet 10. Froglife, Halesworth.

Gent, A.H. & Gibson S.D. (eds.) (1998) *Herpetofauna Workers' Manual*. Joint Nature Conservation Committee, Peterborough.



Plans

Habitat Features Plan: **10581 / P01a May 2018 GP / JM**

Transect route and static detector locations: **10581 / P03 May 2018 SJC / GP**

Bat activity transect results: **10581 / P04 May 2018 SJC / GP**



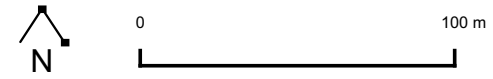
Great crested newt survey results and pond locations: **10581 / P06 May 2018 GP / JM**

Ground based assessment of trees results: **10581 / P07 May 2018 GP / JM**





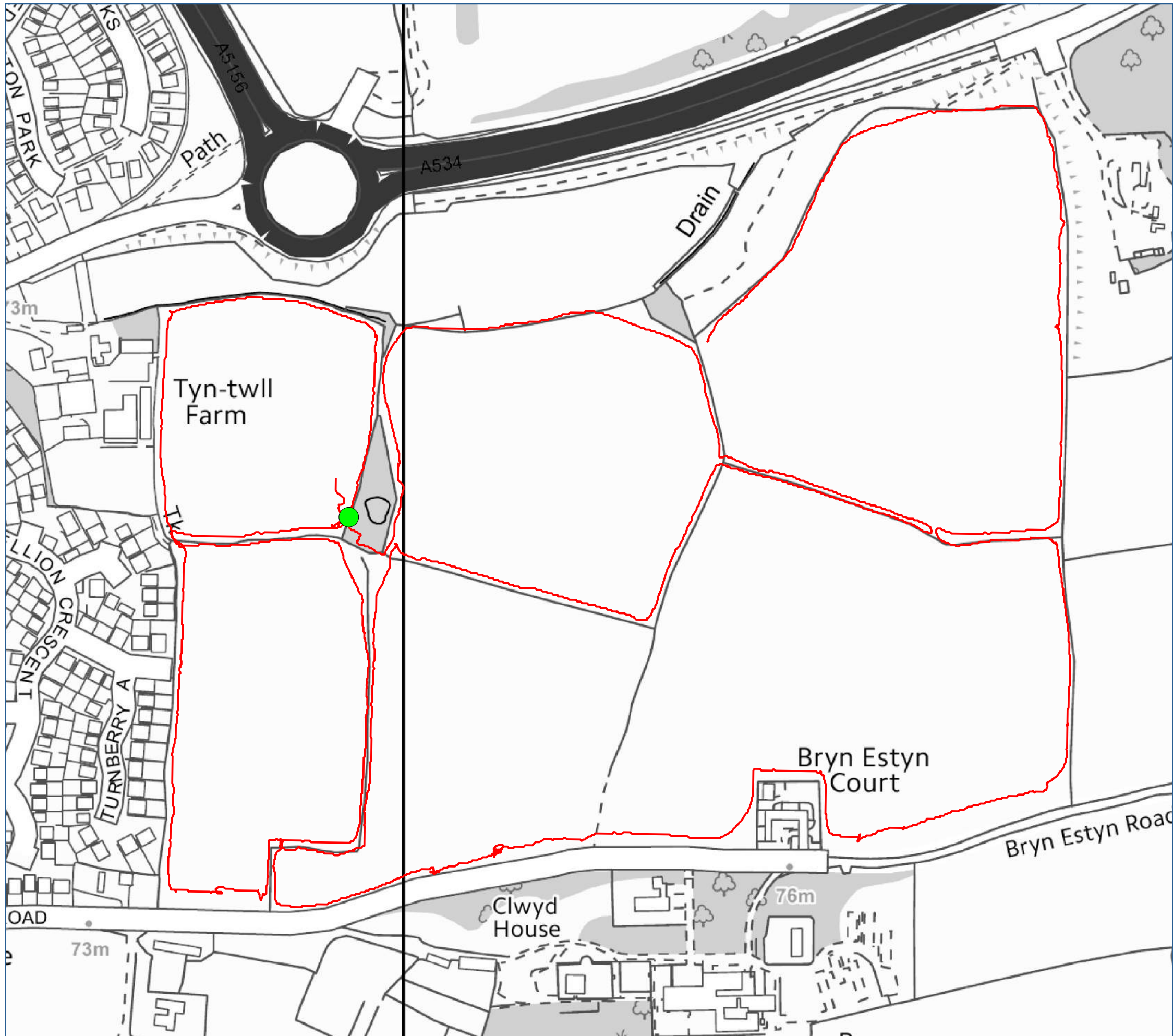
- Site Boundary
- A Arable
- Broad-leaved Woodland (Plantation)
- Broad-leaved Woodland (Semi-natural)
- Defunct hedge
- Drain (dry)
- SI Grassland (Semi-improved)
- Pond
- Scattered Trees
- Scrub
- Tall Ruderal



Project	Land south of Holt Road, Wrexham
Drawing Title	Habitat Features
Scale	As Shown (Approximate)
Drawing No.	10581 / P01a
Date	June 2018
Checked	GP/JM



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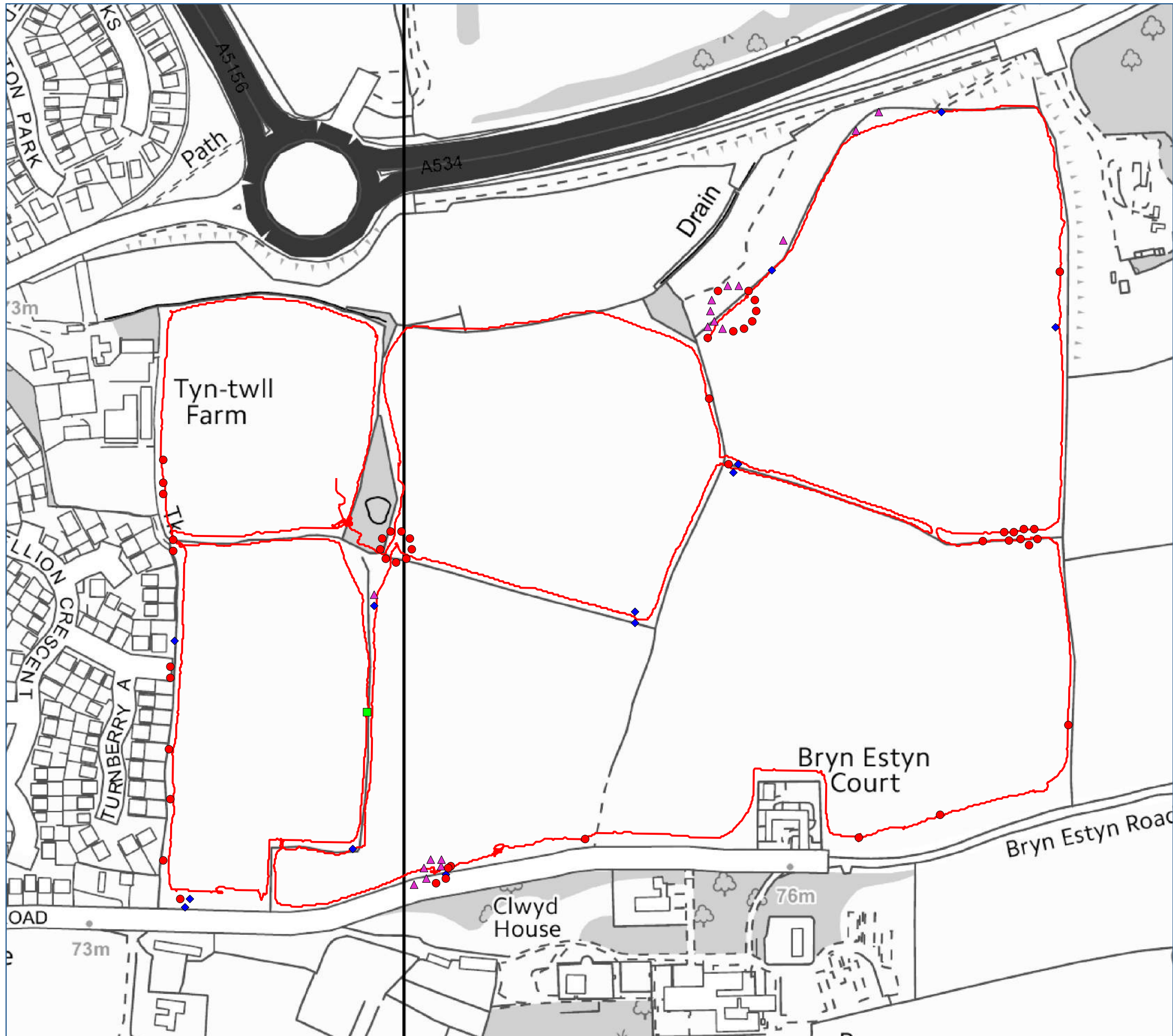
- Transect route
- Static Detector Location



Project	Land at Holt Road, Wrexham
Drawing Title	Transect route and static detector locations
Scale	As Shown (Approximate)
Drawing No.	10581/P03
Date	May 2018
Checked	SJC/GP



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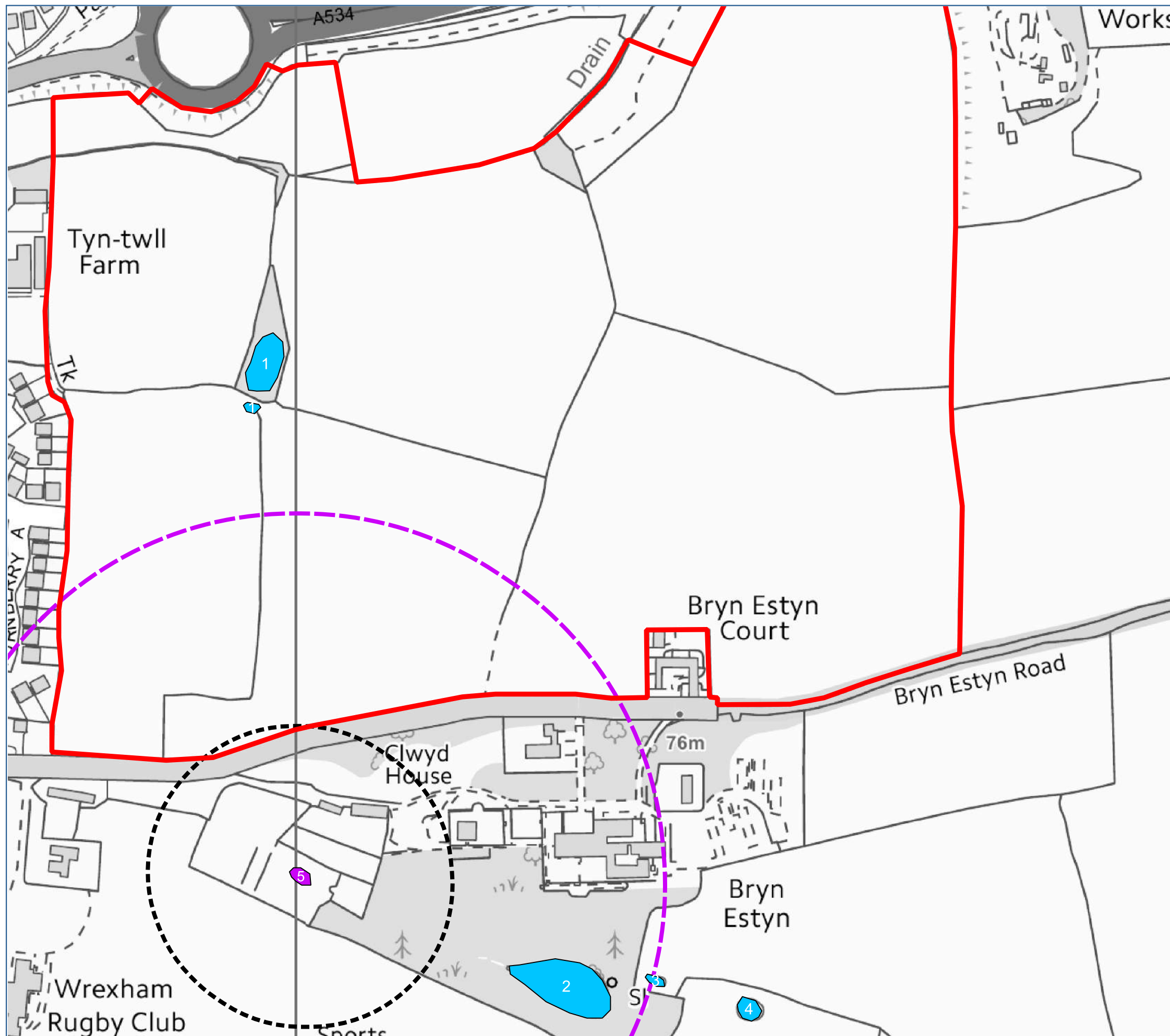
- Transect route
- Common pipistrelle
- Myotis sp.
- Noctule
- Soprano pipistrelle



Project	Land at Holt Road, Wrexham
Drawing Title	Bat activity transect results
Scale	As Shown (Approximate)
Drawing No.	10581/P04
Date	May 2018
Checked	SJC/GP



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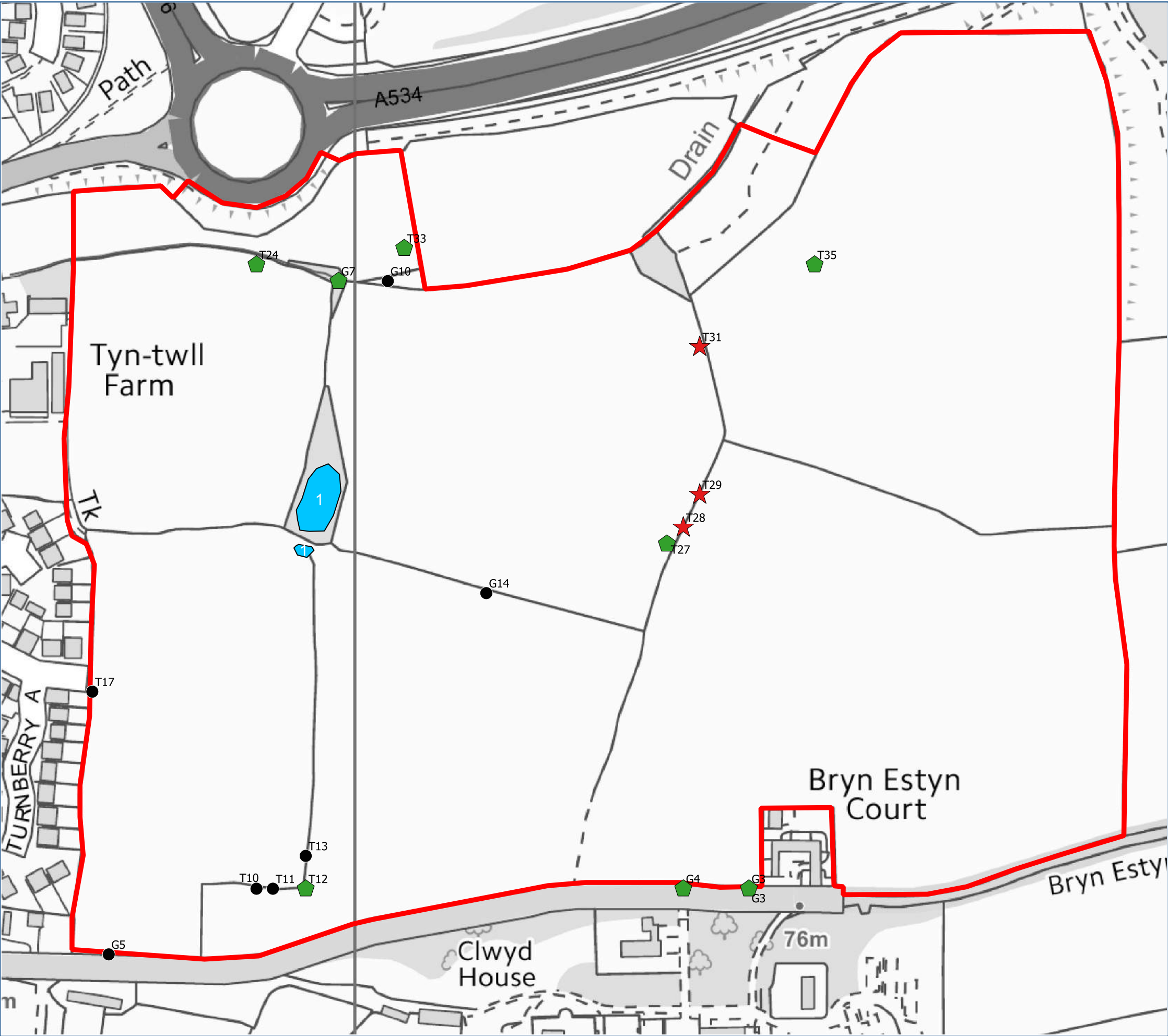
- Site Boundary
- GCN breeding pond
- ⬭ GCN breeding pond (100m buffer)
- ⬭ GCN breeding pond (250m buffer)
- Pond



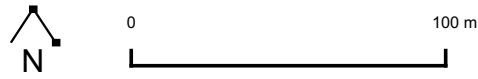
Project	Land south of Holt Road, Wrexham
Drawing Title	GCN survey results
Scale	As Shown (Approximate)
Drawing No.	10581 / P06
Date	June 2018
Checked	GP/JM



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- Site Boundary
- Low
- Moderate
- Negligible



Project	Land south of Holt Road, Wrexham
Drawing Title	Ground based tree assessment results
Scale	As Shown (Approximate)
Drawing No.	10581 / P07
Date	June 2018
Checked	GP/JM



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