

Ecological Impact Assessment



Land at Holt Road, Wrexham

17th January 2024



**Tyler
Grange**

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Admin QA	Author	Checked	Approved
JD	Elliot Grundy MSc	Dale Mortiboys BSc (Hons) ACIEEM	Joseph Dance BSc (Hons) MCIEM

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Summary

- S.1. This report has been prepared by Tyler Grange Group Limited on behalf of Barratt North West and Bloor Homes. It sets out the findings of an Ecological Impact Assessment (EclA) of Land off Holt Road, Wrexham, hereinafter referred to as 'the site'. The proposals are for the development of residential dwellings along with associated infrastructure, access and landscaping.
- S.2. The site has historically been surveyed by Tyler Grange, please see 10581_R02cEcological Assessment Report_181218_GP_HB for further information. An 'extended' Phase 1/UK Habitat Classification (UK Habs) survey and Preliminary Bat Roost Assessment was undertaken on the 31st May 2023 to provide an updated assessment on the wealth of data which already exists for the site. A summary of the results are as follows:
- The site comprises arable land, with areas of dense scrub, tall ruderal, semi-improved grassland and broadleaved woodland, mature native trees (local importance), and native hedgerow (priority habitat of local ecological importance);
 - The site contains habitats that support common and widespread nesting and foraging birds, badger, foraging and roosting bats, and common amphibian species.
- S.3. In terms of protected sites, given the residential nature of development proposals, the potential size of the development, the habitats present on site, and the proximity to the both International, European and local designations and non-statutory designations, no direct impacts are anticipated. Strategic solutions regarding Nutrient Neutrality are being delivered through the council and Natural Resources Wales / Natural England. Any potential impacts which may have arisen as a result of the development will be adequately mitigated through the implementation of a CEMP.
- S.4. Habitats of negligible ecological importance to be lost to the development, such as arable land, require no specific mitigation. All habitats of local ecological importance, such as scattered trees, native hedgerows, dense scrub, and tall ruderal and ponds will be retained, in line with the recently adopted Chapter 6 of Planning Policy Wales (PPW), which encourages a 'step-wise' approach in terms of avoiding impacts to habitats in the first instance. Any incidental losses will be compensated for through replacement planting in the form of native species trees, hedgerows, and creation of Sustainable Urban Drainage Features (SuDs) planting.
- S.5. A development buffer of at least 30m is proposed around each of the badger sett entrances on the eastern boundary, and so no direct impacts on these setts are expected. Based on current proposals the badger setts located to the northwest of the site are likely to be impacted by the construction of the new access road, therefore further survey work will be required to determine whether the sett is classified as an active sett. Following the further survey work, there will be a requirement for obtaining a Natural Resources Wales (NRW) licence and mitigation required will depend upon the classification of the sett use.
- S.6. Species-specific enhancements recommended within this report, which include native planting, SuDS designed using ecological design principles, and provision of bat and bird boxes, would enhance the site for wildlife and increase the habitat diversity on site providing a range of nesting, foraging and commuting opportunities for species such as invertebrates, bats and birds. Connectivity around the site and to the wider area has been considered within the site masterplan, and ensures that existing ecological features retain connections to the wider landscape, in line with Chapter 6 of PPW. This is discussed further in a specific section of this report.



Section 1: Introduction and Context

Introduction

- 1.1. This report has been prepared by Tyler Grange Group Ltd on behalf of Barratt North West and Bloor Homes. It sets out the findings of an Ecological Impact Assessment (EclA) of Land at Holt Road, Wrexham (OS Grid Reference SJ 36054 51585), hereafter referred to as 'the site'. See **Figure 1.1** for the red line boundary.



Figure 1.1: Red line boundary (© Google Aerial Imagery)

- 1.2. This assessment has been undertaken to inform an outline planning application for the development of residential dwellings along with associated infrastructure, access and landscaping. The site proposals are shown in **Appendix 1**.

Site Context

- 1.3. The site is approximately 28.59ha in size and comprises arable land, dense scrub, mixed woodland, native hedgerows and native scattered trees. Immediately adjacent the site to the north is the A543 and Beacon Lane, while immediately adjacent the eastern boundary are further arable fields, and hardstanding in the form of a concrete supplier. The southern boundary of the site is bound by Bryn Estyn Road, while to the west is more



residential dwellings. The wider context of the site is made up of a mosaic of greenspace and hardstanding, with Wrexham Golf Course to the North and Clays Touring Park Golf course to the East. Wrexham Industrial Estate also lies ~1.2km southeast of the site.

- 1.4. The site has historically been surveyed by Tyler Grange in 2018 and 2021. Please review **10581_R02c_Ecological Assessment Report_181218_GP_HB** and **10581_R04_Update Surveys_JD_MM_240221** for further information.

Purpose

- 1.5. This report:
- Uses available background data and results of the field surveys to describe and evaluate the ecological features present within the likely “Zone of Influence”¹ (Zoi) of the proposed development;
 - Describes the actual or potential ecological issues and opportunities that might arise as a result of the site’s development.
 - Where appropriate, makes commitments for mitigation measures for adverse effects on ecological features as well as ecological enhancements, to ensure conformity with policy and legislation listed in **Appendix 2**; and
 - Can be used to inform a planning application for the site’s development.
- 1.6. This assessment and the terminology used are consistent with the Guidelines for Preliminary Ecological Appraisal² and the Guidelines for Ecological Impact Assessment³. A full methodology is set out in **Appendix 3**.

Methodology

- 1.7. Full methods for the data search, Phase 1/ UK Habs survey, PRA, bat activity and badger survey work can be found in **Appendix 3**.

Quality Control

- 1.8. All ecologists at Tyler Grange Group Limited are members of the Chartered Institute of Ecology and Environmental Management (CIEEM) or are working towards membership, and act under the direction of members and abide by the Institute’s Code of Professional Conduct⁴.

¹ Defined by the CIEEM (2018) Guidelines for Ecological Impact Assessment as the area over which ecological features may be affected by biophysical changes as a result of the proposed project and associated activities. This is likely to extend beyond the project site, for example where there are ecological or hydrological links beyond the site boundaries

² CIEEM (2017) Guidelines for Preliminary Ecological Appraisal, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester.

³ CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management, Winchester.

⁴ CIEEM (2022) Code of Professional Conduct, CIEEM, Winchester



Section 2: Ecological Features and Evaluation

Designated Sites

- 2.1. The data search was based on records purchased from North Wales Environmental Information Service (COFNOD), as well as data from the Multi-Agency Geographic Information for the Countryside (MAGIC). See **Appendix 3** for full methodology.
- 2.2. The data search returned five Natura 2000 sites within 10 km of the site, and seven statutory and non-statutory designated sites within 2 km of the site. These are detailed in **Table 2.1** below.



Table 2.1: Designated sites within proximity of the site

Designated site	Distance and direction from site	Citation	Ecological Importance
Midland Meres and Mosses Phase 2 (RAMSAR)	1.98km North	A series of 18 sites made up of nutrient-rich open water bodies (meres) with fringing habitats of reed swamp, fen, carr and damp pasture, and peatlands. The landscape features developed in depressions in the glacial drift left by receding ice sheets. The wide range of habitats supports nationally important flora and fauna.	International
River Dee and Bala Lake (SAC)	4.93km East	Annex I habitats that are a primary reason for selection of this site is the water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation. Annex II species that are a primary reason for selection of this site are Atlantic salmon <i>Salmo salar</i> and Floating water-plantain <i>Luronium natans</i> .	International
Johnston Newt Sites (SAC)	6.27km Southwest	This site lies near to Wrexham in north-east Wales and is composed of two post-industrial sites where coal and clay have been extracted. The population of great crested newts <i>Triturus cristatus</i> is one of the largest known in Great Britain and has been the focus of much conservation management over the last few years. Breeding sites are provided in part by a mining subsidence pool, and natural water-filled hollows on clay, whilst other ponds have been created as part of nature conservation management. Terrestrial habitat varies from marshy grassland, grazed farmland and swamp through to scrub and broad-leaved woodland. Good populations of the widespread amphibian species are also present.	International
Berwyn and South Clewyd Mountains (SAC)	8.71km West	Berwyn contains the largest stands of upland European dry heath in Wales. The dry heath is characteristic of Berwyn's more easterly location and less oceanic climate than the other major Welsh uplands, and consists principally of NVC type H12 <i>Calluna vulgaris</i> – <i>Vaccinium myrtillus</i> heath, with frequent crowberry <i>Empetrum nigrum</i> and occasional cowberry <i>Vaccinium vitis-idaea</i> . Berwyn supports the most extensive tract of near-natural blanket bog in Wales. Much of the blanket bog vegetation is dominated by NVC type M19 <i>Calluna vulgaris</i> – <i>Eriophorum vaginatum</i> blanket mire, with crowberry and an often extensive hypnoid moss cover; within this community cloudberry <i>Rubus chamaemorus</i> is found close to the southernmost limit of its British range.	International
Vicarage Moss (SSSI)	1.98km North	The site is of geomorphological and botanical interest and one of the best-developed examples of a kettle hole complex in Wales comprising one very large and several smaller subsidiary kettle holes. The largest kettle hole, Vicarage Moss itself, is about 200 metres long and forms a deep basin occupied by mire vegetation which also occupies one of the smaller kettle holes. The plant communities on the outer edge of the mire, which is generally species-poor, are dominated by <i>Juncus effusus</i> soft rush with extensive 'lawns' of <i>Sphagnum recurvum</i> and areas of <i>Carex rostrata</i> bottle sedge with <i>Carex elata</i> tufted sedge and <i>Agrostis canine</i> brown bent-grass. Further towards the centre of the mire is an area dominated by <i>Potentilla palustris</i> marsh cinquefoil and <i>Deschampsia cespitosa</i> tufted hair-grass.	National
Borras Bog (LWS)	0.78km Northwest	An acid bog with a canopy of birch. Other trees present are Scot's pine and eared willow. There is extensive rhododendron invasion of the understorey. Over the Sphagnum bog, the field layer has frequent heather, cross-leaved heath, narrow buckler fern, bramble, purple moor-grass and wavy hair-grass. Other species present include cranberry, reed canary-grass and marsh pennywort. There is a small area of pond and marsh to the east with golden dock and nodding bur-marigold.	County
Borras Wood North (LWS)	1.42km Northeast	Ancient woodland over marshy ground. The majority of the site has been planted up with poplars. Beneath this is a ground flora dominated by marshy species, including early purple orchid.	County
Cefn Park (LWS)	1.13km South	This site is a series of broadleaved woodlands within Cefn Park Estate. Big Wood is the largest (8.9ha) and is dominated by ash with oak, sycamore and an occasional mature wych elm. The understorey is continuous with frequent holly, young sycamore and wych elm. Part of the wood has been underplanted with conifers but which are not thriving. There is a rich ground flora which includes dog's mercury, bluebell, wood anemone and ramsons. Rhododendron Spinney is also	County



		dominated by ash but with beech and sweet chestnut and a locally dense understorey of rhododendron. Alder, crack and goat willows dominate the poorly drained eastern side where great horsetail and greater pond sedge occur as well as a fen dominated by common reed.	
Pant Yr Ochain (LWS)	1.28km Northwest	The area within a five mile radius of Pant-yr-ochain woodland designated as it is home to 152 species of birds.	County
Vicarage Gorse (LWS)	1.75km North	A woodland which has much sycamore and planted conifers and poplars. There is the occasional oak and birch. There is an understorey of hazel, hawthorn and holly. The field layer is poor with areas dominated by bramble and bracken. A good sized population of bluebell is present though. On the western edge is a series of ponds with some marshy/semi-improved grassland in between. The ponds have little marginal vegetation, but great crested newts do occur.	County
Wrexham Industrial Estate (LWS)	1.65km Southeast	This is a series of sites within the industrial estate which includes unmanaged grassland at Bryn Road and on Cefn Park land and ancient broadleaved woodland, Erlas Black Wood. The derelict land known as Cefn Park, on the southern edge of the Industrial Estate, consists of a complex mosaic of scrub, grassland and tall herb. A mosaic of woodland and damp grassland occurs adjacent to the River Clywedog. The woodland is dominated by mature hawthorn with alder and crack willow along the river. The ground flora is sparse but dog's mercury, hart's tongue and male fern do occur. Meadowsweet, great willowherb, and canary reed grass occur in the damper patches. The strip of species-rich grassland beside a ditch on Bryn Road has similar grassland species including the uncommon grass vetchling.	County



- 2.3. 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.
- 2.4. 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. Strategic solutions regarding Nutrient Neutrality are being delivered through collaboration between Wrexham Council, Natural Resources Wales and Natural England.
- 2.5. 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 in this report**.
- 2.6. LWS are selected and designated locally for their nature conservation or geological importance – they are considered to be of county ecological importance.
- 2.7. 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 and will **not be considered further in this report**.

Priority Habitats

- 2.8. 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, away from potential impacts, as such this habitat is not considered to be impacted by the proposals.

Habitats and Flora

- 2.9. The habitats present on site are summarised below in **Table 2.2**, along with a description of the composition of the main plant species present and an assessment of their ecological importance. The location of habitats are shown on the Habitats Features Plan 10581/P01b.



Table 2.2: Habitats and flora present on-site

Habitat	Description and Species	Ecological Importance
Arable Land	The majority of the site comprises arable fields, primarily used for growing crops. This habitat has an inherent low species diversity due to the managed nature of the habitat.	Arable fields are composed of highly maintained vegetation, and is considered to be of negligible ecological importance .
Broadleaved Woodland - Plantation	There is 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 hawthorn <i>Crataegus monogyna</i> , silver birch, oak <i>Quercus</i> sp., rowan, holly <i>Ilex aquifolium</i> and cherry <i>Prunus avium</i> .	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 and is considered to be of local ecological importance .
Broadleaved Woodland – Semi-natural	The site contains areas of mature semi-natural broadleaved woodland to the north-west of the site. The woodland contains species such as willows <i>Salix</i> sp., poplars <i>Populus</i> sp., elder <i>Sambucus nigra</i> and ash <i>Fraxinus excelsior</i> , rowan <i>Sorbus aucuparia</i> and sycamore <i>Acer pseudoplatanus</i> , with ground flora dominated by nettle <i>Urtica dioica</i> , cleavers <i>Galium aparine</i> , rosebay willowherb <i>Chamerion angustifolium</i> and bramble <i>Rubus fruticosus</i> .	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 and is considered to be of local ecological importance .
Defunct Hedge	The fields across the site are bordered by defunct hedgerows which are dominated by hawthorn but with some holly on the eastern boundary. Bramble, ivy <i>Hedera helix</i> , hazel <i>Corylus avellana</i> and dog rose <i>Rosa canina</i> are found along its length, in places, as well as some scattered trees.	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 local ecological importance .
Dense Scrub	Dense 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 <i>Ulex europaeus</i> .	Scrub is a common and widespread habitat locally and nationally, however within the site may form a foraging and commuting resource for local fauna and is therefore considered to have local ecological importance .
Ditch – Dry	There is a ditch at the north-west of the site. During the initial site visit in 2017 and again in 2023, 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 and was completely dry during subsequent site visits.	As the ditch was dry during more recent survey visits, and due to the unsuitability of this habitat to support local fauna it was considered to be of negligible ecological importance .
Semi-improved Grassland	There are two fields of semi-improved grassland in the north of the site, which are dominated by grasses including Yorkshire fog <i>Holcus lanatus</i> , cock's-foot <i>Dactylis glomerata</i> , and perennial ryegrass <i>Lolium perenne</i> . Other species recorded in this habitat include: white campion <i>Silene latifolia</i> creeping buttercup <i>Ranunculus repens</i> . 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	The grassland on site is species-poor, supporting common and widespread species, and is therefore considered to have negligible ecological importance .
Pond	There is one pond in the middle of the woodland on site (see Plan 10581 / P01b). During the initial site visit in 2017, the pond was dry. However at the start of the newt surveys in April 2018, the pond was wet. During the 2023 eDNA (May 10 th) and in subsequent badger surveys the pond again was found to be wet.	Ponds are considered a habitat of principal importance, listed in Section 7 of the Environment (Wales) Act 2016. Although ephemeral in nature, the pond provides a stepping-stone between offsite habitats – they are considered to have local ecological importance .



Scattered Trees	The site contains mature scattered trees along the field margins and within the arable field to the north-east. Species include: oak, sycamore, elm <i>Ulmus minor</i> , holly, beech, copper beech <i>Fagus sylvatica</i> , and elder.	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 local ecological importance .
Tall Ruderal	Small amounts of ruderal vegetation are present around the western and northern site boundary. These areas are dominated by rosebay willowherb, bramble <i>Rubus fruticosus</i> and bracken <i>Pteridium sp.</i>	Ruderal vegetation scattered throughout the site supports common and widespread species and is considered to be of negligible ecological importance .



Protected and Notable Species

- 2.10. The below section sets out the potential for protected species on site. Species which are considered likely absent from the site based on professional judgement, following consideration of habitats within the site, signs of species presence at the time of survey and data search records, are not discussed.

Amphibians

- 2.11. The data search returned records of common frog *Rana temporaria*, common toad *Bufo bufo*, great crested newt (GCN) *Triturus cristatus*, palmate newt *Lissotriton helveticus* and smooth newt *Lissotriton vulgaris* within 2 km of the site. The nearest of these was a record of smooth newt recorded in the onsite pond, northeast of the site in 2018. GCN records were also returned adjacent the northern boundary in 2009 and adjacent the western boundary in 2020. No European Protected Species (EPS) licences were returned for GCN within 2 km of the site.

eDNA Results

- 2.12. Tests from the 2023 eDNA survey of the on-site pond were negative for GCN, indicating a likely absence of GCN. Full survey results are detailed in **Appendix 5**. This also confirms the previous 2018 findings of negative GCN eDNA within the on-site pond.
- 2.13. The data search found four waterbodies on or within 250 m of the site, which is generally considered to be within the typical migratory range of GCN from a waterbody⁵. Previous surveys of these ponds in 2018 determined that Pond 5 was assessed as supporting a small GCN population; a maximum count of 6 individuals (5 male and one female, plus eggs) (see Pond Location Plan **10581/P06a** for pond locations). The populations of GCN across Wrexham are generally well understood and recorded.
- 2.14. The terrestrial habitats on site could offer some suitable habitat for GCN however, the majority of the habitat is low quality, due to agricultural disturbance. However, areas of scrub, hedgerows, woodland edges, and grassland all provide suitable GCN habitat. Given the absence of significant dispersal barriers between the site and the breeding pond, small numbers of GCN may utilize the terrestrial habitat onsite for commuting or hibernation, therefore mitigation is required and discussed further within **Section 3** of this report.
- 2.15. Other more mobile amphibian species such as common toad may be present. Common toads are a priority species under The Natural Environment and Rural Communities (NERC) Act 2006⁶. It is considered any population utilising terrestrial habitats on site, such as the scrub, grassland and ruderal vegetation, will also be using further habitats beyond the site boundary and not reliant site alone. As such any population of amphibians such as common toad on site would be of **negligible ecological importance**.

Badger

- 2.16. The local records centre provided 53 badger *Meles meles* records within 2km of the site, with the closest record 33m from of the site.

⁵ Cresswell, W. & Whitworth, R., 2004. An assessment of the efficiency of capture techniques and the value of different habitats for the great crested newt *Triturus cristatus*: English Nature Research Report 576, Peterborough: English Nature.

⁶ Section 40 of the NERC Act puts a duty on local authorities to have regard for the conservation of species and habitats listed at Section 41, including when considering planning applications.



- 2.17. Suitable habitat for badger was recorded onsite in the form of woodland, grassland and ruderal vegetation. Therefore, further surveys to determine the presence/likely absence were undertaken in 2017, 2018, 2021 and updated in 2023.
- 2.18. In summary: one adult badger was observed at the south of the site during a bat activity survey on the 13th July 2017, and ten well-used entrances, active main sett (Sett S01) were recorded on the eastern boundary during the update badger survey in June 2023, with hairs present in many of the entrances. A number of mammal paths used by badger, lots of snuffle holes, as well as multiple latrines and scratching tree were also identified. Small badger prints were found in the area of the sett, implying that juvenile badgers were utilizing the area. This forms part of a well-known main badger sett in the woodland adjacent to the northeastern boundary of the site.
- 2.19. Another partially active outlier single entrance sett (S02) and two further active sett entrances making up an outlier sett (S03) were recorded north of the area of woodland in the north west of the site, again with hairs present and clear of any debris or vegetation within the entrance (see 10581/P05a for sett locations). Based on the sign present and level of usage, these were believed to be outliers. Further monitoring of these setts will confirm this.
- 2.20. Badger survey results are summarized in **table 2.3** below, and further illustrated in plan **10581/P05a** appended to this report.

Table 2.3 – Summary of badger survey results in 2023.

Sett Ref.	Entrance Number	Grid Ref.	Description	Sett Classification
Sett 1	1	SJ 36460 51725	Single large hole within eastern boundary vegetation with large spoil heap facing west into the field. A well-used path runs along the wooded embankment east, behind the entrance. A latrine is present on this path with one pit containing fresh dung (one pile).	Main Sett Active
	2	SJ 36466 51713	Partially used entrance hole on eastern side of embankment, partially blocked.	
	3	SJ 36478 51704	Well-used entrance hole on eastern side of embankment.	
	4	SJ 36460 51695	Well-used single entrance hole facing west towards arable field.	
	5	SJ 36460 51680	Well-used single entrance hole facing west towards arable field.	
	6	SJ 36460 51674	Well-used single entrance hole in embankment facing east. Also, latrine pit with fresh dung on well used mammal path that runs north to south along embankment.	
Sett 2	1	SJ 35981 51651	Single entrance hole in northern side of bank, facing south. Clear entrance and spoil outside but no signs of badger confirmed. Well-worn mammal path runs through tree belt around entrance.	Outlier Sett Partially-active



Sett 3	1	SJ 35963 51653	Well-used single entrance hole facing north on embankment towards arable field. Clear of debris with badger hairs identified in entrance.	Outlier Sett
	2	SJ 35955 51655	Well-used single entrance hole facing north on embankment towards arable field. Clear of debris with badger hairs identified in entrance.	Active

Bats

- 2.21. The data search returned records for four bat species within 2km of the site. Species included common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, noctule *Nyctalus noctule*, Daubenton's bat *Myotis daubentonii*, brown long-eared bat *Plecotus auritus*, lesser horseshoe bat *Rhinolophus hipposideros*, Whiskered bat *Myotis mystacinus*, Brandt's bat *Myotis brandtii*, Myotis bat species *Myotis sp.*, Pipistrelle bat species *Pipistrellus sp.*. The nearest of these was a record of Lesser Horseshoe Bat 0.14 km south of the site in 2019. There are also records of common pipistrelle 0.25 km northwest and southwest of the site. No European Protected Species (EPS) licences were returned for GCN within 2 km of the site.
- 2.22. There is also a known lesser horseshoe maternity roost in Erlas house off-site to the south of the site.

Bat Activity

- 2.23. Suitable habitat for foraging, roosting and commuting was recorded onsite in the form of woodland and trees, hedgerows, dense scrub, semi-improved grassland, and ruderal vegetation. Therefore, further surveys to determine their presence as well as levels of activity were repeated in 2023; the results of the detailed bat surveys are shown in **Appendix 4** and summarised below.
- 2.24. Species recorded during bat activity surveys include:
- Common pipistrelle;
 - Soprano pipistrelle;
 - Noctule bat; and
 - Myotis bat species.
- 2.25. 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.

Bat Static Deployments

- 2.26. Further activity data was obtained from the deployment of static acoustic bat detectors along each transect route. During each seasonal transect visit two detectors were set out along habitats suitable for foraging and commuting. These were deployed for a minimum of five nights with suitable weather conditions and were programmed to begin recording 30 minutes before sunset until 30 minutes after sunrise. Species recorded across site through this method included:



- Common pipistrelle;
- Soprano pipistrelle;
- Noctule bat;
- Myotis bat Species;
- Brown long-eared bat; and
- Lesser Horseshoe.

2.27. Overall, the assemblage of bats utilising the site for foraging and commuting is considered to be of **local ecological importance**.

Preliminary Bat Roost Assessment

2.28. An updated Preliminary Bat Roost Assessment (PBRA) was conducted alongside the 'extended' Phase 1 Habitat survey. This assessment was carried out on all trees on and directly adjacent to site, which may be impacted by the development. See **Appendix 3** for methodology, **Table 2.4** below for results, and the Preliminary Bat Roost Assessment Plan **10581/P07a** for locations.



Table 2.4: PRA results.

Structure/tree and Suitability	Potential Roost Feature (PRF)	Photograph
T01 – Maple spp. Low Potential	PRF – Moderate ivy coverage up the main trunk PRF – Small knot hole 5m high facing southeast	
T02 – Oak High Potential	PRF – Moderate ivy coverage up main trunk extending onto some limbs PRF – Multiple knot holes on limbs, 5-7m high facing north and east	
Tree Group (T3 – T5) – Elder Low Potential	PRF - Moderate ivy coverage up main trunk extending onto some limbs PRF – small knothole on main trunk 5m high facing northwest	



Tree Group 1 (T6 – T13) - Poplar Moderate Potential	PRF – High amount of thick ivy coverage up the entire main trunk of the trees		
Tree T14 – Oak High Potential	PRF – Multiple broken branches and tear-outs on main trunk which created several crevices 6m high PRF – Exposed heartwood branch forming crevice on northern aspect 3m high		
Tree T15 – Acer sp. Low Potential	PRF - High amount of thick ivy coverage up the entire main trunk of the tree		



Tree T16 – Acer sp. Moderate Potential	PRF - High amount of thick ivy coverage up the entire main trunk of the tree PRF – Knot hole on branches facing west 6m high PRF – Knot hole on branches facing south 10m high	
Tree T17 – Acer sp. Low Potential	PRF - High amount of thick ivy coverage up the entire main trunk of the tree	
Tree T18 – Maple sp. High Potential	PRF – Large trunk cavity facing north 3m high	



Tree T19 – Oak High Potential	PRF – Cavity in main trunk facing north 4m high PRF – Multiple tear outs and knot holes on branches 5m high		
Tree T20 – Sycamore Moderate Potential	PRF – Multiple knot holes on branches and main trunk		
Tree T21 – Oak High Potential	PRF – Multiple tear outs and knot holes on main trunk and branches		



Tree T22 – Oak High Potential	PRF – Large cavity on limb facing south 5m high created initially from large tear out		
Tree T23 – Oak High Potential	PRF – Large tear out on main trunk facing south entire length of main trunk PRF – Multiple tear outs on branches exposing heartwood and creating knot holes facing west 4m high		
Tree T24 – Oak High Potential	PRF – Large trunk cavity from ground to 3m high facing north		



Tree T25 – Oak High Potential	PRF – Large broken limb with crevice running the length of the remaining branch facing south 6m high PRF – Hazard beam creating crack down center of branch facing south 5m high		
Tree T26 – Oak Moderate Potential	PRF – Wound from lost limb facing east 5m high PRF – Cavity on main trunk facing east 5m high		
Tree Group 2 – Oak High Potential	PRF – Mature oaks with multiple broken limbs, knothole and exposed heart wood		



Tree T27 – Sycamore Moderate Potential	PRF – High amount of thick ivy coverage up the entire main trunk of the tree		
Tree T28 – Sycamore Low Potential	PRF – Wound from lost limb facing west 6m high PRF – Knothole on underside of limbs facing west 5m high		
Tree T29 – Ash Moderate Potential	PRF – High amount of thick ivy coverage up the entire main trunk of the tree		



Tree T30 – Ash High Potential	PRF – Canopy tear out leaving large cavity facing south 6m high	
Tree T31 – Ash Moderate Potential	PRF – High amount of thick ivy coverage up the entire main trunk of the tree	



Birds

- 2.29. The data search returned a number of records of protected and notable birds species within 2 km 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*.
- 2.30. The woodland and hedgerows 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 also recorded during the initial site visit in 2017. The site is unlikely to be important for ground nesting birds such as skylark *Alauda arvensis* and lapwing due to its relatively small size and the abundance of other habitats locally.
- 2.31. It is considered the assemblage of birds that may use the site for foraging and breeding is of **local ecological importance**, therefore consideration for nesting birds to avoid a breach of legislation is discussed in **Section 3** of this report.

Reptiles

- 2.32. The local record centre provided records of adder *Vipera berus* 0.4km north of the site in 2009, and grass snake *Natrix natrix* (now *Natrix natrix Helvetica*) 0.9km north-west of the site in 2016. One record of common lizard *Zootoca vivipara* was also recorded in 2020 1.98km Southeast associated with Wrexham Industrial Estate.
- 2.33. 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, however no reptiles were recorded. Regardless, due to suitable habitat being present onsite, sensitive working methodologies will be discussed further in **Section 3**.

Otter and Water Vole

- 2.34. COFNOD returned two water vole *Arvicola amphibius* records, the nearest from the Borrass bog LWS 0.8km north-west of the site, in 1999 and five otter *Lutra lutra* records, the nearest 0.9km east of the site in 2011.
- 2.35. The ditch on site was dry and heavily shaded during all site visits, and therefore has limited suitability for water vole, and no suitability for otter, therefore these species are **not considered further in this report**.

Hedgehog

- 2.36. COFNOD provided 37 hedgehog *Erinaceus europaeus* records, the nearest 0.2km west of the site in 2019.
- 2.37. 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. Regardless, due to suitable habitat being present onsite, sensitive working methodologies will be discussed further in **Section 3**.

Invasive species

- 2.38. No species listed under Schedule 9 of the Wildlife and Countryside Act (WCA), were returned from the data search or recorded in any of the site visits and as such will **not be discussed further in this report**.



Section 3: Ecological Impacts, Mitigation, and Enhancement

Proposed Development

- 3.1. The proposals are for the development of residential dwellings along with associated infrastructure, access and landscaping. The potential impacts at this site as a result of the proposed development are set out below, with reference to relevant legislation and planning policy, which is summarised in **Appendix 2**.

Chapter 6 – Planning Policy Wales

- 3.2. On the 11th of October 2023, changes to Chapter 6 of Planning Policy Wales (PPW) were adopted with immediate effect prior to Version 12 of PPW being formally released. Of relevance to ecological matters are the changes regarding 'Net benefit for Biodiversity and Step-wise Approach', 'Protection of SSSIs' and 'Trees and woodlands'. The following section details the implications of these policies on the development, and how the masterplan has responded accordingly.

Net Benefit for Biodiversity and the Step-wise Approach

- 3.3. The proposed development would mainly affect arable habitat of negligible ecological importance, which requires no specific mitigation and which would have limited impact on fauna which use it. In accordance with the step-wise approach and general nature recovery, this habitat is not a strategic target for expansion. The impact of the proposals on biodiversity in general are, therefore, limited and where relevant discussed under the species headings below.
- 3.4. Those habitats within the site which have been identified as being of 'local' ecological importance and/or priorities for conservation under Section 7 of the Environment (Wales) Act 2016 are those which the step-wise approach seeks to address. In the context of the site, these habitats are:
- Areas of woodland;
 - Trees;
 - Hedgerows;
 - Pond
- 3.5. The proposed masterplan accords with the step-wise approach by retaining these habitats, with the ability to enhance them through plug planting of hedgerows and entering all into a long-term management and monitoring plan, which can be secured by planning condition. The masterplan also shows the continued connection (albeit interrupted by proposed road networks) of these habitats to the wider landscape, allowing them to retain functionality and resilience as habitats in their own right and to the fauna which uses them.
- 3.6. Beyond the protection and enhancement of existing ecological features within the site, the masterplan also seeks to provide enhancements in habitat coverage and quality, which also offers benefits for the wildlife which utilise such habitats. As shown in the accompanying masterplan, new areas of woodland are proposed to supplement existing woodland and provide additional connectivity to the wider landscape. Widespread tree planting is also proposed, along with areas of meadow grassland and SUDs features. Whilst the latter is primarily



an engineering solution, if designed sensitively they can also offer benefits for a range of wildlife and provide 'stepping stones' through the site.

- 3.7. Overall, it is considered that with the implementation of the masterplan as presented, the development has the ability to deliver a net benefit for biodiversity through the retention and enhancement of existing green infrastructure and creating new habitat to provide strengthened connections to the wider landscape, thus delivering a more resilient and connected environment.

Designated Sites

Statutory Sites

- 3.8. Given the nature of the site proposals and the distances involved between the site and Midland Meres and Mosses Phase 2 RAMSAR sites and SAC's, no adverse direct or indirect effects are anticipated, and no specific mitigation is required. Strategic solutions regarding Nutrient Neutrality are being delivered in collaboration between Wrexham Council, Natural Resources Wales and Natural England.
- 3.9. Vicarage Moss (SSSI) lies 1.98 km north of the site. The site does not contain any of the habitats for which the SSSI is designated for, therefore there will be no loss to similar habitat types. Equally, there will be no loss to connecting habitats to the SSSI, as boundary vegetation and adjacent habitats, such as woodland blocks, shall be retained. Given the nature of the development, indirect impacts upon the SSSI are considered unlikely as there will be no changes in air and water quality and no increased recreational impact. During the construction phase, there could be potential impacts via chemical/fuel run-off, noise/visual/vibration impacts, dust, etc. Standard best practice pollution prevention⁷ is expected to be incorporated into a Construction Environmental Management Plan (CEMP). These potential impact pathways will therefore be controlled, and impacts Vicarage Moss avoided.

Non-statutory Sites

- 3.10. There were six locally designated sites returned within 2km of the site, with the closest, Borrass Bog (LWS) 0.78km northwest from the development site. Impacts during the operational phase are not anticipated due to the nature of the proposals. Impacts during construction activities could potentially occur to these sites via dust deposition and run-off.
- 3.11. The site does not contain any of the habitats for which the LWS are designated for, therefore there will be no loss to similar habitat types. Equally, there will be no loss to connecting habitats to the LWS. Any potential impacts through the construction phase can be controlled through best practice pollution prevention measures, which can be implemented in a CEMP.
- 3.12. In summary, the production and implementation of a CEMP, to include standard best practice pollution prevention, is expected to be conditioned and therefore prevent impacts to the designated sites above.

⁷ CIRIA (2015) Construction Work Sector Guidance for Designers. Fourth edition



Protected and Notable Species

Amphibians

- 3.13. The wider Wrexham Industrial Estate site is known to support a population of GCN. 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.
- 3.14. A small section of hedgerow likely to provide terrestrial suitability for GCN is being lost for access, but the majority of habitat on site and within 250m of the closest-known breeding pond off-site being lost to development comprises arable land of very low suitability for GCN. Recent eDNA testing of the on-site pond confirmed the likely absence of GCN, and this has been the case during all surveys completed of the pond, whereby GCN have never been recorded in it during survey work completed by Tyler Grange in 2018.
- 3.15. 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.
- 3.16. 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.
- 3.17. 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

- 3.18. 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.

3.19. 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).

3.20. 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 mitigation strategy.

Enhancement of Breeding Habitat

3.21. 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.

3.22. 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

3.23. 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

3.24. 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

3.25. 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

- 3.26. 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

- 3.27. 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.
- 3.28. 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).
- 3.29. Suitably worded planning conditions would secure the design and detail of the above.

The 'Three Tests'

- 3.30. 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

- 3.31. The majority of the habitats affected are of low importance to other amphibian species, 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.

Badger

- 3.32. Multiple active badger setts are located on site, therefore recommendations to avoid impacts are made below. These include a main sett in the northeast and two active outliers in the northwest.
- 3.33. Currently, a development buffer of at least 30m is proposed around each of the main sett entrances on the eastern boundary, and so no direct impacts on these setts are expected. However, as badger can quickly excavate new setts, and setts dug within the eastern embankment could further extend into the development site, it is recommended that an update badger inspection shall be conducted prior to any development works proceeding to provide an up-to-date assessment of the presence of badger setts and ensure no new setts have been excavated within 30m of the development footprint. Every effort should be made to avoid disturbing the main sett in the east due to the importance of this sett to the clan and because of the additional constraints that doing so would entail in terms of mitigation creation and timescale impacts. These would include provision of an artificial sett of appropriate size in a location that is safe guarded long term from disturbance.
- 3.34. Should a badger sett be found within the site prior to the commencement of works, it may be necessary to either provide a suitable buffer (up to 30m) to the sett or to close off the sett entirely, if providing a buffer is considered impractical. Should a sett closure be required a licence from Natural Resources Wales (NRW) will be required for the works.
- 3.35. Based on current proposals the badger setts located to the northwest of the site are likely to be impacted by the construction of the new access road coming off the A534. If this road cannot be rerouted to maintain a 30 meters from the sett entrances, then further monitoring surveys will be required to determine whether the activity levels at each sett. The 28 day monitoring period will also allow more information to be gathered about the use of the sett to ensure they are correctly classified as outliers.
- 3.36. Following the further survey work, should it be determined an 'outlier sett' then the works would need to proceed under a NRW License which can only be granted between July – November.
- 3.37. Snuffle holes across the site indicate badgers are using the site for foraging; it is considered that there is adequate foraging habitat within surrounding areas and no mitigation would be required for the loss of habitat, which is dominated by arable fields. The new public open space in the north-eastern corner of the site will provide enhanced foraging opportunities for badger.
- 3.38. In addition, general protection measures for badger such as covering excavations at night and secure storage of chemicals should be implemented as part of a CEMP.
- 3.39. Should the above be implemented, the scheme should not have a significant impact on the local badger populations.



Bats

- 3.40. Numerous onsite trees (detailed in **Table 2.3**) were assessed as having Low to High suitability to support roosting bats respectively. However, all of these are being retained as part of proposals, with the root protection area of tree being suitably buffered from development.
- 3.41. Indirect impacts associated with dust and noise during the construction phase will be minimised by the implementation of a CEMP. Lighting during and post construction shall follow a sensitive lighting scheme and retain all boundary features such as hedgerows and woodland edges as dark corridors to ensure that the foraging and commuting resources for bats remain unaffected. Any outside lighting should avoid spilling onto retained habitats including retained and newly planted trees
- 3.42. Should any tree be required to be lost as part of the proposals, assessed as having at least low suitability to support roosting bats. In line with best practice guidance⁸, a suitably qualified ecologist such as Tyler Grange shall be contacted and further surveys will be required.
- 3.43. To enhance the site for roosting bats, twelve bat boxes are recommended to be incorporated within scheme by either using integrated bat boxes or externally erected bat boxes (expected to be secured via a suitably worded planning condition).
- 3.44. Through the retention of the majority of trees and new landscape planting, foraging and commuting bats may continue to use the site post-development.
- 3.45. The species assemblage mentioned for the activity and static surveys is common within the area and at low to average numbers, this would not result in further mitigation for the proposals. A lighting plan should be produced and woodland edges, retained hedgerows as well as any created habitats should avoid being lit.

Birds

- 3.46. All birds, their nests and eggs, are protected by law and as such it is an offence to intentionally kill, injure, or take any wild bird; intentionally take, damage, or destroy the nest of any wild bird while it is in use or being built; and intentionally take or destroy the egg of any wild bird.
- 3.47. To avoid triggering the legislation protecting nesting birds, clearance of suitable habitat (small sections of defunct native hedgerow) should be timed outside the nesting bird season (generally taken as March to September inclusive, though this is not defined in law and birds may nest outside of this time). If any clearance works to nesting habitats are required during the nesting season, then pre-removal checks for nesting birds must be carried out by a suitably experienced Ecological Clerk of Works (ECOW), no more than 48 hours prior to the works commencing. If any nesting birds are found to be present, an appropriate buffer zone will be implemented, within which works are excluded for the duration of the breeding attempt. Any active nests will need to be left in situ until a suitably experienced ecologist confirms that the chicks have fledged and the nest is no longer active.
- 3.48. Habitat creation such as native shrub and tree planting is expected to increase nesting opportunities on site. Additionally, twelve bird boxes are recommended to be incorporated within scheme, targeting species of conservation concern known to be present (expected to be secured via a suitably worded planning condition).

⁸ Collins, J. (ed.) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines, 3rd Edition. The Bat Conservation Trust, London



Hedgehog

3.49. Hedgehog are a priority species and therefore afforded consideration in planning policy. Hedgehog are in population decline, efforts should be made to conserve this species and enhance sites for hedgehog wherever possible, by creating 'hedgehog highways' (appropriately sized gaps under boundary fencing to allow the free movement of hedgehog) and implementing safe working methods, such as:

- Storing construction materials in skips or off the ground in pallets where possible;
- Ensuring any excavations are sealed overnight, or left ramped or with an exit should any hedgehogs or other small mammals become trapped;
- Capping any pipework overnight, and;
- Vegetation which could provide over-wintering hibernation potential for hedgehog should be checked by and ecologist prior to vegetation clearance.

Reptiles

3.50. The RAMs will consist of the following components:

- Toolbox talk
- Staged supervised vegetation cutting; and
- Vegetation stripping and dismantling of potential reptile refuges, under supervision of an ecologist.

3.51. The following measures must be undertaken in the active season when reptiles are not hibernating between April and October when air temperatures are above 10°C.

3.52. Prior to the start of any on-site works a toolbox talk will be given to all contractors undertaking works which break ground and could affect reptiles. This will be given by a Suitably Qualified Ecologist (SQE) to ensure the reptile mitigation measures are explained and adhered to at all times. After the toolbox talk, the continuous attendance of a SQE is not considered necessary, but an ecologist will attend site as an Ecological Clerk of Works (ECoW) to supervise the staged cutting of vegetation and dismantling of potential refuge features such as wood any rubble piles.

3.53. The following stages will then be followed sequentially:

Vegetation Cutting

3.54. All vegetation should initially be cut at a slow walking pace to a height of 150mm, where possible towards areas of vegetation that will not be affected by development i.e. towards retained habitats within the adjacent land to encourage any reptiles present to disperse out of the site. All arisings must then be cleared from the site to prevent reptiles from seeking refuge within.

3.55. After the initial cut to 150mm, a period of at least 48 hours should elapse before cutting the remaining vegetation down to ground level. As previously, this should be undertaken at a slow walking pace, working east to westwards. All arisings must then be cleared from the site to prevent lizards from seeking refuge within.



Final Vegetation Stripping, Rubble and Woodpile Clearance

- 3.56. Following the final vegetation cut a further 24 hours should be allowed to elapse before any final vegetation stripping. Any remaining vegetation should then be bladed off to render the work area completely free of vegetation.
- 3.57. Small piles of rubble and woodpiles can be dismantled by hand, larger piles will need to be dismantled carefully with an excavator, working from top to bottom and spreading out the rubble slowly so any lizards within have the chance to escape.
- 3.58. If lizards are present and do not escape, the SQE will capture any lizards by hand or direct the manipulation of the rubble pile to allow lizards to escape.
- 3.59. Any reptiles caught will be moved to adjacent suitable reptile habitat by the SQE.

Storage of Stockpiled Materials

- 3.60. All materials such as timber (which if piled on the ground could provide refuge for reptiles) should be stored off the ground on pallets or similar and bare ground to deter reptiles using them as refuges.



Section 4: Conclusions

- 4.1. Four international statutory designated sites were assessed. No adverse direct or indirect effects are anticipated, and no specific mitigation is required. One national statutory designated site, Vicerage Moss was assessed, given the nature of the development, indirect impacts upon the SSSI are considered unlikely. During the construction phase, potential impacts are expected to be mitigated through the implementation of a Construction Environmental Management Plan (CEMP). Six non-statutory sites were assessed, and no impacts are anticipated as a result of development, as long as standard best practice is followed to control impacts via air, run-off, and other pollutants. These are to be incorporated into a CEMP. Strategic solutions regarding Nutrient Neutrality are being delivered in collaboration between Wrexham Council, Natural Resources Wales and Natural England.
- 4.2. The development will primarily affect habitats of negligible ecological importance. Throughout the development, all trees on site and other habitats of site/local ecological importance (namely broadleaved woodland, dense scrub, semi improved grassland, pond, and tall ruderal) are anticipated to be retained and enhanced. With the enhancements and habitat creation proposed, including native species planting, habitats of ecological importance on site will be enhanced, providing a net benefit for biodiversity within the site.
- 4.3. All boundary trees with bat roosting potential are being retained and protected as part of the proposals and no direct impacts are anticipated. Should vegetation on the site be removed during the core nesting bird season (March-August, inclusive), a pre-works check by an ECoW would be required to determine whether active birds' nests are present.
- 4.4. An appropriately worded planning condition is expected to secure a suitable LEMP or Ecological Enhancement Plan to ensure the long-term management of the proposed habitat enhancements, including proposed tree, hedge, and shrub planting, as well as provision of enhancements for specific species groups such as bird and bat boxes.
- 4.5. In conclusion, in anticipation of the implementation of any necessary mitigation, the proposed development will be compliant with relevant planning policies PS2, PS11, GDP1, EC4, and EC6 of the Local Plan, as well as legislation with regard to ecology.



Appendix 1: Proposed Site Plan

661B 04C Draft Illustrative Concept 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
built around you

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

Checker: DL

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 2: Legislation and Planning Policy

Legislation

- A2.1. Specific habitats and species receive legal protection in the UK under various pieces of legislation, including:
- The Environment Act 2021;
 - The Wildlife and Countryside Act (WCA) 1981 (as amended);
 - The Conservation of Habitats and Species Regulations 2017 (as amended);
 - The Countryside and Rights of Way (CROW) Act 2000;
 - The Natural Environment and Rural Communities Act (NERC) 2006;
 - The Hedgerows Regulations 1997; and
 - The Protection of Badgers Act 1992.
- A2.2. 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 (as amended).
- A2.3. 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.
- A2.4. 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.

National Planning Policy

Planning Policy Wales (PPW), February 2021

- A2.5. Planning Policy Wales (PPW) was updated in February 2021 and sets out the Government's planning policies for Wales and how these should be applied. It includes provision for Net Benefits for Biodiversity.
- A2.6. Section 6.4 of PPW considers biodiversity and ecological network and states that “the planning system has a key role to play in helping to reverse the decline in biodiversity and increasing the resilience of ecosystems, at various scales, by ensuring appropriate mechanisms are in place to both protect against loss and to secure enhancement.”
- A2.7. Addressing the consequences of climate change should be a central part of any measures to conserve biodiversity and the resilience of ecosystems. Information contained in SoNaRR, Area Statements and species records from Local



Environmental Record Centres should be taken into account. 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 the 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 improvement to ecosystem resilience by improving diversity, condition, extent and connectivity of ecological networks.

A2.8. The Biodiversity and Resilience of Ecosystems Duty (Section 6 Duty) states that “planning authorities must seek to maintain and enhance biodiversity in the exercise of their functions. This means development should not cause any significant loss of habitats or populations of species, locally or nationally and must provide a net benefit for biodiversity. In doing so planning authorities must also take account of and promote the resilience of ecosystems, in particular the following aspects:

- Diversity between and within ecosystems;
- The connections between and within ecosystems;
- The scale of ecosystems;
- The condition of ecosystems including their structure and function; and
- The adaptability to ecosystems.

A2.9. In fulfilling this duty, planning authorities must have regard to the list of habitats and species of principal importance for Wales, published under Section 7 of the Environment (Wales) Act 2016;

- The State of Natural Resources Report (SoNaRR), published by Natural Resources Wales (NRW); and
- Any Area Statement that covers all or part of the area in which the authority exercises its functions.”

A2.10. The broad framework for implementing the Section 6 Duty and building resilience through the planning system includes addressing: Diversity, Extent, Condition, Connectivity and Adaptability to change (DECCA).

PPW Version 12 – due for release in the near future

A2.11. *Changes to Chapter 6 were published in October 2023, and are detailed below. The changes will be included in the next iteration of Planning Policy Wales (version 12):*



- **Green Infrastructure:** stronger emphasis on taking a proactive approach to green infrastructure covering cross-boundary considerations, identifying key outputs of green infrastructure assessments, the submission of proportionate green infrastructure statements with planning applications and signposting Building with Nature standards.
- **Net Benefit for Biodiversity and the stepwise approach:** further clarity is provided on securing net benefit for biodiversity through the application of the stepwise approach, including the acknowledgement of off-site compensation measures as a last resort, and the need to consider enhancement and long-term management at each step. The use of the green infrastructure statement as a means of demonstrating the stepwise approach is made explicit. A simplified diagram of the policy approach has been developed (which will be further refined in the consolidated version of PPW12). The importance of strategic collaboration to identify and capture larger scale opportunities for securing a net benefit for biodiversity is recognised.
- **Protection for Sites of Species Scientific Interest:** strengthened approach to the protection of SSSIs, with increased clarity on the position for site management and exemptions for minor development necessary to maintain a 'living landscape'. Other development is considered unacceptable as a matter of principle. Exceptionally, a planned approach may be appropriate where necessary safeguards can be secured through a development plan.
- **Trees and Woodlands:** closer alignment with the stepwise approach, along with promoting new planting as part of development based on securing the right tree in the right place.

Wales Spatial Plan

- A2.12. 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, 2008). 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:
- A2.13. “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.”
- A2.14. 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

- A2.15. The site falls within the administrative borough of Wrexham. Wrexham County Borough Council’s planning policies are set out by the Local Development Plan (LDP 2, 2013 – 2028), which was adopted 20th December 2023



Wrexham Local Development Plan 2 (LDP2) Adopted 20th December 2023

A2.16. Policies in the LDP span economic, social and environmental objectives⁹. The environmental policies include:

- Strategic Policy SP14 safeguards and enhances biodiversity and geodiversity through the identification and protection of sites and/or features of international, national and local importance.
- Policy NE2: protect, manage and enhance the nature conservation and/or geological importance of locally designated sites.
- Strategic Policies SP5 and SP19 supports the creation, enhancement, protection and management of a network of green infrastructure.
- Policy NE3: Development will only be permitted where it does not cause unacceptable harm to trees, woodlands and hedgerows of significant public amenity, natural or cultural heritage value or those that provide important ecosystem services.
- 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

- A2.17. 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)¹⁰', 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.
- A2.18. 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.

⁹ [Wrexham Local Development Plan 2 \(LDP2\) 2013 to 2028 | Wrexham County Borough Council](#), accessed 15/01/24.

¹⁰ <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 3: Methodology

Data Search

- A3.1. A desk-based study was conducted whereby records of designated sites and records of protected and priority species were purchased and interrogated for the site and the surrounding landscape. 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.
- A3.2. The following resources were consulted/contacted:
- Multi-Agency Geographic Information for the countryside (MAGIC) website¹¹;
 - Local Records Centre (COFNOD)¹²; (Data ordered on 01/08/2023 and received on 10/08/2023);
 - Wrexham County Borough Council website¹³;
 - Joint Nature Conservation Committee (JNCC) website¹⁴;
 - Natural England (NE) designated sites website¹⁵;
 - Ordnance Survey mapping; and
 - Google Maps, including aerial photography.
- A3.3. The following areas of search around the boundary of the site boundary were applied:
- 2 km for bat records;
 - 2 km for protected and priority species, national statutory designated and non-statutory sites; and
 - 10 km for European statutory sites.

'Extended' Phase I Habitat Survey and UKHabs

- A3.4. An 'extended' Phase 1 survey was carried out on the 22/05/2017 by Georgina Palmer and Kyle Mellish and then repeated in 2021. This was then updated by Dale Mortiboys (ACIEEM, FISC lvi 3) and Elliot Grundy on 22/08/2023, experienced ecological consultants, a suitably experienced ecologist. The methods used during the walkover survey broadly followed methods used in an 'extended' Phase I habitat survey¹⁶ and entailed recording the main plant species

¹¹ <https://magic.defra.gov.uk/> [Accessed 10/08/2023]

¹² <https://www.cofnod.org.uk/> [Accessed: 01/08/2023]

¹³ <https://www.wrexham.gov.uk/> <https://www.redbridge.gov.uk/planning-and-building/planning-policy/> [Accessed 10/08/2023]

¹⁴ <http://jncc.defra.gov.uk/ProtectedSites/> [Accessed 10/08/2023]

¹⁵ <https://designatedsites.naturalengland.org.uk/> [Accessed 10/08/2023]

¹⁶ Joint Nature Conservation Committee (2010). Handbook for Phase 1 habitat survey - a technique for environmental audit. JNCC, Peterborough.



and classifying and mapping habitat types with reference to the Habitat Definitions provided by the UK Habitat Classification Working Group¹⁷.

- A3.5. Additionally, the habitats identified were evaluated for their potential to support legally protected and notable fauna species. Where access allowed, adjacent habitats were also considered in order 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.

Preliminary Bat Roost Assessment (PBRA)

- A3.6. A PBRA was undertaken on trees of relevance to this assessment. The assessment was undertaken on the 22/082023 by Dale Mortiboys (CL18 NE licence holder ACIEEM), Bethany Phythian (QCIEEM) and Elliot Grundy (MSc). All surveys were daytime inspections and the conditions for all surveys was considered optimal. All trees were inspected from the ground using binoculars and high-powered torch for accessible features. In relation to trees, such features may include woodpecker holes, frost cracks, deadwood, knot holes and limb wounds.
- A3.7. The potential of each tree and building at the site and immediately adjacent to the site to support roosting bats have been categorised against the criteria described in **Table A3.1**.

Table A3.1: Roost Assessment Criteria¹⁸

Suitability	Description of Roosting Habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats.
Low	A structure or tree with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation).
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status.
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for long periods of time due to their size, shelter, protection conditions and surrounding habitat.

- A3.8. Results of the PBRA are shown in **Section 2** of this report.

Badger Survey Methodology

- A3.9. An update badger survey was conducted by Dale Mortiboys, and Bethany Phythian of Tyler Grange on 31st of May 2023. Dale is an experienced field ecologist, CL35 NE badger class licence holder, certified wildlife tracker and is

¹⁷ Butcher, B., Carey, P., Edmons, R., Norton, L. and Treweek, J. (2020). UK Habitat Classification – Habitat Definitions V1.1

¹⁸ Adapted from: Collins, J. (ed.) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines, 3rd Edition. The Bat Conservation Trust, London



competent in undertaking such surveys. Miss Phythian is also an experienced field ecologist and qualifying member of CIEEM. The weather conditions during the survey were optimal.

- A3.10. The site as shown on Badger Survey Plan 10851/P05a plus 30m in each direction was surveyed for badgers (defined as the 'survey area'), where access and views permitted.
- A3.11. During the survey, the survey area was walked, and signs of badger activity recorded in order to determine the classification of each sett present on site. Typical badger field signs include:
- Tracks and mammal pathways
 - Push-throughs (gaps where badgers regularly push their way through fencing or hedgerows)
 - Latrines and dung pits
 - Badger hairs
 - Badger prints;
 - Foraging activity (e.g. snuffle holes);
 - Additional sett entrances.
- A3.12. For any setts recorded these were examined and assigned to one of four categories of importance to the badger clan, as defined by Harris et al. (1989) and used in various National Badger Surveys (Wilson et al., 1997 and Cresswell et al., 1990).
- A3.13. The number of holes comprising each sett was recorded and setts classified as disused, partially used or well-used. Sett descriptions and categories of use are set out in Tables A3.2 and A3.3 below.



Table A3.2 – Classification of badger setts.

Type of Badger Sett	Description
Main Sett	Main setts usually have many holes with large spoil heaps and the setts generally look well used. There are well-used paths to and from the sett and between sett entrances. Although normally the breeding sett is in continuous use, it is possible to find a main sett that has become disused due to excessive digging or some other reason; in such case it should be recorded as a disused main sett.
Annex Sett	Annex setts are often close to a main sett, usually less than 150m away, and are often connected to the main sett by one or more obvious well-worn paths. Annex setts usually have several holes, but may not be in use all the time, even if the main sett is very active.
Subsidiary Sett	Subsidiary setts often only have a few holes. They are usually at least 50m from a main sett and do not have an obvious path connecting with another sett. They are not continuously active.
Outlier Sett	Outlier setts usually have only one or two holes, often have little spoil outside the hole, with no obvious path connecting with another sett and are only used sporadically. When not in use by badgers, they are often taken over by foxes or rabbits. However, they can still be recognised as badger setts by the shape of the tunnel (not the actual entrance hole), which is usually at least 250mm in diameter, and is rounded or a flattened oval shape. Fox and rabbit tunnels are smaller and often taller than broad.

Table A3.3 – Indicators of use of badger setts.

Classification of Use	Description
Active	Clear of debris and vegetation, obviously in regular use
Partially-active	Not in regular use, with leaves or twigs in entrance or moss and other plants growing around the entrance.
Disused	Partially or completely blocked entrances, unable to be used without a considerable amount of clearance.

Limitations

A3.14. There were no survey limitations noted and the site and areas within 30m of the site were fully accessible for survey.

Evaluation

A3.15. The evaluation of habitats and species is defined in accordance with published guidance¹⁹. The scale of importance of each ecological feature is assigned within a defined geographical context, namely international and European, national, regional, county, and local. Below these are features considered to be of negligible importance.

¹⁹ CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management, Winchester.



- A3.16. Consideration will also be given to legally protected or controlled species which are ‘important features’ in the context of this assessment, for which mitigation measures are required to ensure legal compliance, regardless of their geographic scale of importance. Thus, it is possible for a feature of negligible ecological importance to be legally protected and hence require mitigation.
- A3.17. Evaluation is based on various characteristics that can be used to identify ecological features likely to be important in terms of biodiversity. These include site designations (such as Sites of Species Scientific Interest (SSSIs), or for undesignated features, the size, conservation status (locally, nationally or internationally), and the quality of the ecological feature. 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.

Impact Assessment

- A3.18. The assessment of impacts identifies impacts and their effects as a result of the proposed development on important ecological features. This includes consideration of impacts at all relevant stages of the development, including construction and operation/occupation. The assessment includes reference to legislation and policy, and supplementary planning guidance where relevant.

Application of Mitigation Hierarchy

- A3.19. Application of the mitigation hierarchy is fundamental to the ecological impact assessment process. This requires consideration of the following measures, in order of priority, for all potential impacts, to determine the most appropriate mitigation, compensation and enhancement strategy for the project. This is taken into account within **Section 3** of this report and set out below:
- Avoidance – measures to avoid harm to ecological features (set out in ‘Design Evolution’, Section 3);
 - Mitigation – measures to avoid or minimise potential impacts as part of the design or guaranteed by planning controls;
 - Compensation – measures required to offset significant residual negative effects following avoidance and mitigation; and
 - Enhancement – measures over and above requirements for avoidance, mitigation and compensation to provide biodiversity net gain.



Appendix 4: Bat Survey Results

- A4.1. The surveys followed standard methodologies set out in the Bat Mitigation Guidelines (Mitchell-Jones, A.J., 2004), the Bat Workers Manual (Mitchell-Jones, A.J. and McLeish, A.P., 2004) and Bat Surveys - Good Practice Guidelines (Collins, 2016).

Activity Surveys – Transects

- A4.2. Activity surveys were conducted once per season in 2023. These surveys were carried out to establish the use of the site by commuting and/or foraging bats that may roost within the vicinity. The dates, times, weather conditions and surveyor names are provided in **Table A4.1** below. Surveyors used a combination of direct visual observation and echolocation detection techniques to identify any bat activity on the site. In line with survey guidelines, the surveys started approximately at sunset and ended up to two hours after sunset.

Table A4.1. Survey dates, times, weather conditions and surveyor names during activity surveys.

Survey	Date	Survey times	Weather conditions	Surveyors and equipment
1	22/05/2023	Start: 21:14 Sunset: 21:14 End: 23:14	Wind (Beaufort): 3-4 Temp (°C): 13-11 Precipitation: None Cloud (%): 10-0	Carl Capewell Amelia Bailey <i>Anabat Walkabout</i>
2	25/07/2023	Start: 21:13 Sunset: 21:13 End: 23:13	Wind (Beaufort): 1-1 Temp (°C): 14-13 Precipitation: None Cloud (%): 20-20	William Robson Richard Laws <i>Batlogger</i>
3	23/08/2023	Start: 20:22 Sunset: 20:22 End: 22:22	Wind (Beaufort): 1-1 Temp (°C): 19-17 Precipitation: None Cloud (%): 90-80	David Paton Elizabeth Barrett <i>Batlogger</i>

- A4.3. The route covered field boundaries and potential features of interest on the site such as mature trees and woodland, areas of scrub, hedgerows, and woodland tracks (see Drawing Plan **10581/P08** for transect routes).
- A4.4. Anabat Express and Elekon BatLogger M2 detectors were used throughout surveys; the BatLogger detector was used for active monitoring and full spectrum recording whilst the Anabat Express detectors for recording in zero crossing format. AnalookW, Anabat Insight and BatExplorer software was used to confirm the identification of bat calls recorded in the field.
- A4.5. A total of 138 bat passes were recorded during the transect survey visits. These passes were from four different species including common pipistrelle *Pipistrellus pipistrellus* (129 passes), soprano pipistrelle *Pipistrellus pygmaeus* (6 passes), noctule bat *Nyctalus 31noctula* (1 pass), and myotis species *Myotis* (2 passes).
- A4.6. The number of passes recorded for each species on each visit are detailed and illustrated in **Table A4.2** and **Figure A4.1** below.

Table A4.2 – Summary of bat passes and species recorded during bat activity surveys.



Bat Species	Number of Recordings			
	V1 – 22/05/2023	V2 – 25/07/2023	V3 – 23/08/2023	Total
Common Pipistrelle	41	46	42	129
Soprano Pipistrelle	2	3	1	6
Noctule	0	0	1	1
Myotis Sp.	1	0	1	2

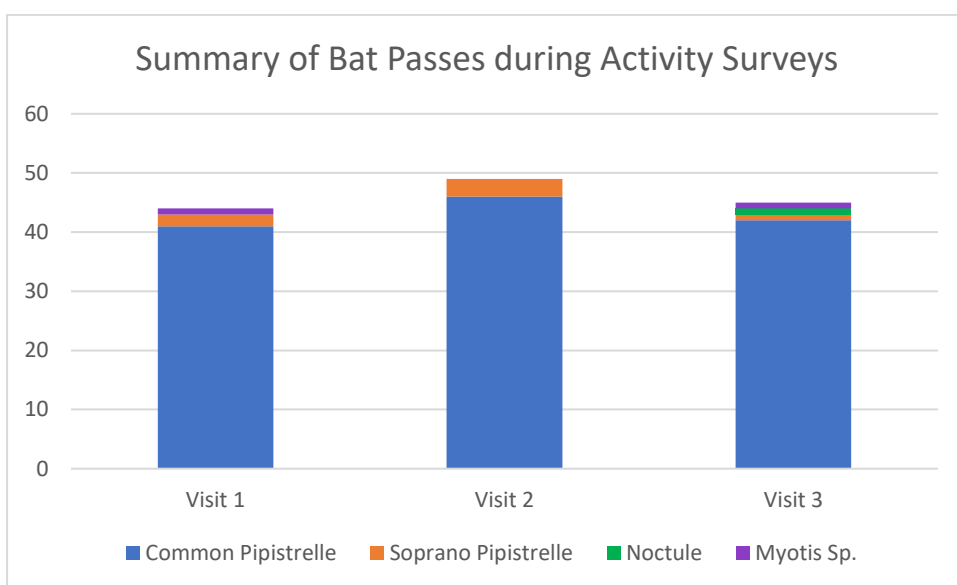


Figure A4.1 – Illustration of bat passes and species recorded during bat activity surveys.

- A4.7. Common pipistrelle activity was distributed across the whole site and ownership boundary, but appeared highest along field boundary features (e.g. hedgerows, trees etc.). Noctule, myotis, and soprano pipistrelle activity was generally low throughout the surveys, and little fidelity was seen to certain areas of the site.

Activity Surveys – Static Detectors

- A4.8. Further activity data was obtained from the deployment of static bat detectors during activity transect visits. The detector locations are shown on plan **10581/P08**.
- A4.9. During each visit, detectors were set to record for a minimum of five nights and were programmed to begin recording 30 minutes before sunset and continue to record until 30 minutes after sunrise. The dates and weather conditions for the automated survey are shown in **Table A4.3** below.

Table A4.3 Survey dates, locations and weather conditions during static detector surveys (*obtained from wunderground.com from the nearest weather station at Wrexham).

Visit	Month	Dates Deployed	Overnight Weather Conditions (min max temp °C, min & max wind mph, precipitation*)
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1	May	22/05/2023 – 26/05/2023	Temp (°C): 9 – 21 Wind (mph): 0 – 11 No precipitation
2	July	25/07/2023 – 29/07/2023	Temp (°C): 11 – 21 Wind (mph): 0 – 21 No precipitation
3	August	24/08/2023 – 28/08/2023	Temp (°C): 10 – 22 Wind (mph): 7 – 17 No precipitation

A4.10. A total of 936 bat passes were recorded during the static detector deployment periods. These passes were from six different species including common pipistrelle (619 passes), soprano pipistrelle (83 passes), noctule bat (64 passes), myotis species (140 passes), brown long-eared bat *Plecotus auritus* (18 passes), and lesser horseshoe *Rhinolophus hipposideros* (12 passes).

A4.11. The number of passes recorded for each species during each deployment are detailed and illustrated in **Table A4.4** and **Figure A4.2** below. Locations of each static detector deployment can be seen on plan **10581/P08** appended to this report.

Table A4.4 – Summary of bat passes and species recorded during static detector deployments.

Bat Species	Number of Recordings					
	V1A	V1B	V2A	V2B	V3A	Total
Common Pipistrelle	74	138	287	63	57	619
Soprano Pipistrelle	1	1	16	49	16	83
Noctule	7	11	10	35	1	64
Myotis Sp.	6	8	78	28	20	140
Brown long-eared	0	1	4	3	10	18
Lesser Horseshoe	0	0	0	11	1	12



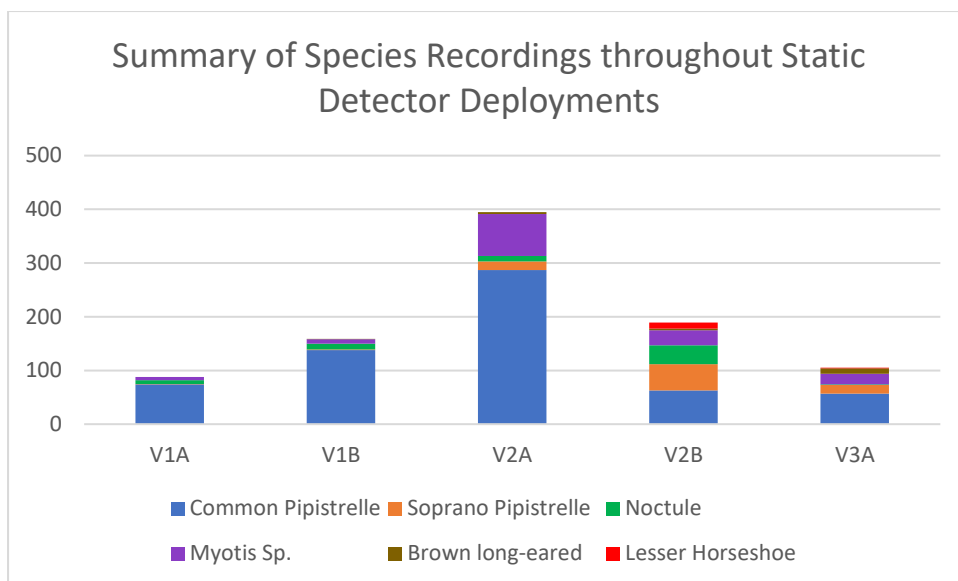


Figure A4.2 – Illustration of bat passes and species recorded during static detector deployments.

- A4.12. Most bat activity was recorded from location V2A, situated on the eastern boundary of the site during the month of July, with the highest number of passes of any deployment (395 passes). Elsewhere across the site levels of bat activity remained consistent.
- A4.13. Common pipistrelle bats were recorded at all static detector locations. Although soprano pipistrelle, noctules, and myotis bats were recorded less frequently, these were also recorded across all locations and were distributed evenly across the site.
- A4.14. Lesser horseshoe and brown long-eared bats were not recorded on every visit. Brown long-eared bats were however recorded during the majority of visits, albeit in lower numbers, and were distributed evenly across the site. Lesser horseshoe bats were recorded during visits 2 and 3, and only from locations V2B and V3a in the central area of the site.

Survey limitations

- A4.15. Bat surveys are subject to numerous variables. The echolocation calls of species such as brown long-eared bats 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.
- A4.16. 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.).
- A4.17. As data from these deployments have been analysed for five nights, the influence of these weather events should not significantly changes the overall results of these surveys, and therefore the interpretation and assessments of impacts.
- A4.18. During the September deployment of static detectors one of the detectors failed on the final night and only recorded for four complete nights. This is not considered to be a significant constraint given the results obtained and amount of data recorded across the season.



Appendix 5: GCN Survey Results

GCN-KTO024 - SO01846 - GCN eDNA Report





NATURE
METRICS
DNA-BASED MONITORING

Environmental DNA Report

Great Crested Newt



Order number	SO01846
Prepared for	Tyler Grange
Project	10581 - Holt Road
Number of samples	1
Sampling dates	2023/05/10
Report ID	GCN-KTO024
Date of report	2023-05-24



Thank you for choosing NatureMetrics

Welcome to your report. We are the leading provider of powerful, scalable biodiversity data delivered using environmental DNA.

Your sample(s) have been processed in accordance with the protocol set out in Appendix 5 of Biggs et al. (2014). Results are based on the samples as supplied by the client to the laboratory. Incorrect sampling methodology may affect the results. Note that a negative result does not preclude the presence of GCN at a level below the [limits of detection](#).

A results interpretation guide and a glossary of terms highlighted throughout this report can be found at the end of the report.

GCN Detection Results

Pond ID	Inhibition	Degradation	GCN Score	Result
10581-P01	No	No	0	Negative

Sample Information

Pond ID	Kit ID	Sampling Date	Received Date
10581-P01	GCN-23-00939	2023/05/10	2023/05/12

Methods

eDNA was precipitated via centrifugation at 14,000 x g and then extracted using Qiagen DNeasy Blood and Tissue extraction kits. **qPCR** amplification was carried out in 12 replicates per sample, using GCN specific **primers** and **probe** (developed by Thomsen et al. (2012) and adopted by Biggs et al. (2014)), in the presence of **extraction negative controls**, **qPCR positive controls**, and **qPCR negative controls**. A score is given for the number of positive replicates out of 12.

The **qPCR** method follows the recommendations set out by NatureMetrics for Natural England in the qPCR validation project and helps improve the reliability of the interpretation of the data.

Results from the GCN assay are considered to have a **high** confidence rating according to our **Validation Scale** (Harper et al. 2021).

The quality control methods exceed the requirements outlined in Appendix 5 of Biggs et al. (2014). These consist of the use of **kit blanks**, additional **extraction negative controls**, **qPCR negative controls**, and **qPCR positive controls**. Using these controls ensures assay performance is as expected and increases confidence in any weak or late amplifications.

The extraction and qPCR negative controls analysed alongside your samples showed no target



amplification and the triplicate positive controls performed as expected.

END OF REPORT

Contact: **team@naturemetrics.co.uk**



Result Interpretation Guide

Positive

Target DNA has been detected in this sample, meaning that at least 1 of the 12 qPCR replicates has amplified. This is not a quantitative test, so you should not interpret a high eDNA score (e.g. 12/12) as necessarily indicating a larger population of GCN than a low eDNA score (e.g. 1/12).

Negative

No target DNA has been detected in this sample, but the internal and external controls worked as expected. This tells us that if there had been GCN DNA in the sample, we would have detected it, so we can be confident in its absence from the sample provided.

Inconclusive

No GCN DNA was detected in the sample, but the internal controls failed to amplify as expected. This means that any GCN DNA in the sample might also have failed to amplify properly, so we cannot have confidence in this negative result. Inconclusive results can be caused by the degradation of the DNA (as indicated by delayed or no amplification of the DNA marker contained in the ethanol in the kits) or by inhibition of the reaction (as indicated by delayed or no amplification of the DNA marker added in the lab) caused by certain chemicals or organic compounds that may be present in the water sample.

Validation Scale

We have developed our own confidence assessment tool for qPCR eDNA assays that builds upon the Thalinger et al. (2021) validation scale and helps end-users to interpret the qPCR outputs but also contextualise these with the level of validation that the assay itself has gone through. Briefly, the level of confidence that can be assigned to results coming from an assay is derived from several validation steps:

- Basic analysis - can the assay work in principle on the computer?
- PCR protocol - has the protocol been optimised in the lab?
- Specificity analysis - has the assay been tested in the lab against other co-inhabiting and/or closely related species?
- How extensively has the assay been tested with natural samples?
- Have the theoretical limits of detection been established?
- Have detection probabilities been estimated with extensive site occupancy modelling?
- Have external factors affecting detectability been extensively tested (e.g. seasonality, spatial heterogeneity)?

- Low

Results from these assays are difficult to interpret with confidence. It is impossible to conclusively tell if the target species is present or absent because of the limited amounts of *in silico*, *in vitro*, and *in vivo* testing.

- Medium

Assays with this rating have been tested *in silico*, have optimised lab protocols, specificity and sensitivity tested in and out of the lab, but with no estimates of detection probabilities or extensive testing of external factors that may affect the detectability of the target. Positive results can be interpreted as meaning the target species' DNA is present (assuming the correct sampling conditions), but negative results could mean that the target is absent or that external



factors such as ecology, seasonality, and spatial scales are influencing the detections.

- High

High rating assays have everything that a Medium assay has, in addition to site occupancy modelling and extensive testing of external effects such as ecological, temporal and spatial factors. Positive results can be conclusively interpreted, and negative results can be interpreted as meaning the target species' DNA is absent (assuming the correct sampling conditions). In some instances, a probability of target species presence at a site and in a sample can be given.

Glossary

Controls

Controls are used to monitor both the performance of the assays but also any contamination. Controls are treated in the same way as a normal sample. This is particularly important given the sensitivity of eDNA qPCR methods. Our full complement of controls enables us to fully monitor the whole GCN eDNA process from kits to data.

Kit blank

Used to determine if the kits are contaminated but also to monitor the early stages of the pipelines, e.g. sample reception. These samples also act as uninhibited samples that can be used as a baseline to compare against. This is an additional control not specifically mentioned in the Biggs et al. (2014) protocol.

Extraction negative

Extraction blank. Used to monitor potential contamination during the DNA extraction process.

qPCR negative

Template negative control. Used to monitor potential contamination during the qPCR setup process. For every qPCR reaction, we include more qPCR negative controls than are prescribed in the Biggs et al. (2014) protocol.

qPCR positive

Used to determine whether the qPCR run performed as expected. In addition to the 4 standard dilutions prescribed by the Biggs et al. (2014) protocol, we include an additional standard dilution and amplify all standards in triplicate. The increased number of standard dilutions and replicates allow us to generate standard curves to assess run performance and assay sensitivity.

Limit of detection

The lowest standard positive control concentration at which 95 % of technical replicates amplify. Target amplification below the LOD cannot automatically be considered as negative but should be further investigated as spurious amplifications are more prevalent at these low concentrations.

eDNA

Short for 'environmental DNA'. Refers to DNA deposited in the environment through excretions and secretions, such as mucus, skin cells, saliva, faeces, urine etc. This can be collected in environmental samples (e.g. water, sediment) and used to identify the organisms that it originated from. eDNA in water is broken down by environmental processes over a period of days to weeks. It can travel some distance from the point at which it was released from

the organism, particularly in running water. eDNA is sampled in low concentrations and can be degraded (i.e. broken into short fragments), which limits the analysis options.

Inhibitors

Chemicals/compounds that reduce or prevent DNA amplification, potentially resulting in false-negative results. Common inhibitors include tannins, humic acids and other organic compounds. Inhibitors can be overcome by either diluting the DNA (and the inhibitors), but dilution carries the risk of reducing the DNA concentration below the limits of detection.

qPCR

Stands for 'quantitative PCR'. A PCR reaction incorporating a coloured dye that fluoresces during DNA amplification, allowing a machine to track the progress of the reaction. Often used with species-specific primers and probe where amplification is used to infer the presence of the target species' DNA in the sample. If the species is not present in the sample, no fluorescence will be detected.

Primers

Short sections of synthesised DNA that bind to either end of the DNA segment to be amplified by qPCR.

Probe

A short section of synthesised DNA that binds to a specific section of the target species' DNA within the section flanked by the primers. The probe is designed to be totally specific to that species. The probe is labelled such that it fluoresces during amplification, which is used to infer the presence of the target species' DNA in the sample.

References

- Biggs J, Ewald N, Valentini A, Gaboriaud C, Griffiths RA, Foster J, Wilkinson J, Arnett A, Williams P and Dunn F (2014). Analytical and methodological development for improved surveillance of the Great Crested Newt. Appendix 5. Technical advice note for field and laboratory sampling of great crested newt (*Triturus cristatus*) environmental DNA. Freshwater Habitats Trust, Oxford.
- Harper KJ, Tang CQ, Bruce K, Ross-Gillespie A, Ross-Gillespie V, and Egeter B (2021). A framework for assessing confidence in environmental DNA qPCR assays and results. Natural England Report.
- Thalinger B, Deiner K, Harper LR, Rees HC, Blackman RC, Sint D, Traugott M, Goldberg CS and Bruce K (2021). A validation scale to determine the readiness of environmental DNA assays for routine species monitoring. *Environmental DNA*, 3, 823–836.
- Thomsen PF, Kielgast JOS, Iversen LL, Wiuf C, Rasmussen M, Gilbert MTP, Orlando L and Willerslev E (2012). Monitoring endangered freshwater biodiversity using environmental DNA. *Molecular Ecology*, 21, 2565-2573.

Plans:

Plan 1: Habitat Features Plan **10581/P01b**

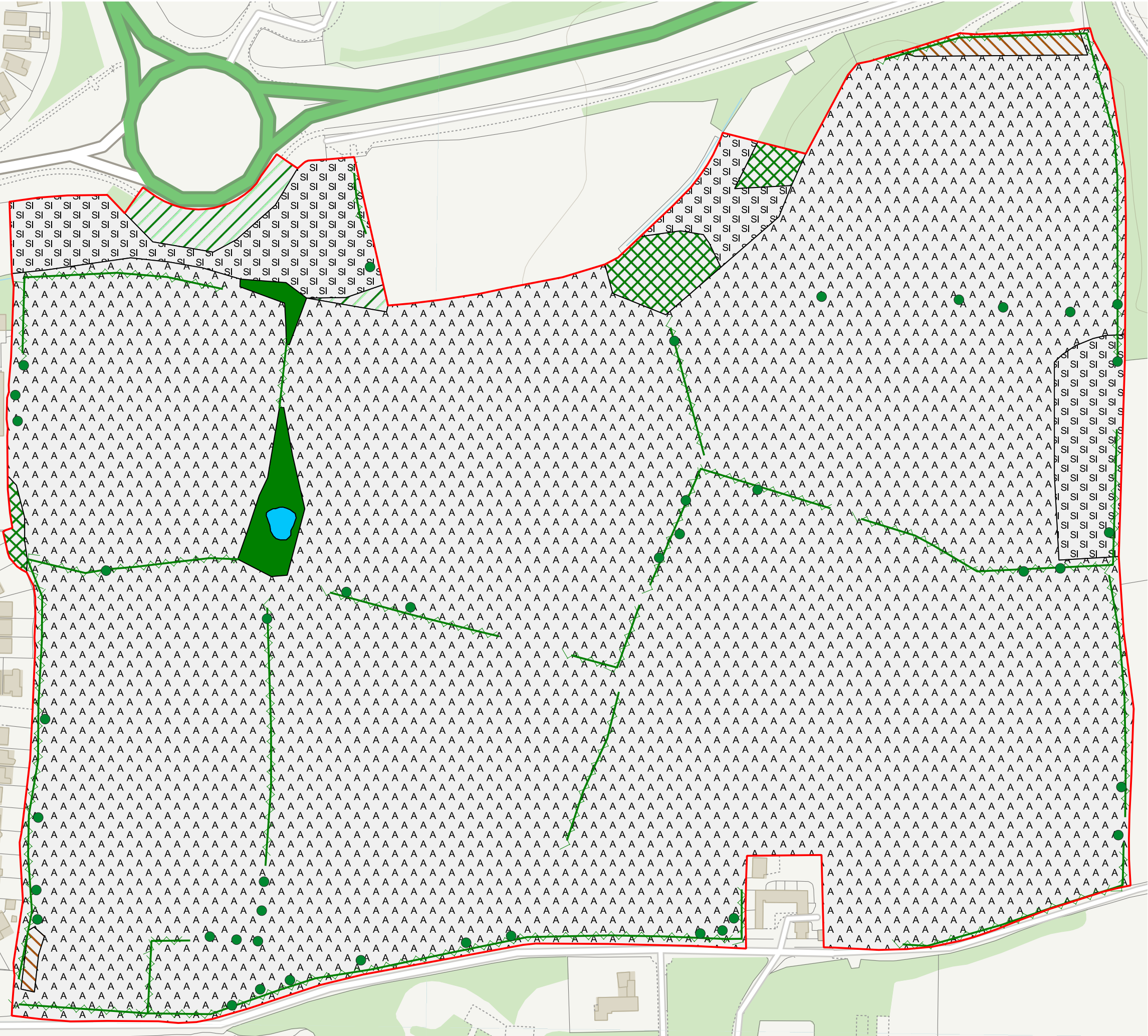
Plan 2: Badger Survey Results **10581/P05a**

Plan 3: Pond Location Plan **10581/P06a**

Plan 4: PRA Results Plan **10581/P07a**

Plan 5: Bat Activity Results Plan **10581/P08**





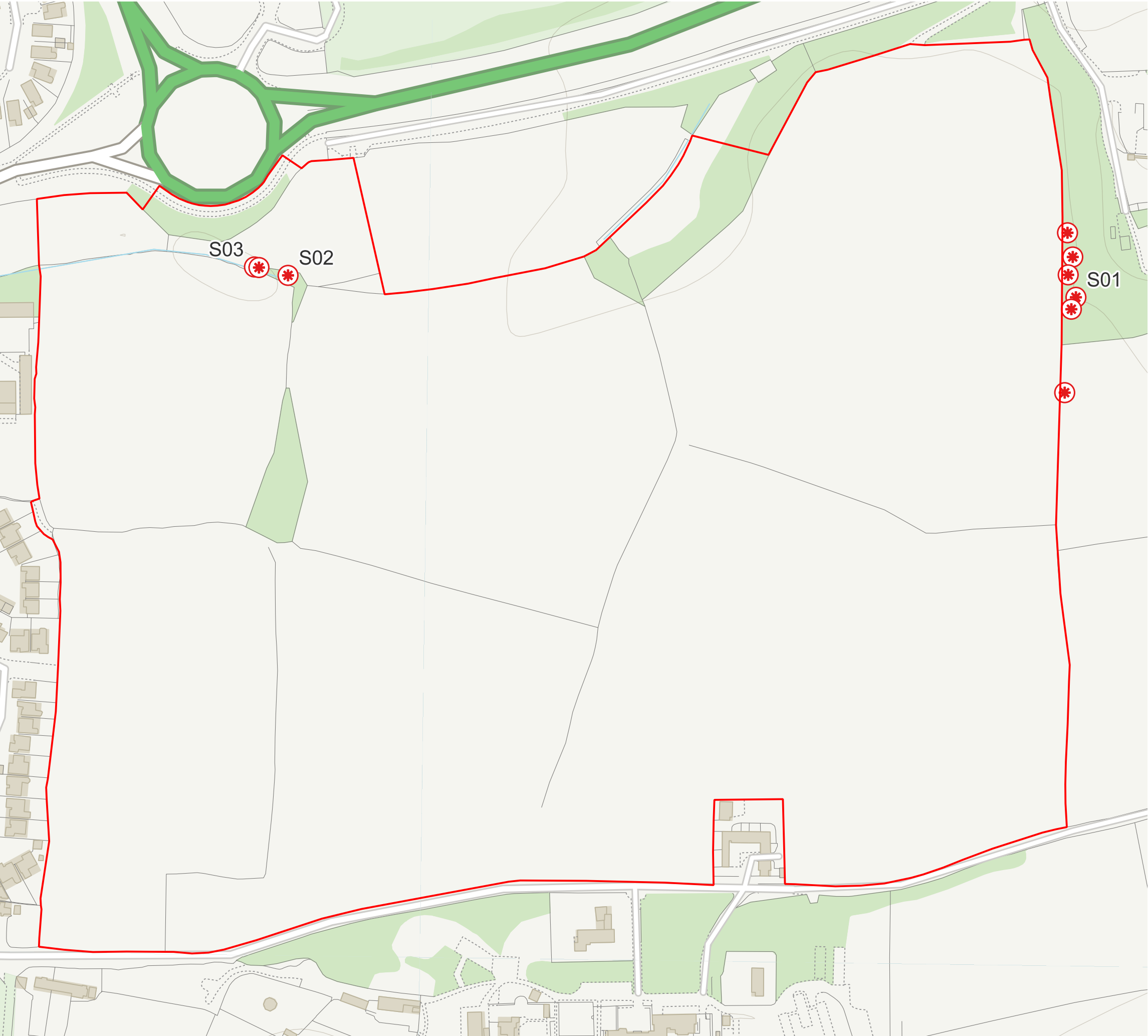
- Redline Boundary
- Arable Land
- Standing Water
- Tall Ruderal
- Poor semi-improved grassland
- Dense Scrub
- Mixed woodland - plantation
- Broadleaved woodland - semi-natural
- Defunct Native Hedgerow
- Scattered Trees



Project	Holt Road, Wrexham
Drawing Title	Habitat Features Plan
Scale	As Shown (Approximate)
Drawing No.	10581/P01b
Date	14/08/2023
Checked	ECG/DM



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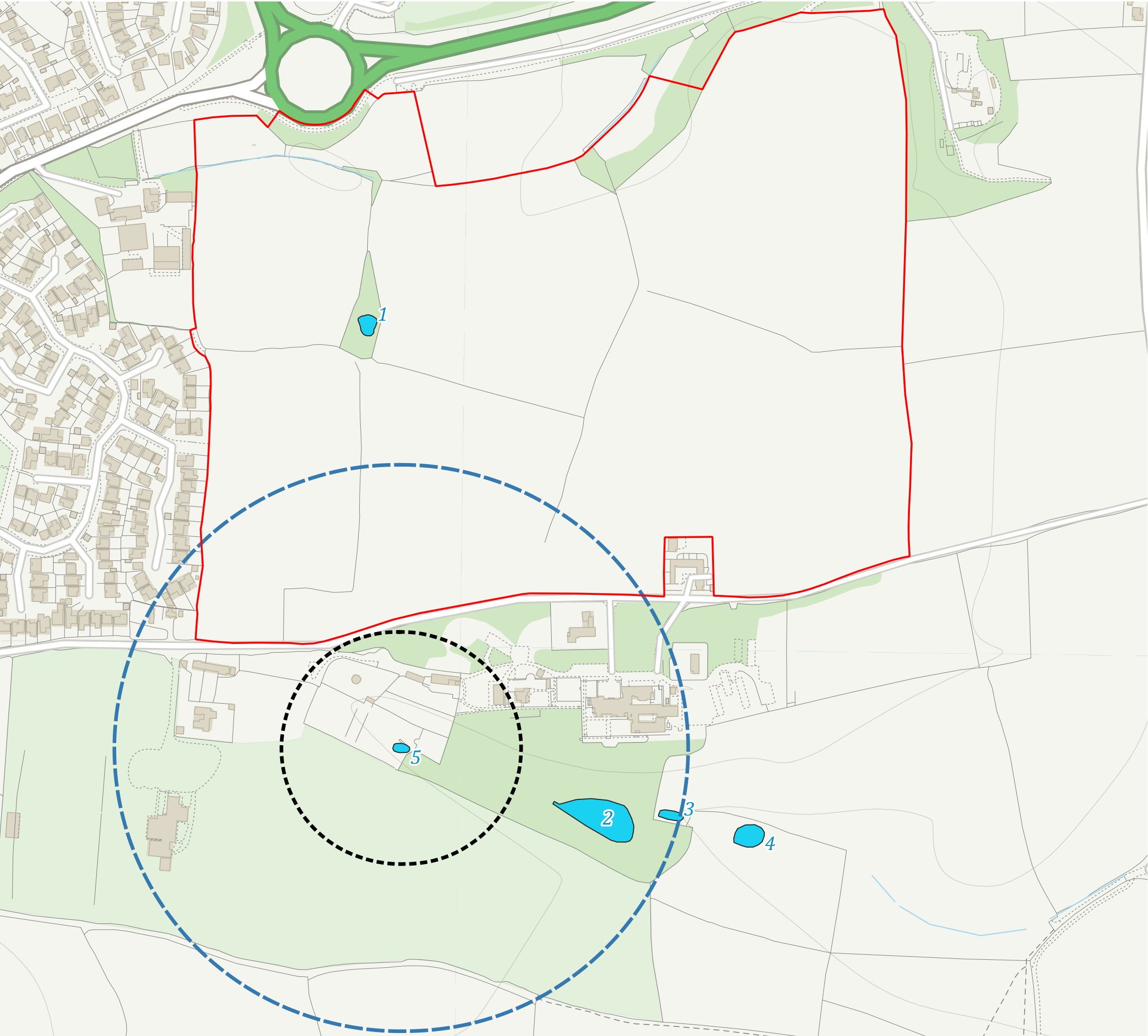
-  Redline Boundary
-  Badger Sett Entrance



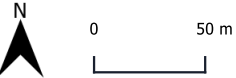
Project	Holt Road, Wrexham
Drawing Title	Badger Sett Location Plan
Scale	As Shown (Approximate)
Drawing No.	10581/P05a
Date	24/08/2023
Checked	ECG/DM



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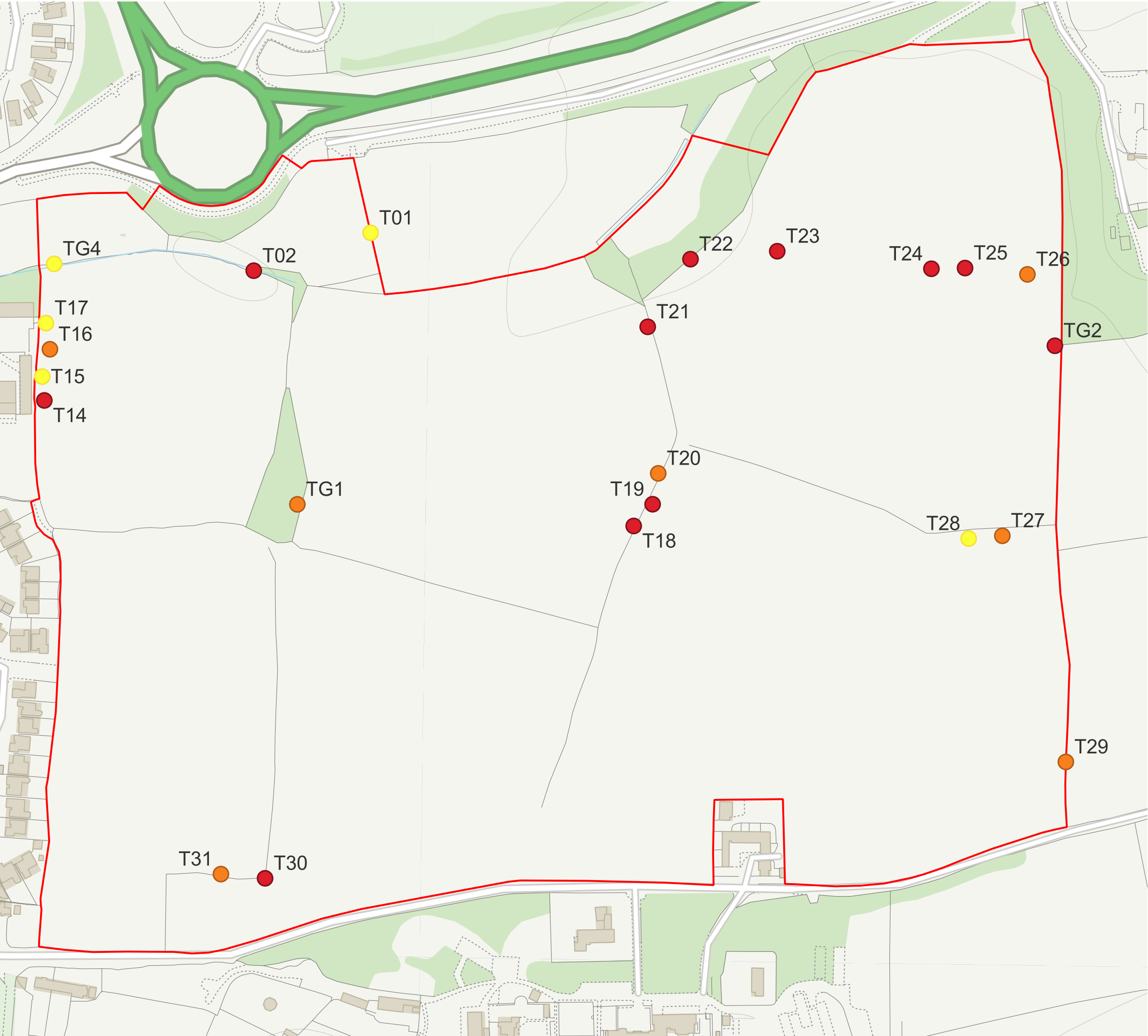
-  Redline Boundary
-  Pond
-  100-meter buffer
-  250-meter buffer



Project	Holt Road, Wrexham
Drawing Title	Pond Location Plan
Scale	As Shown (Approximate)
Drawing No.	10581/P06a
Date	14/08/2023
Checked	ECG/DM



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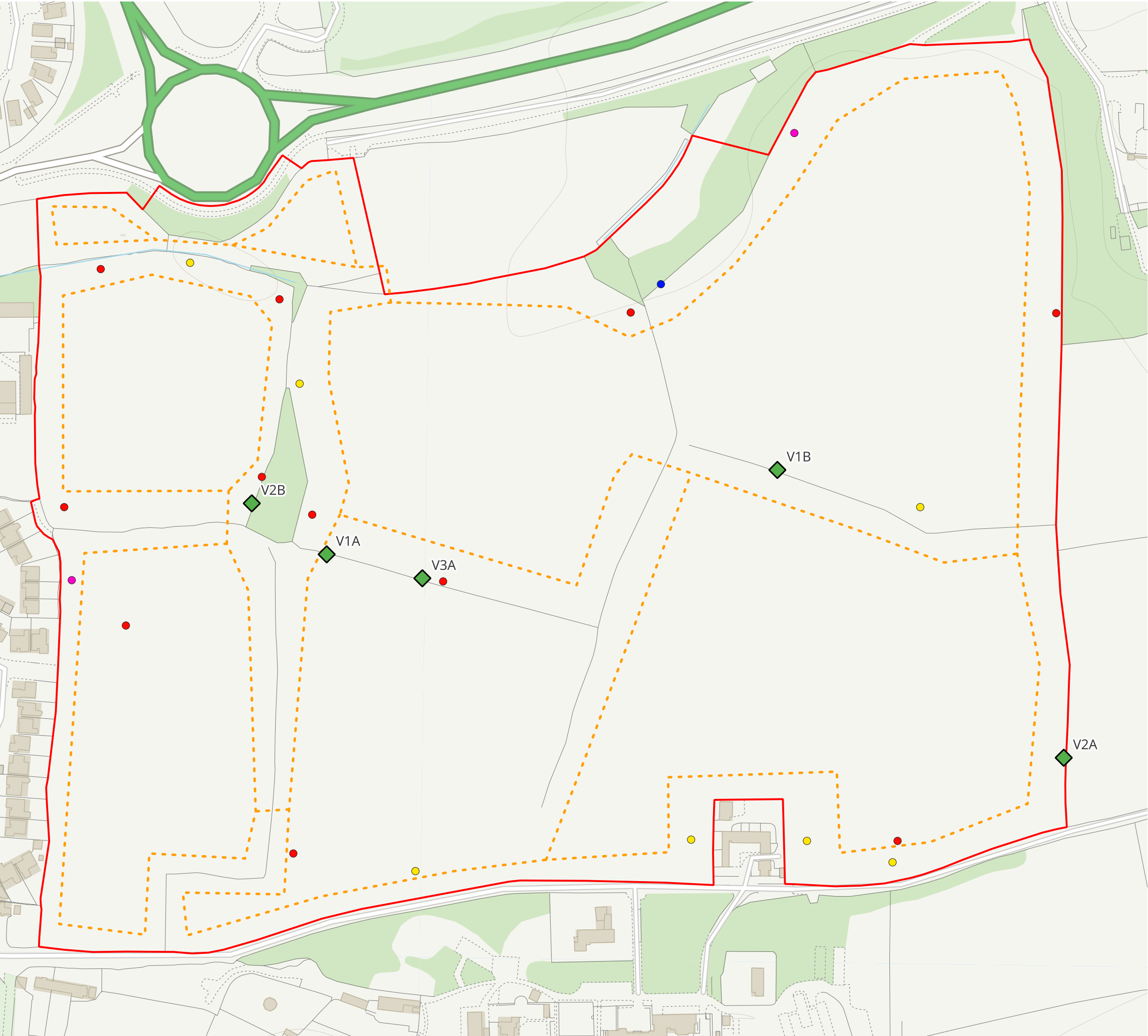
- Redline Boundary
- Low Bat Roosting Potential Tree
- Moderate Bat Roosting Potential Tree
- High Bat Roosting Potential Tree



Project	Holt Road, Wrexham
Drawing Title	Preliminary Bat Roost Assesment Plan
Scale	As Shown (Approximate)
Drawing No.	10581/P07a
Date	24/08/2023
Checked	ECG/DM



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Boundaries

 Redline Boundary

Bat Activity Survey Results

-  Common Pipistrelle
-  Soprano Pipistrelle
-  Noctule
-  Myotis Sp.
-  Static Detector Location
-  Transect Route



Project	Holt Road, Wrexham
Drawing Title	Bat Activity Results Plan
Scale	As Shown (Approximate)
Drawing No.	10581/P08
Date	21/11/2023
Checked	DP/DM



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An abstract collage of various geometric shapes and icons in shades of blue, purple, and yellow. The shapes include triangles, squares, and circles, some with patterns like polka dots or stripes. Icons include a hand, a leaf, a star, and a fan-like shape. The central text is overlaid on a large yellow hexagon.

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