Woodlands Farm

on behalf of Axis PED

Ecological Assessment

avianecology

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SUMMARY

This report has been prepared by Avian Ecology Ltd., on behalf of Axis PED. It provides an assessment of potential ecological effects associated with a proposed residential development on land at Woodlands Farm, Dodds Lane, Gwersyllt, Wrexham.

This report presents baseline information on habitats and ecological features both within the Site and the immediate surrounding area. The potential presence of protected species and habitats and sites of nature conservation interest is identified and considered in relation to the proposed development.

Great crested newts are known to be present within the surrounding area, with waterbodies present within 500m of the Site; however, there are no known great crested newt ponds within 250m of the Site. Habitats within the Site provide some foraging opportunities as well as potential places that could be used for shelter and refuge. Habitat creation and compensation is proposed both within the proposed development area and on nearby land which will complement the wider conservation objectives for great crested newts within the Borough. A detailed Method Statement for the protection of great crested newts during the construction phase will be agreed in consultation with Natural Resources Wales (NRW) and Wrexham County Borough Council. Works will proceed either under Reasonable Avoidance Measures (RAMs) or under a European Protected Species derogation licence granted by NRW if required. In either case, it is considered that with such measures in place, the proposed development will have no likely significant effects on the favourable conservation status of this species.

Bat surveys were undertaken of structures within the Site with potential to support roosting bats. No evidence of any bat roosts was recorded and these buildings have subsequently been demolished on safety grounds.

Embedded design features are provided, including green buffers and landscape planting using native species appropriate to the locality, bird and bat boxes and new hibernacula features will maintain biodiversity value and ecological connectivity, and provide shelter, foraging, breeding and roosting opportunities. Ecological connectivity will be maintained through the provision of landscape planting and green space, which will be managed to provide long-term habitat and species interest around the Site. In addition, a separate area of land will be set aside and managed specifically to provide favourable habitat conditions for great crested newts, providing long-term sustainable biodiversity benefit at this location.

Providing the implementation of the proposed mitigation, the potential for adverse impacts on protected and notable species or habitats is considered to be negligible.

1 INTRODUCTION

1.1 Background

1.1.1 This report has been prepared by Avian Ecology Ltd. on behalf of Axis PED, and provides an assessment of ecological effects associated with a proposed residential development on land at Woodland Farm, Dodds Lane, Gwersyllt, Wrexham.

1.1.2 It updates a previous draft report prepared in relation to an earlier application with a different footprint and layout. This earlier application was turned down at planning, with one of the reasons for refusal being that inadequate mitigation proposal for the protected species great crested newt *Triturus cristata* had been put forward. Subsequently, an updated development layout has been proposed which includes amended provision for great crested newts and also for biodiversity more generally, reflecting the concerns raised by Wrexham County Borough Council. Ecological provision has been included as an embedded design element of the proposed development, and possible mitigation measures have been discussed informally with the County Ecologist.

1.1.3 The proposal Site, hereafter referred to as the 'Site', is shown by the red-line boundary in **Figure 2**.

1.1.4 The objectives of the Assessment are to:

- Provide baseline information on the current habitats and ecological features both within the Site and in the immediately surrounding area;
- Identify the proximity of any designated sites for nature conservation interest and provide an assessment of any potential effects the proposed time extension may have on these;
- Identify the presence or potential presence of any protected species or habitats and provide an assessment of any potential effects the proposed time extension may have on these; and,
- Provide recommendations for further pre-construction checks and / or mitigation measures, if required, and provide an outline of proposed habitat enhancements, if applicable.

1.1.5 The Assessment has been informed through a desk based review of relevant ecological information, and an Extended Phase 1 habitat survey and bat surveys undertaken in 2016.

1.1.6 The Assessment refers to relevant legislation, planning policy and guidance as appropriate.

1.2 Site Overview

1.2.1 The Site (approximately 1.52ha), as shown by the red-line boundary in **Figure 2** is located within the Woodlands Farm landholding, to the south of Gwersyllt, Wrexham, to the northeast of Dodds Lane. The Site comprises semi-improved grassland with tall ruderal and scrub vegetation. Farm buildings adjacent were subject to bat surveys in 2016 and were not found to support bat roosts. These buildings have subsequently been demolished and are not considered further in this Assessment.

1.2.2 The surrounding area comprises further semi-improved grasslands fields of the wider Woodlands Farm landholding, pockets of woodland to the north and east, with residential developments along the Rhosobin Road to the south and east and residential, industrial and amenity developments of Gwersyllt to the west.

1.3 Legislative Framework, Planning Policy and Guidance

1.3.1 Reference has been made to the following key pieces of legislation, planning policy and guidance listed in **Table 1.1**.

Table 1.1: Key legislation, planning policy and guidance.

European
• Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (hereafter referred to as the 'Habitats Directive'); and, • Directive 2009/147/EC of the European Parliament and of the Council on the conservation of wild birds (codified version of Directive 79/409/EEC as amended) (hereafter referred to as the 'Birds Directive').
National
• The Conservation of Habitats and Species Regulations 2017, (the 'Habitat Regulations'); • The Wildlife and Countryside Act 1981 (as amended); • The Environment (Wales) Act 2016; • Countryside and Rights of Way Act 2000; • Protection of Badgers Act 1992; • Hedgerow Regulations 1997 • Natural Environment and Rural Communities (NERC) Act (2006); • The National Planning Policy Framework (NPPF) (July 2018); • 'Birds of Conservation Concern 4' (Eaton *et al*., 2015)[1]; • The United Kingdom Biodiversity Action Plan (UK BAP); • The Bat Conservation Trust - *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Ed.).* (Collins *et al.*, 2016[2]); and • BS 42020:2013 Biodiversity – Code of Practice for Planning and Development.
Local
• Wrexham's Unitary Development Plan 1996 – 2011; • The Wrexham local Development Plan 2 (LDP2) 2013 to 2028; • Wrexham's Biodiversity Action Plan; • Wrexham Biodiversity Checklist[3]; and, • Options for GCNs in Wrexham: Comparative impact modelling to inform planning (Fletcher & Wilkinson, 2013[4]).

1.3.2 The 'UK Post-2010 Biodiversity Framework' succeeds the UK Biodiversity Action Plan (UK BAP) and 'Conserving Biodiversity – the UK Approach'. The lists of priority species and habitats agreed under UK BAP still form the basis of much biodiversity work and are therefore considered within this report in the context of the objectives of the Biodiversity Framework. BAPs identify habitats and species of nature conservation priority on a UK (UK BAP) and Local (LBAP) scale. UK BAPs formed the basis for statutory lists of species and habitats of principal importance in Wales under Section 7 of the Environment Act (Wales) 2016 (formerly listed under Section 42 (Wales) of the Natural Environment and Rural Communities Act 2006), and so are also relevant in the context of this legislation.

[1] Eaton, M., Aebischer, N., Brown, A., Hearn, R., Lock, L., Musgrove, A., Noble, D,. Stroud, D. and Gregory, R (2015). Birds of Conservation Concern 4: the population status of birds in the UK, Channel Islands and Isle of Man. *British Birds*, 108, pp708-746.

[2] Collins *et al.* (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines*. 3rd edition, BCT: London

[3] http://www.wrexham.gov.uk/assets/pdfs/planning/biodiversity_checklist.pdf

[4] Fletcher, D.H. & Wilkinson, J.W. (2013) Options for GCNs in Wrexham: Comparative impact modelling to inform planning. Amphibian and Reptile Conservation.

2 METHODOLOGY

2.1 Desktop Study

2.1.1 A desktop study was undertaken to identify any known existing features or species of ecological importance within the study area (as defined below).

2.1.2 The desk study included a review of relevant policy and guidance and sought to identify any statutory designated sites for nature conservation through a review of the Multi Agency Geographic Information for the Countryside (MAGIC)[5]. An information request was also submitted to the North Wales Environmental Information Service (Cofnod) to obtain records of protected and notable species, habitats and non-statutory designated sites within proximity to the development site.

2.1.3 The following data search parameters, from the Site were used:

- Records of protected and notable species and habitats within a 2km radius; and,
- Statutory and non-statutory designated sites within a 2km radius.

2.1.4 Reference was made to Ordnance Survey maps of the wider area and online aerial images (www.google.co.uk/maps) in order to determine any features of nature conservation interest in the wider area.

2.1.5 The desk study has also included a review of existing ecological survey information for the Site and surrounding area, including:

- Bat Activity Survey for Woodlands Farm Gwersyllt, Wrexham, North Wales (2012[6]);
- Protected Species Survey Woodlands Farm Gwersyllt, Wrexham, North Wales (2012[7]); and,
- Land Adjacent to Rhosddu Industrial Estate, Wrexham LL114YL: Ecological Scoping Survey (2014[8)].

2.2 Field Survey

Extended Phase I Habitat Survey

2.2.1 An Extended Phase 1 habitat survey of the Site was undertaken on the 22nd June 2016 by Miss. C. Baldock MRes ACIEEM and Mr. A. Logan MSc MCIEEM. The survey methodology followed the UK industry standard Joint Nature Conservation Committee (JNCC) Phase 1 Habitat Methodology (JNCC, 2010[9]).

2.2.2 During the survey all habitats within the survey area were mapped and described using a series of 'target notes' (TNs). The survey was extended to include the additional recording of specific features

[5] http://www.magic.gov.uk.
[6] Clwydian Ecology (2012a) Bat Activity Survey for Woodlands Farm, Gwersyllt, Wrexham, North Wales. A report prepared on behalf of Brookdale Consulting Ltd.
[7] Clwydian Ecology (2012b) Protected Species Survey Woodlands Farm, Gwersyllt, Wrexham, North Wales. A report prepared on behalf of Brookdale Consulting Ltd.
[8] The Tyrer Partnership (2014) Land Adjacent to Rhosddu Industrial Estate, Wrexham LL114YL. A report prepared on behalf of D S Holmes Builders Ltd.
[9] JNCC (2010) Handbook for Phase 1 Habitat Survey - a Technique for Environmental Audit. Revised Print 2010. Joint Nature Conservancy Council, Peterborough

indicating the presence, or likely presence, of protected species, invasive species and other species of conservation significance.

2.2.3 The extent of the survey area is detailed in **Figure 2** and included the Site and the wider Woodlands Farm development area.

Bats

2.2.4 The assessment presented herein has been undertaken with reference to previous surveys undertaken at Woodlands Farm:

- Bat Activity Survey for Woodlands Farm Gwersyllt, Wrexham, North Wales (Clwydian Ecology, 2012); and,
- Protected Species Survey Woodlands Farm Gwersyllt, Wrexham, North Wales (Clwydian Ecology, 2012).

2.2.5 These surveys which were undertaken in 2012 comprised an internal and external inspection and emergence/activity survey of farm buildings within the Site to ascertain their use by roosting bats.

2.2.6 Further bat emergence/re-entry surveys were subsequently undertaken in 2016 by Avian Ecology Ltd. in relation to the farmhouse and associated outbuildings, the methodology for and findings of which are set out in a separate bat survey report **Appendix 2**.

Great Crested Newts

2.2.7 Five waterbodies are identified within 500m of the Site, of these only one is located within 250m of the Site boundary (**Figure 3**). Access could not be obtained to identified ponds for the purpose of this assessment to further identify their potential for great crested newts *Triturus cristatus* and/or confirm presence/absence.

2.2.8 In the absence of this, following consultation with the Wrexham County Borough Council Ecologist (E. Broad, *pers comm*.), reference has been made to *Options for GCNs in Wrexham: Comparative impact modelling to inform planning* (Fletcher & Wilkinson, 2013) and existing species records obtained from Cofnod.

Limitations of Survey

2.2.9 Access for the Extended Phase 1 habitat survey has only been possible for habitats within the area of land within the ownership of the Applicant. Therefore habitats outside of this were not subject to a full habitat survey, although broad habitat types and boundary features were recorded and no significant constraints were encountered.

2.3 Ecological Impact Assessment

2.3.1 This assessment presented follows the principles set out in the Chartered Institute of Ecology and Environmental Management's (CIEEM) 'Guidelines for Ecological Impact Assessment' (CIEEM, 2016[10]).

[10] CIEEM (2016) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester.

3 BASELINE

3.1 Designated Sites for Nature Conservation

3.1.1 A review of MAGIC confirmed that the Site is not located within any statutory designated site for nature conservation.

3.1.2 Designated sites for nature conservation (statutory and non-statutory designated sites within 2km of the Site) are detailed within **Table 3.1** and presented on **Figure 1**.

Table 3.1: Statutory and non-statutory designated sites.

Site name	**Distance & Direction**	Reason for designation
W310 Woodlands and Fishpond Wood Wildlife Site	120m N	Two areas of wetland; the larger area is the site of an old lake which is no longer dammed. Along the line of this lake is now a marsh and alder woodland. Around the west end of the marsh is semi-improved neutral grassland with a good herb content. Habitat - marsh/marshy grassland, *Salix - Betula - Phragmites* woodland, Scattered scrub, Semi-improved neutral grassland, Semi-natural broad-leaved woodland
W309 Bryn Alyn and Wormswood Wildlife Site	570m E	A series of semi-natural woods and semi-improved grasslands around a meander of the River Alyn. Habitats - *Alnus - Fraxinus - Lysimachia* woodland, Broad-leaved plantation, *Fraxinus - Acer - Mercurialis* woodland, Marsh/marshy grassland, *Quercus robur - Pteridium - Rubus* woodland, *Salix - Betula - Phragmites* woodland, Semi-improved neutral grassland, Semi-natural broad-leaved woodland
W306 Alyn Waters Wildlife Site	810M N	A series of woods along the River Alyn and some regenerating neutral grassland within the Alyn Waters Country Park. Habitats - *Alnus - Fraxinus - Lysimachia* woodland, Dense/continuous scrub, *Fraxinus - Acer - Mercurialis* woodland, Marsh/marshy grassland, *Salix - Betula - Phragmites* woodland, Semi-improved neutral grassland, Semi-natural broad-leaved woodland, Unimproved neutral grassland
W311 Moss Valley Wildlife Site	1.3km W	Well wooded valley slopes with adjoining grassland. Habitats - *Fraxinus - Acer - Mercurialis* woodland, *Quercus - Betula - Deschampsia* woodland, *Quercus robur - Pteridium - Rubus* woodland, Semi-improved neutral grassland, Semi-natural broad-leaved woodland, Standing water, Unimproved calcareous grassland
Alyn Waters Local Nature Reserves (LNR)	1.4km	No information available; assumed to overlap with the W306 Alyn Waters Wildlife Site.
Gatewen Marsh Site of Special Scientific Interest (SSSI)	1.5km S	The site qualifies for designation by virtue of is mesotrophic mire habitats and its associated flora communities.

3.2 Habitats and Flora

3.2.1 This section should be read in conjunction with the Phase 1 Habitat Plan presented as **Figure 2,** Target Notes (TNs) presented in **Table 3.2** and photographic plates presented in **Appendix 1**.

3.2.2 At the time of the field surveys the Site comprised several large semi-improved grassland fields, surrounding a derelict farm house and agricultural outbuildings, these buildings were subsequently demolished in 2017 after bat surveys confirmed that none of the buildings supported bat roosts. The fields within the Site were under low intensity management at the time of survey, supporting tall grassland. Patches of tall ruderal species are present, indicative of nutrient enrichment.

3.2.3 Hedgerow field margins were bushy and outgrown (approximately 6-8m tall) and supported scattered mature oak *Quercus sp.* and ash *Fraxinus excelsior* trees. A row of sycamore *Acer pseudoplatanus* trees formed part of the eastern edge of the wider development area. Hedgerow species included elder *Sambucus nigra*, hazel *Corylus avellana*, hawthorn *Crataegus monogyna*, holly *Ilex aquifolium* and wych elm *Ulmus glabra* and were outgrown and bushy.

3.2.4 Patches of tall ruderals and an area of planted damson *Prunus domestica*, elder *Sambucus nigra* and Leylandi are present around the edge of the derelict farm house and outbuildings, together with scattered willow *Salix* sp. elder and apple *Malus sp*. trees.

3.2.5 No protected or invasive flora were recorded within the Site and no records of protected or invasive flora were returned by Cofnod from within the Site.

3.2.6 The information provided by Cofnod for the desk study, did not identify any Ancient Woodland Sites located immediately adjacent to the Site.

Table 3.2: Target note descriptions.

Target Note	Comment
TN1	Tall ruderals dominated by nettle *Urtica dioica*, bramble *Rubus fruiticosa*, rosebay willowherb Chamerion angustifolium, cleavers Galium aparine, spear thistle *Cirsium vulgare* and hogweed *Horacleum sphondylium*. Other species included foxglove, great willowherb Epilobium hirsuta, burdock *Arctium sp*., common ragwort *Jacobaea vulgaris*, hedge woundwort *Stachys sylvatica* and tufted vetch *Viccia cracca*.
TN2	The sward in the poor semi-improved grassland was dominated by Yorkshire fog *Holcus lanatus* with cock's-foot Dactylis glomerata, meadow foxtail *Alopecurus pratensis* and common bent *Agrostis capillaris* also present. Herbs included silverweed *Argentina anserina*, meadow buttercup *Ranunculus acris*, common mouse-ear *Cerastium fontanum* and common vetch *Vicia sativa*.
TN3	The northern half of the eastern field, within the wider landholding, supported a sward which graded from poor semi-improved to neutral semi-improved with a slightly higher diversity of grasses present including sweet vernal-grass *Anthoxanthum odoratum*, crested dog's tail *Cynosurus cristatus* and red fescue *Festuca rubra* and with creeping cinquefoil *Potentilla reptans* and red clover *Trifolium pratense* also noted and lesser stitchwort *Stellaria graminea* alongside the hedgerow with trees.
TN4	Mature oak tree *Quercus* sp. (c. 20m in height), offering low bat roost potential with a small dead branch with holes in it and the potential for further features to be present if inspected at height.
TN5	Mature oak trees (c. 18m) offering with low bat roost potential.

3.3 Fauna

Invertebrates

3.3.1 The semi-improved nature of the baseline grassland habitats within the Site would reasonably be expected to support a restricted range of common terrestrial species, such as the large skipper butterfly *Ochlodes sylvanus.* Tall ruderal vegetation is likely to offer some higher value habitats, but such habitats are not extensive.

3.3.2 In the absence of any baseline habitats within the development site suitable of supporting a potentially diverse assemblage and with little potential for any rare or notable species to occur, the baseline invertebrate assemblage associated with habitats recorded within the site would therefore be considered as of **Site** importance.

Birds

3.3.3 The Site is considered likely to support a suite of breeding birds typical of the region and urban fringe habitats. This is likely to include some 'red-listed' or 'amber-listed' breeding species of local conservation value, as detailed in Eaton *et al*., (2015), such as dunnock *Prunella modularis*, bullfinch *Pyrrhula pyrrhula* and song thrush *Turdus philomelos* for which records were returned by Cofnod within 2km of the Site. Most breeding species will be restricted to boundary features, but some species such as house martin *Delichon urbicum* and swallow *Hirundo rustica* may forage over the fields. Grassland habitats within the site, being of an overgrown nature are not considered suitable for ground nesting species such as skylark *Alauda arvensis*, meadow pipit *Anthus pratensis* and lapwing *Vanellus vanellus*.

3.3.4 Records of barn owls *Tyto alba* were returned from within 2km of the Site and may forage locally. No evidence of barn owls were however recorded during internal building inspections in 2012 and/or during the Extended Phase 1 habitat survey in 2016.

3.3.5 The Site is not considered to provide suitable nesting habitat for additional species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended).

3.3.6 The baseline bird assemblage associated with habitats recorded within the Site would therefore be considered as of **Site** importance.

Bats

3.3.7 The information request submitted to Cofnod, returned records of brown long-eared bat *Plecotus auritus*, soprano pipistrelle *Pipistrellus pygmaeus*, common pipistrelle *Pipistrellus pipistrellus*, Daubenton's bat *Myotis daubentonii* along with a number of additional records for unidentified bat species, additional *Myotis* and *Pipistellus* species. No records were returned from within the Site.

3.3.8 Hedgerow field margins within the Site, as recorded were bushy and included mature trees. Such features generally provide high value foraging and commuting habitats for bats and are connected to a mosaic of scrub and semi-natural woodland and possible marshy grassland (from the aerials) to the north of the wider development area.

3.3.9 The derelict farm house within the Site supported a tiled / slate roof and was considered to offer moderate to high potential for roosting bats, although no direct evidence of roosting bats was observed. No access into the internal contained roof voids was possible but limited inspection could be made through the vandalised and damaged first floor ceiling. The outbuildings had been subject to vandalism and exhibited fire damage; these buildings were considered to provide low potential for roosting bats, with the roof being largely exposed and limited to open beams in areas. Crevices in the brickwork, particularly where wooden beams join with structural brick walls offered some opportunities for individual bats.

3.3.10 Several mature oak trees located within the field boundaries (TN4 and TN5; **Figure 2**) were considered to offer low potential for roosting bats, being of a sufficient size and age indicating that they could offer potential roost features for bats and with one of them supporting a small dead branch with holes in it.

3.3.11 Bat activity surveys originally undertaken at the Site in 2012 (Clwydian Ecology, 2012a&b) did not record the presence of roosting bats within the agricultural outbuildings and these were not

considered particularly attractive to bats on the basis of high light levels, air flow and fluctuating temperatures. These outbuildings had deteriorated further, with fire damage and significant roof collapse observed by the time the emergence/re-entry surveys were undertaken in 2016.

3.3.12 The emergence and re-entry surveys undertaken in 2016 are described in **Appendix 2**. The three surveys undertaken between July and August found no evidence of roosting bats within the agricultural buildings, adjacent trees or derelict farmhouse. Subsequent to these surveys it is understood that these buildings were demolished for reasons of safety.

Badger

3.3.13 No field signs of badgers or evidence of setts was identified within the Site during the Extended Phase 1 habitat survey. Paths or runs were present through grassland within the wider development area but these could not be confirmed as badger or other mammal species.

3.3.14 Existing records of badgers were returned by Cofnod suggesting that the species is likely to be present in the vicinity of the Site and therefore may be present on the Site on an occasional basis.

Otter and Water Vole

3.3.15 Records of otter *Lutra lutra* and water vole *Arvicola amphibius* were returned by Cofnod to the north of the Site.

3.3.16 No freshwater habitat features suitable for either of these species were recorded within or immediately adjacent to the Site, and these species are therefore not considered further in this assessment.

Amphibians

3.3.17 Five ponds (ponds P1-P5, **Figure 3**) are located within 500m of the Site. One pond lies just less than 250m to the north of the Site but was not accessible for survey. In the absence of surveys being possible to inform this assessment, a precautionary approach has been adopted and reference made to *Options for GCNs in Wrexham: Comparative impact modelling to inform planning* (Fletcher & Wilkinson, 2013), along with records returned by Cofnod.

3.3.18 Records of common toad *Bufo bufo*, common frog *Rana temporaria*, palmate newt *Lissotriton helveticus*, smooth newt *Lissotriton vulgaris* and great crested newt *Triturus cristatus* were returned by Cofnod from within 2km of the Site. The records identify the presence of great crested newts within two ponds, ponds P2 and P5, located within 500m (but over 250m) of the Site. All of the great crested newt records provided by Cofnod within 500m of the Site (from the last 20 years) are located south of the intervening road, railway and other built development.

3.3.19 In accordance with *Great Crested Newt Mitigation Guidelines* (English Nature, 2001[11]), it is possible to broadly distinguish three categories of great crested newt terrestrial habitat:

- *Immediate* habitat - <50m from breeding ponds;
- *Intermediate* habitat - 50-250m from breeding ponds; and,
- *Distant* habitat - >250m from breeding ponds.

[11] English Nature. (2001) *Great Crested Newt Mitigation Guidelines*. English Nature, Peterborough. www.english-nature.org.uk/pubs/publication/PDF/GCN0801w.PDF

3.3.20 The likelihood of terrestrial habitats being used by great crested newts is generally acknowledged to decrease with increasing distance from breeding ponds i.e. with the likelihood of use being highest within immediate habitats. The extent of dispersal is also influenced by the quality and connectivity of surrounding terrestrial habitats, with individuals most likely to disperse further from breeding ponds if; the *Immediate* terrestrial habitat is of poor quality or of limited extent; and/or if there are 'corridors' of optimal habitat to facilitate dispersal.

3.3.21 All but one of the mapped ponds lie beyond 250m of the Site boundary thus reducing the likelihood of individuals dispersing into habitats within the Site. Ponds P3, P4 and P5 are also separated from the Site by intervening roadways, built development and a railway line which present a barrier to dispersal and reduce the likelihood of individuals dispersing into habitats within the Site.

3.3.22 The tall ruderal vegetation, grassland and boundary hedgerows within the Site provide potentially suitable foraging habitat and places of shelter and refuge for amphibians including great crested newt. However, given the separation distance between the nearest ponds and the higher quality habitats that surrounds these ponds (including woodland which is a high value refuge habitat for amphibians), it is considered that the majority of individuals, where present, will remain close to these ponds. The amphibian assemblage likely to be present within the Site is therefore considered to be limited.

3.3.23 With reference to Fletcher and Wilkinson (2013), the Site is not located within any existing or proposed newt mitigation sites, but does lie just west of a newt mitigation site as proposed in the Wrexham Strategy.

Reptiles

3.3.24 Tall ruderal and grassland vegetation present on Site offers some potential for reptiles such as grass snake *Natrix natrix* and common lizard *Zootoca vivipara*, with records of such species returned by Cofnod from within 2km of the Site. However the Site does not provide extensive areas of high value habitat for reptiles.

3.3.25 It is considered that individuals may be present on a transient basis but that such animals would form part of wider local populations and the Site is not considered to be critical to the viability of any local reptile populations.

Other Notable Species

3.3.26 Habitats within the development site are unlikely to provide any high or regular interest for other protected or notable species however; boundary habitats, tall ruderal and grassland habitats may provide some suitability for additional small mammal species such as hedgehog *Erinaceus europaeus* and for which Cofnod returned records of from within 2km of the Site.

3.4 Invasive Non-native Species

3.4.1 No invasive non-native species were identified on Site or adjacent areas during the field survey.

4 ASSESSMENT OF EFFECTS AND MITIGATION MEASURES

4.1 Designated Sites for Nature Conservation

4.1.1 The Site does not form part of any statutory designated site for nature conservation. No statutory designated sites are located within the 2km search radius. Local wildlife sites are present within 1km, the nearest being Woodlands and Fishpond Wood Wildlife Site. With standard pollution prevention and control measures in place, the proposed development will not have direct or indirect effects on these sites.

4.1.2 No direct or indirect impacts are predicted upon any designated site.

4.2 Habitats and Flora

4.2.1 Apart from boundary species-poor hedgerows, there are no Habitats of Principal Importance (listed in Section 7 of the Environment (Wales) Act 2016) within the Site and no protected or notable plant species were recorded during the Extended Phase 1 habitat survey. No impacts upon local populations of notable habitats or species would be expected to occur as a result of the proposed development.

4.2.2 The loss of a relatively small extent of semi-improved grassland, tall ruderal, scrub and hedgerow habitats, all common, widespread and of low floristic diversity and low intrinsic value, is not considered to be significant at a local geographic scale. Similar and higher quality habitat is available within the surrounding area.

4.2.3 Standard pollution prevention and control measures will be implemented in line with Natural Resources Wales (NRW) and Local Authority guidelines to prevent pollution and surface water run-off affecting adjoining habitats during the construction phase of the proposed development. This will form part of a Construction Environmental Management Plan (CEMP). As part of this, retained trees and hedgerows will be protected during the construction phase in accordance with BS 5837:2010 '*Trees in relation to design, demolition and construction – recommendations*'.

4.2.4 The proposed development includes landscaping and habitat creation measures which include tree and shrub planting and new meadow grassland areas which will provide a green buffer to the development and maintain habitat connectivity around the Site. Landscaping will include tree and hedgerow planting along the boundaries of the Site, reinforcing the existing features. In addition, a new native hedgerow will be planted to the east of the Site running west-east and connecting habitat within the Site with the existing hedgerow network in the surrounding area.

Birds

4.2.5 The proposed development will not adversely affect local populations of birds given the limited suitability of habitats present on Site. All wild birds, their nests and eggs in the UK are protected under the provisions of Part 1 of the Wildlife and Countryside Act 1981 (as amended). Under Part 1, Section 1 it is an offence to intentionally or recklessly kill, injure or take any wild bird; or take, damage or destroy the nest (whilst being built or in use) or eggs of any wild bird. In addition, species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), are afforded further protection. Under Part 1, Section 1 it is an offence to intentionally or recklessly disturb a species listed on Schedule 1 whilst it is building a nest or is in, on or near a nest containing eggs or young; or to disturb their dependent young.

4.2.6 In order to avoid impacts on nesting birds and to ensure compliance with the provisions of the Wildlife and Countryside Act 1981 (as amended), it is recommended that operational works requiring soil stripping and vegetation removal takes place outside of the bird breeding season

(March-August inclusive). If vegetation works are unavoidable during the breeding season, suitable nesting areas should be inspected by a suitably experienced ecologist prior to works commencing. Only when the ecologist is satisfied that no offence will occur under the legislation will works be permitted to proceed.

4.2.7 The completed development is not likely to generate significant levels of noise and disruption over and above existing background levels from roads and residential areas, to which local bird populations are already likely to be habituated. Breeding, foraging and movement of birds in and along the boundary and adjoining habitats will be unaffected and the provision of new tree and hedgerow planting and habitat creation within the proposed development, as well as resources provided by new gardens as they mature, will maintain foraging and nesting opportunities. The proposed development will include the installation of 15 bird boxes suitable for different species will be installed on selected buildings and/or on suitable trees around the Site.

4.2.8 No species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) are considered likely to be present and no additional measures are considered necessary other than those already stated.

Bats

4.2.9 The proposed development does not support features suitable for roosting bats. Previous surveys of farm building found no evidence of use by bats and these structures have now been demolished. Two trees with low bat roost potential present on the boundary of the proposed development will be retained. If this proves not to be possible, for example for reasons of safety, these trees will be removed using soft fell methods by qualified arborists under the supervision of an ecologist.

4.2.10 New bat roost opportunities will be provided as an integrated part of the proposed development, with 10 bat boxes installed at suitable heights and elevations. Boxes of suitable design (e.g. 2F and 1FF Schwegler and Ibstock bat boxes) will be erected on suitable buildings and mature trees within hedgerows in order to encourage roosting bats.

4.2.11 The habitats on Site provide suitable habitat for foraging bats, and bats were confirmed to fly and forage across parts of the Site (and the adjacent residential areas) during surveys completed in 2016. The loss of ruderal, scrub and grassland habitat for the proposed development is not considered likely to have an adverse effect on local foraging resources, nor is the proposed layout likely to cause any interruption or fragmentation of bat commuting routes. The design layout and proposed landscape and habitat plan maintains greenspace and habitat corridors around the Site.

4.2.12 Once constructed, the proposed development will be lit, as are the nearby existing road and residential areas. Although some species of bat swarm and feed around white mercury streetlights, others, such as brown long-eared bats and *Myotis* species will avoid artificial lighting.

4.2.13 Depending on the positioning of lighting units, habitats around the periphery of the Site could be affected by light spill and therefore affect foraging behaviour and commuting routes. However, the proposed layout maintains greenspace and planted buffers around the new houses such that the potential for noticeable additional light spill into the darker areas to the north and east is limited. The detailed lighting design of the proposed development will also seek to minimise excessive light spill and it is expected that the detailed lighting design would be subject to a planning condition.

4.2.14 The development is therefore not considered likely to affect the favourable conservation status of any bat species and with careful lighting design, the provision of new roost opportunities and buffer planting to strengthen commuting flightlines, is likely to provide local benefit for some bat species.

Badger

4.2.15 No setts were identified within or immediately adjacent to the Site; however badgers are likely to be locally present.

4.2.16 A pre-construction check for badger setts should be completed by a suitably qualified ecologist immediately prior to commencement of works. If evidence of an active badger sett is found, then measures to ensure no harm or damage ensue should be implemented in accordance with the Protection of Badgers Act 1992. If an active sett is to be lost as a result of the development, a derogation licence from NRW may be required.

Amphibians

4.2.17 No ponds or other waterbodies will be directly or indirectly affected by the proposed development and no immediate terrestrial habitat (i.e. within 50m of a pond) is located within the Site or wider development area.

4.2.18 Great crested newts are known to be present locally and habitats within the Site are considered to offer some potential for foraging, as well as providing some limited opportunities for shelter and refuge. The nearest ponds are all over 250m distant apart from one pond which is just under 250m from the Site. Local records for this species are confined to ponds which are separated from the Site by intervening roads, built development and a railway. There is ready availability of suitable habitat near to these ponds, and with the retention and maintenance of suitable connecting habitat around the Site, no adverse effects on the favourable conservation status of local great crested newt populations are anticipated as a result of the proposed development.

4.2.19 To ensure the protection of individual animals potentially present within the Site during the construction phase, either a European Protected Species (EPS) derogation licence from NRW will be required, or the development will need to proceed following Reasonable Avoidance Measures (RAMs) under the supervision of suitably competent ecologist, which would form a contractual requirement within the CEMP. In either case, with suitable measures agreed and implemented, it is considered that GCN can be adequately protected as part of the proposals and that the development would be able to proceed lawfully. Consultation would be required with NRW to determine the preferred approach, given the likely continued lack of access to survey ponds in the wider area.

4.2.20 Habitat creation and compensation specifically for amphibians but also benefiting other wildlife is proposed within the wider landownership (shown on **Figure 4**); this will aim to ensure that there will be no detriment to the conservation status of great crested newts in the area as a result of the proposed development and that suitable habitat for great crested newts can be maintained over the long term. The compensation will include the creation of a minimum of 4 artificial hibernacula (see **Diagram 5.1**) with surrounding scrub planting within areas set-aside as habitat to be managed specifically to favour great crested newts.

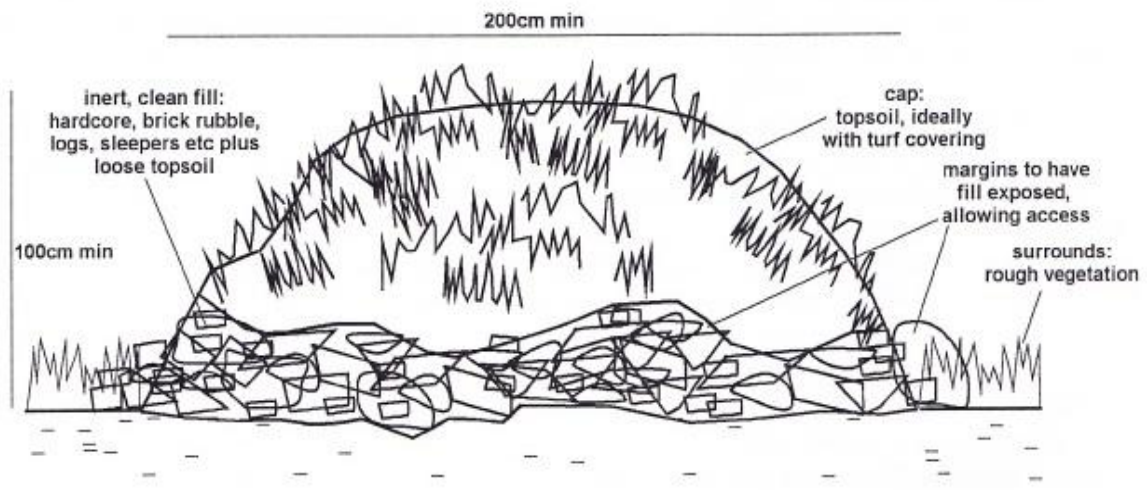


Diagram 5.1 Suggested hibernaculum design as depicted in the Great Crested Newt Mitigation Guidelines (English Nature 2001).

4.2.21 The development is not considered to result in barriers to dispersal for great crested newts. The habitat creation and compensation area identified within **Figure 4** is located adjacent to an area identified by Wrexham Borough Council as a proposed newt mitigation site as part of the Great Crested Newt Master Plan (Fletcher & Wilkinson, 2013) and therefore provides an opportunity to secure and create a dedicated terrestrial habitat area that will complement the wider conservation objective within the Borough.

Reptiles

4.2.22 Habitats within the development footprint may be used by small numbers of common reptile species. RAMs designed to protect reptiles from inadvertent harm during the construction phase will be included in the CEMP will minimise the risks to individual reptiles, if present.

Other species

4.2.23 No other species are considered pertinent in relation to the proposed development.

4.3 Conclusions

4.3.1 Overall the proposed development is not considered likely to have adverse effects on local populations of any species. Land take for the proposed development requires the loss of a relatively small extent of semi-improved grassland, tall ruderal, scrub and hedgerow habitats, all common, widespread and of low floristic diversity and limited biodiversity value. Embedded design features are provided, including green buffers and landscape planting using native species appropriate to the locality, bird and bat boxes and new hibernacula features will maintain biodiversity value and ecological connectivity, and provide additional shelter, foraging, breeding and roosting opportunities. Ecological connectivity will be maintained through the provision of landscape planting and green space, which will be managed to provide long-term habitat and species interest around the Site. In addition, a separate area of land will be set aside and managed specifically to provide favourable habitat conditions for great crested newts, providing long-term sustainable biodiversity benefit at this location.

5 SUMMARY - ECOLOGY PRIORITY MATRIX

Feature	Status / Legal Protection	Recommended Further Actions	Recommended Mitigation / Enhancement Measures
Designated Sites	Statutory/Non-statutory	n/a	Standard pollution prevention and control measures in accordance with NRW guidelines.
General Habitat	n/a	n/a	Standard pollution prevention and control measures in accordance with NRW guidelines.
Birds	Annex 1, WCA, S42, UKBAP	Nest searches / pre-commencement surveys if construction works including site clearance activities are proposed during breeding/nesting season (01st March to 31st August).	Vegetation clearance to avoid breeding season if possible. Provision of 15 bird boxes as part of the proposed development.
Bats	WCA, Habitat Regs. 2017	n/a	Provision of 10 bat boxes at suitable locations on Site as part of the proposed development.
Badgers	Protection of Badgers Act 1992	Pre-construction search for new badger setts	Further mitigation required if new setts found on/adjacent to Site prior to development.
Amphibians	WCA, Habitat Regs. 2017	n/a	Detailed protection and mitigation strategy to be agreed with WCBC and NRW. Supplementary habitat creation within the proposed newt mitigation area. Landscape planting as part of the design to include green buffer and tree, shrub and grassland planting. Habitat management to maintain habitat connectivity around the Site along with foraging and refuge opportunities. Favourable Conservation Status of great crested newts to be maintained through mitigation, and under RAMs or derogation licence during construction. This to be agreed with NRW and WCBC in advance of works commencing.
Other Species	S41, UKBAP	n/a	n/a

Ecology Priority Matrix Key:
BHS – Biological Heritage Site
Annex 1 – Listed on Annex I of the Birds Directive
WCA – Listed on Schedule 1, 5, 8 or 9 of the Wildlife and Countryside Act 1981 (as amended)
Habitat Regs. 2017 – Listed on Schedule 2, 3, or 4 of the Habitats Regulations
S42 – Species listed on Section 42 of the NERC Act
UK/LBAP – UK/Local Biodiversity Action Plan

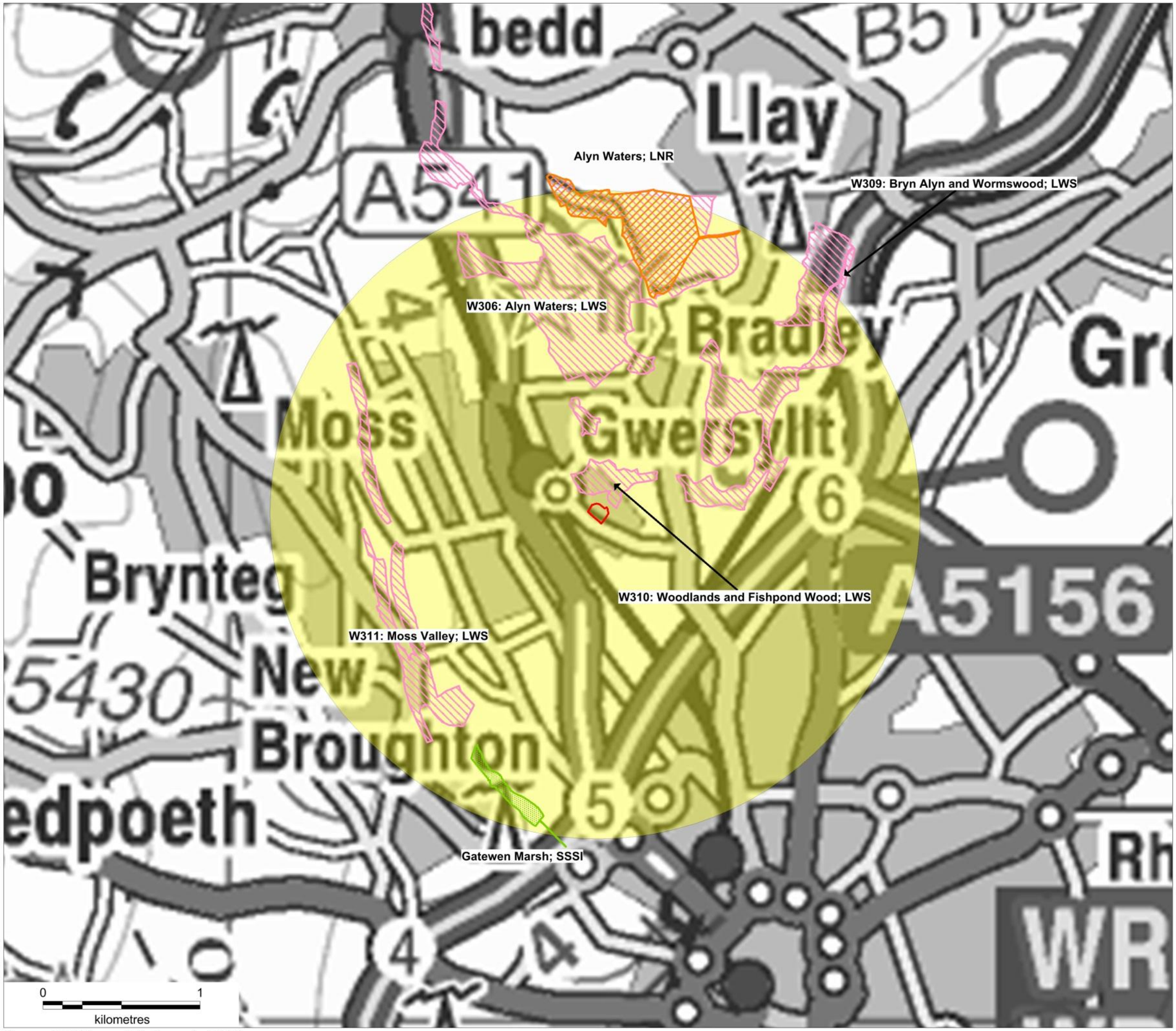
FIGURES:

Figure 1: Site Location and designated sites

Figure 2: Phase 1 habitat survey

Figure 3: Pond locations

Figure 4: Habitat Creation Plan



Legend

Phase 1 development area

2km buffer

Designated Sites

Statutory

LNR

SSSI

Non-statutory

LWS

Woodlands Farm, Wrexham

Figure 1
Site Location & Designated Sites

Drawn by:	JP	Checked by:	AL
Date:	08/07/2016		

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Axis, Woodlands Farm

Figure 2: Phase 1 Habitats Plan

Legend

- Land ownership boundary
- Site boundary
- Target note (TN1-TN5)

Habitats

- A/SI — Arable (A) / Poor semi-improved grassland (SI)
- Dense scrub
- Tall ruderal
- Building
- Fence
- Intact hedge (species-poor)
- Intact hedge (species-rich)
- Intact hedge with trees (species-poor)
- Wall
- Scattered scrub
- Tree

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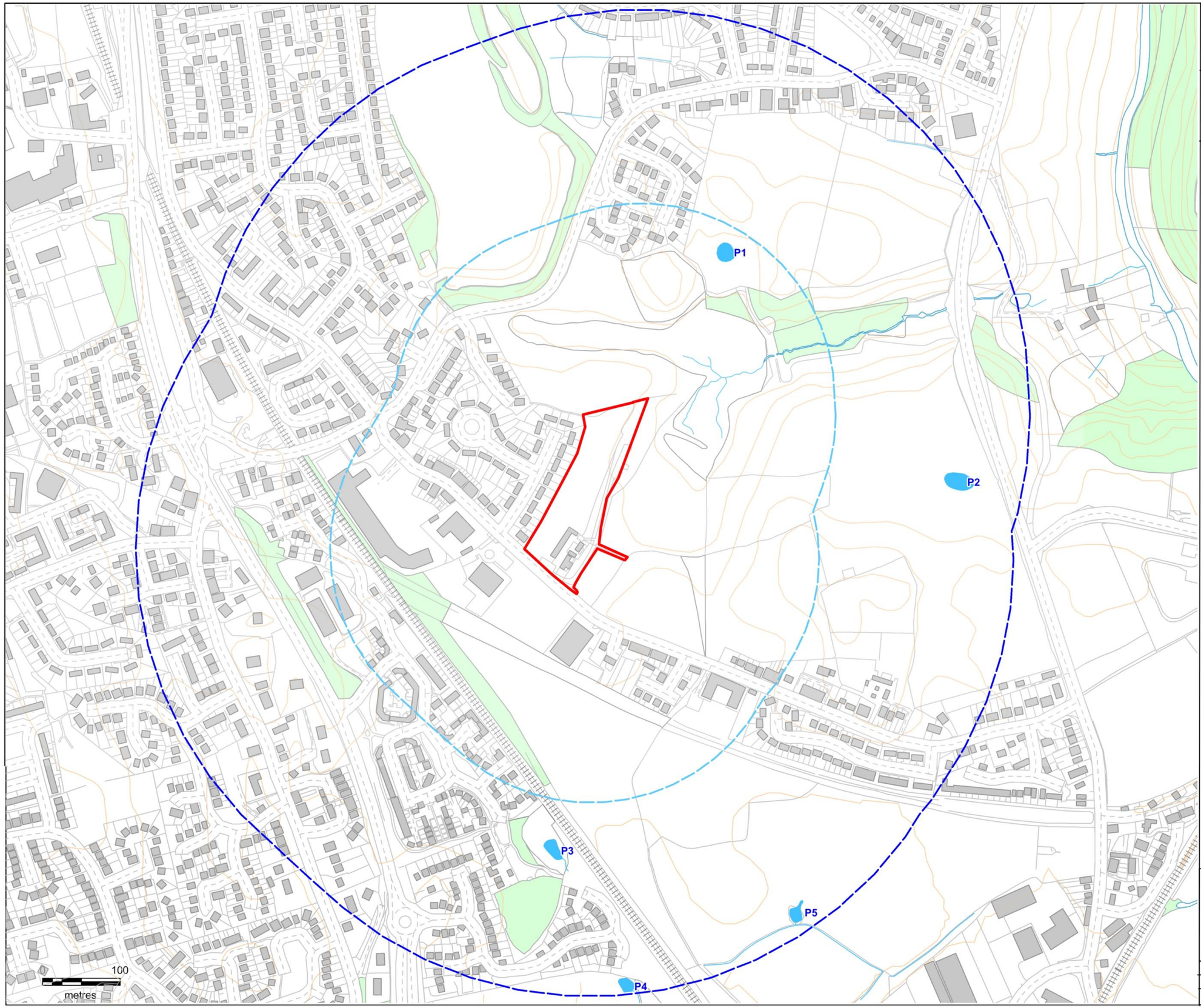
		Drawing No.	001
Date	20/08/2018	Drawn by	MR
Checked by	AL	Plan Source	Avian

N W E S

Axis, Woodlands Farm

Figure 3: Pond Survey Plan



Legend

- Site boundary
- 250m site buffer
- 500m site buffer
- Ponds

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		Drawing No.	001
Date	20/08/2018	Drawn by	MR
Checked by	UM	Plan Source	Avian

N W E S

Legend

- Site boundary
- Land ownership boundary - wider survey area
- GCN habitat creation andcompensation area
- New hedgerow planting
- Exisiting mature tree
- New tree planting

This map contains data from the following sources:
DATA SOURCE (DATE)

Co-ordinate System : British National Grid
Projection: Traverse Mercator
Datum: OSGB 1936
Units: Metres

Rev	Date	Desciption	Drn	Chk	App
00	21/08/2018	Rev	MR	Rev	Rev

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Figure 4 -
Habitat Creation Plan
Map 1 of 1

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