



PROPOSED CONVERSION AND NEW BUILD FOR HOUSING

Report Title: Preliminary Ecological Appraisal

Address: Gamford Farm, Gamford Lane, Rossett, LL12 0EW

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Gamford Farm, Gamford Lane, Rossett, LL12 0EW
Preliminary Ecological Appraisal

Document Title	Preliminary Ecological Appraisal
Prepared for	Appleton Deeley Planning and Landscape
Prepared by	Tyrer Ecological Consultants Ltd

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Executive Summary

As part of a proposed planning application concerning Gamford House and a number of outbuildings at the former Gamford Farm site, Rossett, Wrexham, Tyrer Ecological Consultants Ltd were commissioned by Appleton Deeley Planning and Landscape to undertake a Preliminary Ecological Appraisal, which included standardised Phase 1 habitat mapping, preliminary roost assessments of buildings and habitat suitability index (HSI) of ponds; the survey took place on 26th November 2018 in dry, clear conditions.

The site boundary comprises approximately 1.6ha in area; the site proposed for development is now redundant from its former farming purpose and incorporates the dwelling “Gamford House” to the south (Building 1 –which has suffered recent fire damage on 5th November 2018), a number of outbuildings (Buildings 2-10), scattered trees, scrub, tall ruderal habitat, rough grassland, hedgerow and a pond. A second pond is found 45metres to the south-west, outside of the survey boundary.

Vegetation & Habitats: The survey concludes that no notable flora of conservation importance resides within the survey boundary. Pond and hedgerow are present both are local priority habitats. Proposals are understood to retain both pond and hedgerow, however, if proposals are amended to incorporate the loss of these habitats potential mitigation measures will be applicable and may need to be implemented to offset the loss of local priority habitat. No alien species listed as ‘invasive’ under Sc.9 of the Wildlife & Countryside Act (1981) (as amended) were present during the survey.

Bats: Six buildings at Gamford Farm have been categorised as possessing bat roost potential, in accordance with current BCT guidelines. Buildings 1, 2, 3, 5 and 6 pertain to having “Moderate” potential and Building 9 pertains to having “Low” potential. It is recommended that a suite of dusk/dawn surveys should be undertaken at the site within the main active season of bats (May - August) in order to establish if/which buildings contain roost(s) and if so identify the species, abundance, roost locations and flight lines following emergence/re-entry. It should be noted that where bat/s or their roost/place of rest/shelter will be affected by the proposed works then to allow developmental works at the site to legally commence an application for a European Protected Species Mitigation Licence (EPSML) and subsequent granting of a licence will be required.

Terrestrial Mammals: Impacts to Hedgehog are anticipated at local level, mainly through loss of refuge. This impact can be offset through the provision of two Hedgehog homes placed in the boundary east near to the hedgerow, prior to the commencement of works (see Appendix IV for ideas).

Breeding Birds: There are no implications in relation to Schedule 1 protected birds such as Barn owl, despite immediate environs being considered valuable hunting habitat and despite the site offering several ramshackle buildings that could support this species for breeding/nesting. In respect of common birds, a host of species were observed and historic nests attributed to two species, House Sparrow and Swallow, were found within 5 of the buildings. Enhancement for common nesting birds is recommended as a planning condition (See Appendix IV for ideas tailored to House Sparrow and Swallow).

Great Crested Newt: GCN presence/absence surveys are required to be undertaken prior to any development to inform the current population level and to avoid injury/risk of death to Newts (an offence under the Conservation of Habitats & Species Regulations 2017), as well as to inform an appropriate mitigation strategy for the scheme. Surveys need to be undertaken at both Ponds 1 and 2, requiring permission from the landowner of Pond 2, which is the responsibility of the developer to seek. See section 9.11 for full details.

Reptiles: Though not encountered during the survey the presence of Grass Snake is anticipated on site, notably due to Cofnod records confirming their presence within 500 metres of the site within the previous 5 years, favourable connectivity to confirmed areas and suitable habitats present to support the species within the development site. It is considered that a statement of reasonable avoidance measures (RAMS) should be created tailored to reptiles.

The measures will then need to be followed by site contractors, in order to avoid potential impacts occurring to localised reptiles which may be in the area, namely Grass Snake but inclusive of other reptiles. The RAMS should include the ecologist supervised dismantling of two areas of refugia identified in the north of the site, however, the RAMS should be completed after such time as further information is gathered regarding Great Crested Newt, i.e. - designed following GCN presence/absence surveys.

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1.0 Introduction & Reasons for Survey

- 1.1 As part of a proposed planning application concerning Gamford House and a number of outbuildings at the former Gamford Farm, Rossett, Wrexham (Figure 1), Tyrer Ecological Consultants Ltd were commissioned by Appleton Deeley Planning and Landscape to undertake a Preliminary Ecological Appraisal, this included standardised Phase 1 habitat mapping, preliminary roost assessments of buildings and habitat suitability index (HSI) of ponds; the survey was undertaken on 26th November 2018 in dry, clear conditions.

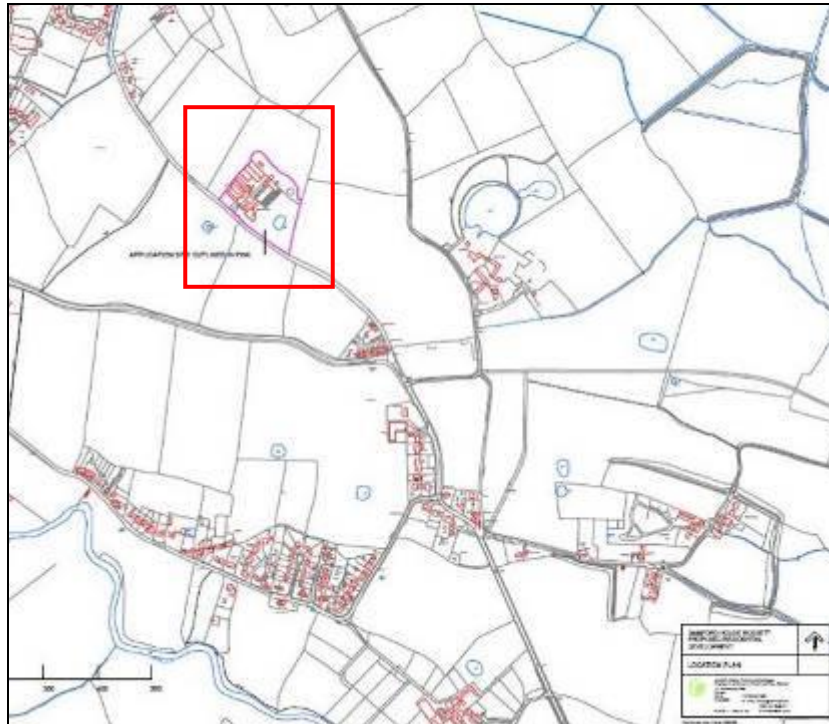


Figure 1 - Existing site plans

- 1.2 It is the understanding of Tyrer Ecological Consultants Ltd that proposals involve the demolition and/or conversion of all structures in order to facilitate the development of new residential units with associative gardens and landscaping.
- 1.3 Ecological surveys, particularly where specially protected species may be present, are generally required as part of the Local Authority's Planning Policies. If additional surveys are required following the site visit the report will outline the details of those further requirements.
- 1.4 The basic objective of the appraisal was to ascertain the nature of the land, its respective features and its immediate surrounding area; where possible information would be obtained on any sensitive wildlife habitats or species that were present or may be present and if so determine if they will be affected by future development.

1.5 The objectives of the ecological appraisal are as follows:

- Gather baseline data on the current habitat and ecological features at the site and surrounding the site
- Assess the presence/likely presence of species with statutory protection and assess impacts of proposals against them
- Identify designated sites in close proximity and assess the likely impacts of the proposed development against those sites
- Advise further surveys or mitigation requirements that may be required prior to development of the site
- Outline opportunities to provide biodiversity enhancement in accordance with relevant legislature

2.0 UK Biodiversity Plans

2.1 Section 7 of the Environment Wales Act (2016) provides priority species and habitats listed for the purpose of maintaining and enhancing biodiversity in relation to Wales. The list below (Table 1) contains some of the priority species from the long-list that were searched for after a desktop assessment of the site and surrounding habitat combined with existing distribution data; the list is not comprehensive but outlines specially-considered species based on the nature of the proposals. There are two section 7 priority habitats present within the survey boundary - pond and hedgerow.

Table 1 – Section 7 species considered likely to be found within the extending locality

Amphibians	
Common Toad	<i>Bufo bufo</i>
Great Crested Newt	<i>Triturus cristatus</i>
Birds	
Skylark	<i>Alauda arvensis</i>
Kestrel	<i>Falco tinunculus</i>
House Sparrow	<i>Passer domesticus</i>
Tree Sparrow	<i>Passer montanus</i>
Hedge Accentor (Dunnock)	<i>Prunella modularis</i>
Common Starling	<i>Sturnus vulgaris</i>
Song Thrush	<i>Turdus philomelos</i>
Invertebrates	
Large Garden Bumblebee	<i>Bombus ruderatus</i>
Cinnabar Moth	<i>Tyria jacobaeae</i>
Mammals	
Water Vole	<i>Arvicola terrestris</i>
West European Hedgehog	<i>Erinaceus europaeus</i>
Brown Hare	<i>Lepus europaeus</i>
Bats	<i>Chiroptera</i>
Reptiles	
Slow-worm	<i>Anguis fragilis</i>
Grass Snake	<i>Natrix natrix</i>
Adder	<i>Vipera berus</i>
Common Lizard	<i>Zootoca vivipara</i>

Vascular Plants	
Purple Ramping Fumitory	<i>Fumaria purpurea</i>

3.0 Local Biodiversity Action Plan

3.1 LBAP's are simply a way of encouraging people to work together and deliver a programme of continuing action for biodiversity at a local level. They set out practical steps that aim to:

- Help protect biodiversity
- Enhance and improve biodiversity where possible, and
- Promote biodiversity at a local level

Sites of Local Biological Interest

3.2 Whilst there is no legal protection for Sites of Local Biological Interest per se, the presence of a protected species within them would attract the usual protection afforded to it/them.

Local Considerations

3.3 The Wrexham Unitary Development Plan (2005) and the Wrexham Biodiversity Action Plan (WBAP) were consulted via online sources for the purposes of compiling the report, though no source provided the full details of the WBAP.

4.0 Site-related Protected Species Legislation

4.1 Up to 11 bat species have been recorded in Wrexham, most of which use built structures, notably occupied residential properties, for roosting. The most frequently encountered species is the Common Pipistrelle bat (*Pipistrellus pipistrellus*) and its abundant status in Wrexham is reflected throughout the UK. All British bats and their roosts are afforded protection under the 1981 Wildlife & Countryside Act (as amended) and are listed in Schedule 2 of the Conservation of Habitats & Species Regulations 2017.

4.2 Barn owl (*Tyto alba*) are recorded within Wrexham in areas where there exists an agricultural matrix that includes suitable bank sides of vegetation, drainage ditches and rough grassland that will provide habitat for their main prey i.e. small mammals, whilst they typically may use barns/old buildings and tree hollows for nesting or roosting purposes. They are constantly under threat from loss of habitat and nest sites, which is a situation that is mirrored throughout most of the UK.

All wild birds (with only minor exceptions) and their nests whilst being built or containing eggs or dependant young are protected under the Wildlife & Countryside Act 1981 (as amended). Some species such as those listed on Schedule 1, e.g. Barn owls and Kingfisher (*Alcedo atthis*) are afforded a greater level of protection. Where nesting birds are present then work should be timed outside of the breeding/nesting season (March – August) so as to avoid disturbance.

4.3 Badger (*Meles meles*) are encountered in parts of Wrexham; they may not be deliberately killed or trapped except under licence. Badger baiting has been outlawed since 1835; digging for them was made illegal by the Badgers Act 1973. The Protection of Badgers Act 1992 consolidates past badger legislation and in addition to protecting the animal itself, makes it an offence to damage, destroy or obstruct badger setts.

- 4.4 Great Crested Newts (*Triturus cristatus*) (GCN) have declined within the UK over recent years due to destruction and fragmentation of breeding ponds and terrestrial habitat. They spend a high percentage of their adult life in a terrestrial habitat and use hibernacula such as log piles, tree roots and rubble for refuge and/or hibernation. Within Wrexham GCN's are found where favourable habitat coincides with connectivity to breeding pools.
- 4.5 Adder (*Vipera berus*), Common Lizard (*Zootoca vivipara*), Grass Snake (*Natrix helvetica*) and Slow-worm (*Anguis fragilis*) are protected under Schedule 5 of the Wildlife and Countryside Act (1981) (as amended); found sporadically throughout North Wales it is an offence to intentionally kill, injure or take these animals from the wild.
- 4.6 Although many species listed within Schedule 9 (Part II) Wildlife & Countryside Act (WCA) (1981) (as amended) are local/rare/absent in Wrexham, species such as Japanese Knotweed (*Fallopia japonica*), Himalayan/Indian Balsam (*Impatiens glandulifera*) and Wall Cotoneaster (*Cotoneaster horizontalis*) are widespread; all species carry the same penalty for causing plants to grow in the wild and DEFRA (2014) issue the following advice regarding invasive (plant) species:
- 'You must not plant in the wild or cause certain invasive and non-native plants (all species listed under Schedule 9 (Part II) WCA 1981) to grow in the wild. This can include moving contaminated soil or plant cuttings. You can be fined or sent to prison for up to 2 years'.*
- 4.7 Guidance for Local Authorities: Extract from Office of the Deputy Prime Minister: Circular 06/2005.

"It is essential that the presence or otherwise of protected species, and the extent that they may be affected by the proposed development, is established before planning permission is granted, otherwise all relevant material considerations may not have been addressed in making the decision."

5.0 Survey Methodology

Desk Study

- 5.1 Prior to a site visit a desktop study was conducted using online resources to obtain information pertaining to any sites afforded statutory (e.g. SSSI) and non-statutory (e.g. LWS) designations within 3km of the site boundary. To do so, the Multi Agency Geographic Information for the Countryside (MAGIC – provided by Defra) was accessed to gather such information; this particular interactive mapping service was also used to locate any locally granted European Protected Species Mitigation Licenses (EPSML) to further inform conclusions concerning such species in the context of the study site and its proposed development.

Satellite imagery was reviewed using sources such as Google Earth (© 2018) to determine the nature of adjoining and extending habitats; such information aids in the understanding of how the site might interact with its surroundings ecologically and its value in that context, and how the development may impact at a wider scale.

A data search to include all protected species and designated sites within a 2km radius of Gamford Farm was requested from the Local Biological Records Centre serving Wrexham (Cofnod) as it would provide further and otherwise unobtainable information concerning protected species and their local distributions.

During the desktop study it is noted that Gamford Farm has been subject to previous ecological survey work undertaken in 2015 by Arbtech and The Environment Partnership (TEP), available on the Wrexham.gov.uk planning portal; the findings have been acknowledged as part of the completion of this report.

Field Survey

- 5.2 The ecological appraisal was conducted on the 26th November 2018 by Mr. M. Pritchard, a multi-protected species licenced ecologist in England with Tyrer Ecological Consultants Ltd in addition to acting as an accredited agent on the Natural Resources Wales bat licence of Mr. S. Irwin (Licence no. 73156:OTH:CSAB:2016). The survey followed UK industry standard Joint Nature Conservation Committee (JNCC) Phase 1 Habitat Methodology standards (JNCC, 2010), with reference to the Chartered Institute of Ecology and Environmental Management (CIEEM) Technical Guidance Series “Guidelines for Preliminary Ecological Appraisal 2nd Edition (CIEEM, 2017).

The results, conclusions and recommendations of the report have been assessed by the wider ecological team at Tyrer Ecological Consultants Ltd and their assessment concurs with that of Mr. Pritchard.

- 5.3 Chapter 5, point 2.8 of Planning Policy Wales (PPW) stipulates the following:

“The planning system has an important part to play in meeting biodiversity objectives by promoting approaches to development which create new opportunities to enhance biodiversity, prevent biodiversity losses, or compensate for losses where damage is unavoidable. Local planning authorities must address biodiversity issues, in so far as they relate to land planning, in both development plans and development management decisions. Local planning authorities should consider how they might accommodate a response to climate change as part of their overall approach towards meeting biodiversity objectives. Ways in which the adaptation needs of biodiversity could be considered include identifying the scope for minimising or reversing the fragmentation of habitats and improving habitat connectivity through the promotion of wildlife corridors. Local planning authorities should ensure that development minimises impact within areas identified as important for the ability of species to adapt and/or to move to more suitable habitats.”

Furthermore, Biodiversity Net Gain: Good practice principles for development (CIEEM, 2016) have been adopted whereby appropriate enhancement recommendations ensure that a “biodiversity net gain” is obtained.

- 5.4 A ‘site walkover’ was conducted; this included an assessment of all available habitat features; identification and evidence of all fauna would be documented, whilst in tandem the land was assessed for the potential to support the range of species discussed in sections 2.0 through to 4.6. The ‘walkover’ also aimed to identify any ephemeral pools or unmapped waterbodies.
- 5.5 During the walkover botanical assemblages were assessed and the land was inspected for the presence of red-listed (Stroh *et al*, 2014), s.7 and local BAP species, alongside specially protected species as listed under Schedule 8 of the Wildlife and Countryside Act (WCA) (1981) (as amended) or Schedule 5 Conservation of Habitats and Species Regulations (2017). Additional to attributing ecological value to red-listed/BAP species, in accordance with existing CIEEM guidance, a geographic frame of reference is also adopted. Plant species may be recognised for their ecological notoriety on a geographical scale which is adopted on a site-to-site basis (see Figure 2 below).

For a botanical species list, see **Appendix II**.

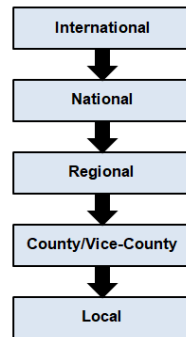


Figure 2 - *Geographic Frame of Reference entailing degrees of conservation importance (CIEEM)*

- 5.6 In combination with assessing the area in relation to flora of conservation importance, the land was also assessed in relation to the presence of invasive species as listed under Schedule 9 of the Wildlife and Countryside Act (1981) (as amended).
- 5.7 Buildings and trees were inspected for potential places that may be of value to bats or breeding birds and to determine if evidence of use of either group was present; no conventional lofts are present in any buildings on the site; upper floors when accessible were investigated with the aid of high powered torch for evidence of bat use, which mainly includes bat droppings, incidental presence, dead specimens and/or prey items - and investigated for evidence of breeding birds - which broadly involves a search for historic/recent nest materials and on occasion includes behaviour, pellets, faeces and or dead hatchlings/fledglings. The surrounding habitat was also considered in terms of general suitability for bats and breeding birds.

Criteria for roost assessment are based upon the following determinant which is based upon the Bat Conservation Trust 'Bat Surveys: Good Practice Guidelines' (2016): (Figure 3).

Table 4.1 Guidelines for assessing the potential suitability of proposed development sites for bats, based on the presence of habitat features within the landscape, to be applied using professional judgement.

Suitability	Description Roosting habitats	Commuting and foraging habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats.	Negligible habitat features on site likely to be used by commuting or foraging bats.
Low	A structure 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 ^a 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 ^b). A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential. ^c	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
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 ^a and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
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 longer periods of time due to their size, shelter, protection, conditions ^a and surrounding habitat.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to and connected to known roosts.

^a For example, in terms of temperature, humidity, height above ground level, light levels or levels of disturbance.
^b Evidence from the Netherlands shows mass swarming events of common pipistrelle bats in the autumn followed by mass hibernation in a diverse range of building types in urban environments (Roosten et al, 2015). This phenomenon requires some research in the UK but ecologists should be aware of the potential for larger numbers of this species to be present during the autumn and winter in large buildings in highly urbanised environments.
^c This system of categorisation aligns with BS 8006:2015 Surveying for bats in trees and woodland (BSI, 2015).

Figure 3 - BCT guidelines extract

5.8 A number of factors are used for the bat survey methodology, which include: -

- Knowledge of bat species relevant to the site location and geographical range
- Nature of the immediate /surrounding habitat in relation to foraging opportunities
- Presence/absence of roost potential
- Value of roost potential – if present

Following the survey, the results, conclusions and recommendations are based upon surveyor experience and knowledge of bat ecology.

5.9 The walkover of the site included a search for signs of Badger activity which includes digging, occupied setts, 'runs' leading to and from a sett or the existence of latrines or 'snuffle' holes where Badgers have foraged in the ground.

5.10 Two ponds were inspected and scored using the GCN Habitat Suitability Index (HSI) assessment. Developed by *Oldham et al* (2000), the GCN HSI is a quantitative measure of habitat quality evaluating suitability of habitat for Great Crested Newt. Each HSI is a number between 0 and 1, derived from an assessment of ten habitat variables known to influence the presence of newts; it should be stated that HSI scoring is not a substitute for undertaking newt surveys; it indicates but cannot confirm presence or absence of newts. Very low HSI scores may be used along with scheme details to infer a minimal chance of committing an offence in low impact situations. This is on a risk assessment basis and developers should be aware of the potential hazards of this approach.

NB: *English Nature's (now Natural England) Great Crested Newt Mitigation Guidelines (2001) states ponds within 500m of a proposed development site should be considered for their respective potential to support GCN; however, in some instances this distance may be reduced to 250m due to the presence of physical barriers and obstructions, or based on the likely magnitude of impacts arising from the proposed development.*

- 5.11 The site was assessed for suitability for use by reptiles, with particular attention paid to features that could be used as basking areas (e.g. south-facing slopes), hibernation (e.g. banks, walls, piles of potential hibernacula) and opportunities for foraging (e.g. rough grassland and scrub).

- Common Lizards (*Zootoca vivipara*) use a variety of habitats from woodland glades to walls and pastures - includes brownfield sites
- Slow-worms (*Anguis fragilis*) use similar habitats to Common Lizards, and are often found in rank grassland, gardens and derelict land
- Grass Snakes (*Natrix natrix*) have broadly similar requirements to Common Lizards but with a greater reliance on ponds and wetlands, where they can predate amphibians
- Adder (*Vipera berus*) use a range of fairly open habitats with some cover, but are most often found in dry heath

6.0 Constraints

- 6.1 Gamford House, which is the dwelling on site referred to throughout as Building 1, is understood to have suffered recent fire damage on 5th November 2018, destroying the roof and much of the upper floor. The building has previously been confirmed as a Common Pipistrelle maternity roost and it supported an unspecified population of breeding House Sparrow (information sourced from TEP & Arbtech ecological reports, 2015, available on the Wrexham Planning Portal). During the survey access to Building 1 was not permitted on the grounds of health and safety and the building is effectively fenced off. Many buildings on the site are in a considerable state of dilapidation and were similarly not accessible on the grounds of health and safety; building descriptions are given in section 8.4, Table 2, which describes the findings of all structures surveyed in relation to bats.
- 6.2 This report does not contain a comprehensive list entailing the totality of botanical taxa on site. Species listed within Appendix II were noted from incidental observation at the time of the appraisal; many plant species are only evident at certain times of the year; consequently some plant species may have gone undetected.
- 6.3 The survey was undertaken outside of the breeding season of bats, when maternity colonies have dispersed and bats are within their hibernation season, however evidence of bats (i.e. - droppings) can typically be found inside buildings where sheltered from the elements; exposed evidence is less likely to be found due to wind, rainfall.
- 6.4 Birds which commonly rely upon buildings and structures such as House Sparrows (*Passer domesticus*), Swallows (*Hirundo rustica*), Swift (*Apus apus*) and House Martin (*Delichon urbicum*), have also come to the end of their breeding season; as such active nesting behaviour is unlikely to be present. However, where buildings have been used by nesting birds then evidence of nesting is still likely to be present (i.e. - old nests or large accumulations of droppings).
- 6.5 Having considered all constraining factors in the context of the site and report outcomes, it is considered that they would not significantly hinder or prevent the gathering of ecological information on which to base sound conclusions and recommendations.

7.0 Desk Study Results

- 7.1 Gamford Farm is located immediately adjacent to Gamford Lane, off the B5102, in Wrexham, North Wales, approximately 0.8km south from the Welsh/English border.
- 7.2 The immediate habitat is rural, largely represented by open arable land bounded by ditches, hedgerows, rough grassland and scattered trees of both mature and semi-mature age. The farm is directly connected to a local wildlife site (Darnell Wood LWS) 140m to the north, designated for its semi-natural broad-leaved woodland and standing water habitats.
- 7.3 The extending habitat is consistently rural to all compass points (Figure 4), dominated by extensive areas of permanently managed arable grassland, though the village of Rossett which lies 450m to the west contains an array of buildings, dwellings and associative gardens. Open freshwater habitats are present throughout a 1.0km radius, including the River Alyn 650m south, Pulford Brook 960m north and a large number of ponds and ditch/tributary systems.



Figure 4 - Location of the site in the extending landscape (Source: Google 2018)

- 7.4 The accumulated site-surrounding environs offer good connectivity and are considered to offer a strong level of diversity and favourability for many of the species for which the ecological appraisal aimed to identify, including terrestrial mammals, amphibians and reptiles. In respect of bats the site offers favourable connectivity for species associated with rural landscapes, such as Common Pipistrelle bats; in respect of birds it offers suitable hunting conditions for Schedule 1 listed species such as Barn Owl, subject to their presence in the locality, as well as favourability for a host of common bird species.

- 7.5 Darnell Wood, found 140m to the north, is a designated local wildlife site (LWS), a non-statutory local designation that recognises the sites environmental importance. From the Magic Mapping results it is noted that the site is located within the impact zone for the River Dee and Bala Lake (SSSI, SAC) whilst also located approximately 2.3km north-east of Marford Quarry (SSSI) and 2.5km west of the Old Pulford Brook Meadows (SSSI). Notwithstanding its inclusion with the impact zone of the River Dee and Bala Lake SSSI, the proposals are highly unlikely to impact upon either of the designated sites or the associative species for which the sites have been designated.
- 7.6 A search of MAGIC Maps revealed two EPSM licences have been granted within 3.0km of the study site (though this solely relates to licences granted in England to the regional north at approximately 2.0km and 2.6km distances respectively); they affect the non-breeding roosts of four species, namely Common Pipistrelle, Soprano Pipistrelle, Brown Long-eared and Natterers bats.
- 7.7 One pond is within the site boundary with a second located approx. 45metres to the south-west instigating consideration for terrestrial site use by amphibious species, including protected GCN. No other ponds are present within 250metres of the site.
- 7.8 The data search provided by Cofnod produced records for multiple protected species located within a 2km radius, the most notable of which have been summarised below. The full details of the data search will be sent separately though are referred too, in **Appendix III**.

Bats - 10 records of bats comprising of Common Pipistrelle, *Pipistrellus* sp. and Unknown bat; the nearest of which is a *Pipistrellus* sp., record located 304 metres to the west.

Notable Mammals - Records of Otter, Hedgehog and one record of Polecat (roadkill).

Breeding Birds - 28 records of Barn owl recorded between 2003 and 2012, to the south of the site, at a range generally between 0.8km and 2.0km+.

Amphibians - 6 records of Great Crested Newt, the most notable of which is found at 593 metres to the south from 2015, referring to a small colony found within a garden pond, separable from the site by 1 significant barrier, a road.

Reptiles - 5 records of Grass Snake; 4 records of which are dated between 2007 and 2014; the nearest of which is notable, found at 427 metres north in a designated LWS with good connectivity to the development site.

7.9 2015 Ecological Surveys - timeline of previous surveys at the site

11th June 2015, TEP - Ecological Assessment
29th June 2015, TEP - eDNA in relation to Great Crested Newt
18th August 2015, Arbtech - Dusk survey (Bats)
24th August 2015, Arbtech - Dusk survey (Bats)
25th August 2015, Arbtech - Dusk survey (Bats)
31st August 2015, Arbtech - Dusk survey (Bats)
21st September 2015, Arbtech - Dusk survey (Bats)
22nd September 2015, Arbtech - Dusk survey (Bats)
23rd September 2015, Arbtech - Dusk survey (Bats)
24th September 2015, Arbtech - Dusk survey (Bats)

7.10 2015 Ecological Surveys - relevant results and conclusions

Bats - During an internal inspection evidence of bats was located on the top floor and loft of Gamford House (Building 1) by TEP, who stated in their Ecological Assessment *“Due to the high number of droppings recorded, this is likely to be a maternity roost”*. TEP recommended a host of dusk/dawn surveys at the site covering most of the buildings. A total of 8 dusk surveys were subsequently undertaken by Arbtech in the same year who concluded the following within their report *“It has been confirmed that bats are roosting within the main house. Features suitable for bats exist across the site and although every effort has been made to confirm likely absence, a precautionary approach to demolition is recommended to minimise the risks of impact on bats incidentally and infrequently using other buildings and features”*

GCN - TEP undertook eDNA on two ponds after a 1km data search revealed GCN records exist within the search area and after categorising two ponds “excellent” and “good” during HIS scoring. The results of the eDNA testing implemented by TEP indicated that GCN were absent from the ponds and no further recommendations were given.

Breeding Birds - Recommendations for bird box site enhancement followed the surveys by TEP after House Sparrow, Swallow and Common Pigeon were found nesting within buildings on site, and a host of common bird species were noted utilising the site for other purposes, such as foraging.

Reptiles - TEP recommended Reasonable Avoidance Measures (RAMS) for reptiles, most notably Grass Snake, after records were flagged up during their 1km desktop search. TEP also recommended dismantling of suitable refugia to support reptiles during the months of May - October as to avoid the hibernation season of reptiles.

Other animals - TEP concluded that there is a high likelihood that Hedgehog and Common Toad use the site and recommended a pre-works method statement be adhered too in order to avoid harm occurring to both species.

8.0 Field Survey results

8.1 Overview

The site boundary comprises approximately 1.6ha in area; it is a former farm now redundant of that purpose, it features a dwelling “Gamford House” in the south (Building 1), a number of outbuildings (Buildings 2-10), scattered trees, scrub, tall ruderal habitat, rough grassland, hedgerow and a pond. A second pond is found 45metres to the south-west, outside of the survey boundary.

8.2 Vegetation

During the site walkover no botanical species of conservation importance were identified across the extent of the survey area, nor were any species notified under Schedule 9 (Part II) of the Wildlife and Countryside Act (1981) (as amended) observed. All five weeds notified as such under the Weeds Act (1959) are present - Creeping Thistle, Spear Thistle, Curled Dock, Broad-leaved Dock and Common Ragwort.

See **Appendix II** for the botanical species list.

8.3 Phase 1 Habitat Survey

All species nomenclature follows Stace, C. (2010) – definitive English names.

*Please refer to **Appendix I - Phase 1 Habitat Map**, for the location of all described habitats.

Target Notes

- 1 - Burnt out dwelling “Gamford House” (Building 1)
- 2 - A mature Pedunculate Oak (*Quercus robur*) with potential roost value to bats
- 3 - Location of a Brown Rat prey larder
- 4 - Location of recent bonfire damage and scorched ground
- 5 - Recently laid new building foundations
- 6 - High value hibernacula to amphibians and/or reptiles

A1.2.2 - Coniferous Woodland - Plantation

A small mixed species thicket is present just south of Pond 1, containing Norway Spruce and Scot's-pine with an understory that includes Japanese Rose, Ivy and several introduced garden species.

A2.1 and A2.2 - Scrub - dense/continuous and scattered

There are varying areas of scrub within the site largely represented by dominant Bramble and Willow sp., though other species such as Hawthorn, Elder and Butterfly-bush occur.

B2.2 - Neutral semi-improved grassland

Grassland throughout the site is rough and unmanaged; in the boundary north it is significantly disturbed by tyre tracks and bonfire damage (Target Note 4); Ox-eye Daisy and Black Medick are noted; the grassland in the centre and south contains species such as Common Rampion, Fumitory, Yorkshire-fog, Red Fescue, Broad-leaved/Curled Dock and Common Sorrel amongst others.

C3.1 - Other tall herb and fern - ruderal

Largely represented by Creeping Thistle, Common Nettle and Hogweed though includes Willow-herbs, particularly around Pond 1 on site.

G1 - Open Water

One pond is found within the site boundary (Pond 1) whilst a second lies outside of the site boundary (Pond 2). Vegetation at Pond 1 includes Iris spp., Cow Parsley and Common Reed. At Pond 2 (outside of the site boundary) vegetation mainly includes Floating Sweet-grass, Common Nettle and Creeping Thistle. Ponds described in Table 5.

J2.1.2 - Intact hedge - species-poor

Comprised of Hawthorn, Blackthorn, Holly, Field Maple. A large Pedunculate Oak breaks up the hedge but ultimately forms part of the 'intact' hedge (Target Note 2).

J3.6 - Buildings

A number of buildings are present at the site, described in Table 2.

J4 - Bare Ground

Bare ground is used to describe areas of hardstanding and/or bare earth found throughout the site.

8.4 Bats

All buildings are described in relation to bats (Table 2); building references, descriptions, roost category and imagery are presented. A topographical illustration is also provided overleaf, to be used in conjunction with the building descriptions (Figure 5).

Broadly in relation to bats the site contains an abundance of scrub, scattered trees, rough grassland and intact hedgerow habitat, as well as an absence of lighting at night, which should be considered valuable to Brown Long-eared and Pipistrelle bats in terms of foraging and commuting.

Evidence of tree felling is present in the south of the site, close to Gamford House. All standing trees were assessed for their potential to support roosting bats; trees are generally semi-mature having grown through unmanaged seral succession in the last estimated 10-40 years, however one mature Pedunculate Oak (Target Note 2) forms part of the hedgerow along the southern site boundary, it is sizeable, contains dense Ivy and of an age whereby potential roost features (PRF) could be hidden at height. All other trees on site are considered absent of roost potential in respect of bats, given an absence of cavities, cracks, holes, splits or fissures which could be utilised by bats for the purposes of roosting.

NB: *For general reference in relation to Table 2: Loft dwelling bats (such as Brown Long-eared bats) generally prefer large, unrestrictive loft spaces that have consistently warm temperatures and allow free flight; whilst crevice-dwelling bats (such as the Pipistrellus genus) prefer to roost within cavities, such as between roof lining and roof slate, though bats will seek ad-hoc ingress opportunities for roosting where access permits.*



Figure 5 - Illustrative guide to Building locations - to be used in conjunction with Table 2

Gamford Farm, Gamford Lane, Rossett, LL12 0EW
Preliminary Ecological Appraisal

Table 2 – Buildings at Gamford Farm and their suitability for roosting bats

Building Ref	Description and Roost Potential	Photographs
1	<u>Gamford House</u> A two-storey brick dwelling with destroyed pitch, slate roof. It has previously been a confirmed Common Pipistrelle maternity roost prior to suffering fire damage on the 5th November 2018 (TEP & Arbtech 2015). The roof is now entirely absent, and all that remains are the intact building gable elevations and damaged ground level compartments/extensions. The building is fenced and internal access was prohibited by the client on the considered grounds of health and safety. Considered unsuitable for breeding by Brown Long-eared bats. Potential remains present for roosting by crevice-dwelling bats due to crevices created in brickwork through damage, gaps present in brick at the gable elevation/remaining roofing slate interfaces, gaps beneath timber fascia's adorning the building and ingress potential present due to general dilapidation throughout the structure. Bat roost potential: Moderate	
2	<u>Stables</u> Dilapidated, single-storey brick building with a pitched slate roof and open wooden window frames. Separated into five independent compartments. No loft present. The south-western compartment has a false ceiling, creating a void space under the tiles; other compartments are open to the ridge, average room height of approx. 3 metres, underlay absent and the interior is draughty and part-illuminated. Unsuitable for breeding by Brown Long-eared bats but could be used for other purposes, such as a day roost / feeding station / hibernation. Potential for roosting by crevice-dwelling bats exists in the form of gaps in slates, brickwork and general dilapidation throughout. Bat roost potential: Moderate	

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Building Ref	Description and Roost Potential	Photographs
3	<u>Two large two-storey barns with adjoining pen and building ruins</u> Dilapidated, brick built with a multi-pitched, slate roof. No underfelt present, though a deteriorating lime and mortar application is noted in visible areas of the roof. South-west section: No loft but a rectangular roof void is present of approx. 2.5 metres high, accessible via ladder in south of the building, conditions are cluttered, part-illuminated and draughty. Unsuitable for breeding by Brown Long-eared bats but could be used for other purposes such as a day/night roost and/or feeding station. There exists an abundance of ingress provision for crevice-dwelling bats at the gable elevation, under eaves, at the ridge and within internal brickwork. Central section: Internal conditions are unknown as access was not gained due to severe structural damage particularly on the north-west elevation, now largely containing dense scrub growth. Gaps otherwise observed under ridge tiles, in roof slate and beneath the eaves. North-east section: No loft, large open barn with flighted stair access to a spacious upper floor; conditions are illuminated and draughty. Considered unsuitable for breeding by Brown long-eared bats but structure could be used for other purposes such as a feeding station. Potential roost features are limited internally though minor crevices are noted at wall plate level, where old beams are missing leaving holes in mortar, and within holes in internal render.  Roost potential: Moderate	    

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Building Ref	Description and Roost Potential	Photographs
4	<u>Large agricultural structure</u> Dilapidated, single-storey, part brick/block/timber built former livestock barn; the roof is made of pre-fabricated corrugated iron and cement asbestos. Largely open to an uneven roof pitch with internal room height of approx. 7.5 metres; screen windows present in roof, conditions are vastly spacious, fully illuminated and significantly draughty. Much of the building west is smothered in climbing Ivy which is also growing internally. The building east is open sided and areas which could be used for roosting by loft dwelling and crevice dwelling bats are absent. With an absence of suitable ingress features, the building is considered generally unsuitable for roosting by both loft-dwelling and crevice dwelling bats, though bats could forage within the structure as access permits. Roost potential: Negligible	
5	<u>Linear Stables A</u> Dilapidated, single-storey, brick stables with a pitched, slate roof - four compartments exist internally, half open door/window frames are present. Surrounded by dense scrub reaching roof height in all areas except for the south-facing gable elevation. Internal conditions are part-illuminated and draughty, underfelt is absent and a false ceiling has collapsed revealing a deteriorating lime and mortar application. Unsuitable for breeding by Brown Long-eared bats but could be used for other purposes by BLE such as day/night/feeding/hibernation roost. Potential exists throughout for roosting by crevice-dwelling bats, in the form of gaps at timber joists, loose/missing slates, and general dilapidation throughout the structure. Roost potential: Moderate	

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Building Ref	Description and Roost Potential	Photographs
6	<u>Linear Stables B</u> Dilapidated, single-storey brick structure with a dual level pitch, slate roof - seven compartments internally and open door/window frames. Surrounded by dense scrub on its western elevation reaching roof height. Contains a small roof void on its south-eastern section which could not be accessed on the grounds of health and safety but is considered a stable compartment with better shelter than the rest of the structure - internal conditions are spacious, part-illuminated and draughty, underfelt is absent, a deteriorating lime and mortar application is present. The roof has partially collapsed in the north-west of the structure. Unsuitable for breeding by Brown Long-eared bats but could be used for other purposes by BLE. Potential exists for roosting by crevice-dwelling bats, in the form of gaps at ridge tiles, damage in roof, beneath end slates, loose/missing slates, general dilapidation in brick and timber. Roost potential: Moderate	
7	<u>Triple-pitched storage Barns</u> x3 adjoined structures, all single-storey, triple-pitched cement asbestos roof. Building is of metal, breeze-blocks and timber construction. No underlay throughout, typical room height of 7.5 metres, screen windows present in cement asbestos and iron sheet roof, lack any loft spaces and is open to the ridge in all compartments. Fully illuminated, draughty and spacious. Open sided in several places, missing timber and sheeting provides ease of internal access to flying animals. Dense, extensive scrub is present along the general north and east of the building.	

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Building Ref	Description and Roost Potential	Photographs
7 cont ...	With an absence of suitable ingress features, the structure is considered unsuitable for roosting by both loft-dwelling and crevice dwelling bats, however, bats could fly in and out of the structure for foraging purposes. Roost potential: Negligible  	  
8	<u>Vent-build</u> Dilapidated, single-storey, brick and breeze block construct with a cement asbestos, pitched roof. Willow scrub grows high over the northern elevation and the building is attached to a breeze block tower (Building 8a). Access is only possible via doorframe on the south-facing elevation. No lofts present, the interior is illuminated, draughty and spacious. Underfelt is absent and crevice opportunities are lacking internally, though minor gaps exist at wall plate. With an absence of suitable ingress features, the structure is considered, in it's entirely, unsuitable for roosting by both loft-dwelling and crevice dwelling bats. Roost potential: Negligible	 

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Building Ref	Description and Roost Potential	Photographs
8a	<u>Tower construct</u> A single-storey brick and breeze-block tower adjoined to Buildings 8 and 9, the brick section contains a pitched, asbestos sheet roof and the tower section contains a flat, asbestos and plastic sheet roof. There are no loft spaces present and roof lining is absent; the interior is fully illuminated, spacious and draughty as the structure is open ended on its north-eastern elevation. Outside of potential hidden opportunities at wall plate height, there are no internal or external cavity features that could be used by bats for ingress or roosting. With a absence of suitable roost features the structure is considered unsuitable for roosting by both loft-dwelling and crevice dwelling bats. Roost potential: Negligible 	 

9	<u>Overgrown pig pens</u> Dilapidated, single-storey former pig pen made of brick and external render with a pitch, slate roof. Significantly damaged throughout and with dense scrub; inaccessible. Internal conditions are thus unknown though are undoubtedly draughty and part-illuminated. Gaps are evident in the roofing slate; both the centre-east section and the south facing gable elevation are significantly damaged creating large gaps in brick and mortar, including open internal access. Considered unsuitable for loft dwelling bats but could be utilised by crevice-dwelling bats. Roost potential: Low	
10	<u>Flat damaged pens & foundations</u> Single-storey former pens attached to several incomplete building foundations. Dilapidated, flat-roofed and open sided. Multi-compartmental, underlay is absent, internal conditions are cramped, illuminated and draughty. Generally, in good condition and appears to be lacking potential roost features. The structure is considered unsuitable for roosting bats due to an absence of features that could be used for bat roosting or otherwise provide hidden ingress opportunities. Roost potential: Negligible	

8.5 Terrestrial Mammals

No Hedgehogs (*Erinaceus europaeus*) or evidence of Hedgehog was found during the survey; however, given the good connectivity around the site, combined with the overgrown nature it is considered that there are many opportunities for shelter, breeding and hibernation. Furthermore, rough grassland habitat provides favourable platform for foraging. No hogs are observed; however, this can frequently be the case due to their nocturnal preferences.

Red Fox (*Vulpes vulpes*) scat was located inside Building 4; a larder of dead Brown Rats was located on a bale of hay in Building 8a (Target Note 3), potentially indicative of a Red Fox prey larder.

8.6 Breeding Birds

An observation of birds utilising Gamford Farm noted evidence of historic nesting by two species, House Sparrow (*Passer domesticus*) and Swallow (*Hirundo rustica*), with nests found in various buildings, whilst other species were encountered generally roosting and/or flying over the site (Table 3).

In relation to Schedule 1 birds such as Barn owl, the site is found in an area that is considered optimal habitat for this species hunting requirements and some of the buildings surveyed have the potential to support Barn owls for breeding/roosting purposes, however, no evidence to suggest the presence or historic presence of this species was observed.

Table 3 - Birds recorded during the survey

Common name	Scientific name	Abundance	Comment
Feral Pigeon	<i>Columba livia domestica</i>	1	Dead bird found in Building 8a
Carion Crow	<i>Corvus corone</i>	3	Flushed from Building 8a upon entering the site
Jackdaw	<i>Corvus monedula</i>	1	Heard not seen near the boundary east
Blue Tit	<i>Cyanistes caeruleus</i>	1	Seen flying near to Pond 1
Robin	<i>Erithacus rubecula</i>	1	Fleeting between scrub at Buildings 4, 5 and 6
Kestrel	<i>Falco tinunculus</i>	1	A feather found located near to Building 8
Chaffinch	<i>Fringilla coelebs</i>	1	Heard not seen from south boundary hedge
Swallow	<i>Hirundo rustica</i>	Historic nests x2	Nesting material found in Building 8 and 8a
Pied Wagtail	<i>Motacilla alba</i>	1	Flew through the site south to north
House Sparrow	<i>Passer domesticus</i>	Historic nests x3	Nesting material found in Buildings 3, 4 and 5
Pheasant	<i>Phasianus colchicus</i>	1	Seen just outside the site north
Duncock	<i>Prunella modularis</i>	1	Seen at roost in scrub in the north of site
Wren	<i>Troglodytes troglodytes</i>	1	Calling from scrub in the north of site
Blackbird	<i>Turdus merula</i>	1	A female flushed from scrub by Pond 1

8.7 Amphibians

Great Crested Newt (GCN)

One pond is located within the site boundary (Pond 1) with a second pond located 45 metres to the south-west, outside of the site boundary (Pond 2) (Figure 6). Terrestrial habitat within the site comprises a mix of moderate to high value to amphibians, inclusive of hedgerow, rough grassland, dilapidated structures, piled refugia/aggregates and potential hibernacula in core proximity (<50metres) from two potential breeding ponds. No significant barriers prevent commuting between the two ponds, though Gamford Road adjacent to site, poses a low risk of road kill.

Both ponds were scored using GCN HSI and are described below (Tables 4 and 5).

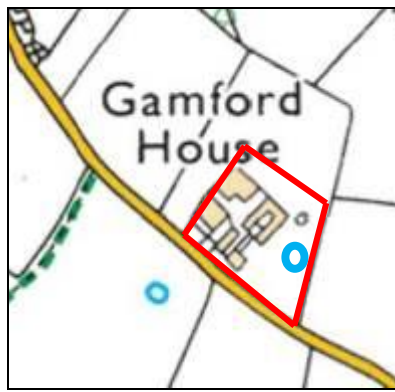


Figure 6 - Location of ponds in/within 250metres of site (Source: OS Maps 2018)

Table 4 - HSI scoring

Great Crested Newt (GCN) HSI method			
Key to Suitability Indices: SI1 - Geographic location SI2 - Pond area (to nearest 50m2) SI3 - Pond permanence SI4 - Water quality SI5 - Shading % SI6 - Presence of waterfowl SI7 - Presence of fish SI8 - Pond density in area SI9 - Terrestrial habitat quality SI10 - Macrophyte cover in pond		HSI Score <0.50 0.50 – 0.59 0.60 – 0.69 0.70 – 0.79 >0.80	Pond suitability = Poor = Below Average = Average = Good = Excellent
Pond ref	Pond 1	Pond 2	
SI1 - Location	1	1	
SI2 - Pond area	0.9	0.2	
SI3 - Pond drying	0.9	0.5	
SI4 - Water quality	0.67	0.33	
SI4 - Shade	1	1	
SI6 - Fowl	1	0.67	
SI7 - Fish	1	1	
SI8 - Ponds	0.95	0.95	
SI9 - Terr'l habitat	1	0.67	
SI10 - Macrophytes	0.6	0.4	
HSI	0.89	0.60	

Table 5 - Pond details

Pond Ref	National Grid Reference	Pond Suitability	Description
1	SJ37845737	Excellent	Located within the site boundary east. Circular in shape, surrounded by rough grassland, tall ruderal and Willow sp. scrub that affords superb connectivity to nearby scrub and hedgerow. Contains semi-aquatic plants, a thin line of oil/pollution is found on the surface of the water, water turbidity is low/clear (1/5) and the base of the pond contains leaf litter. Banks are moderately inclined and the estimated depth is 1.5ft deep centrally. Proximity to impact development zone is immediate (less than 25 metres west). 
2	SJ37715737	Average	Located 45 metres south-west of site boundary. A circular pond with island, surrounded by tall/ruderal and limited scrub. Good connectivity to nearby hedgerows. Pond contains Fool's Water-cress and a <i>Veronica</i> sp., water turbidity is low/clear (2/5). Banks are shallow, estimated max depth of 2ft in areas Mallard duck pair present during survey, separated from development site. 

Two significant areas of hibernacula (Figure 7) are assimilated in the north of the site (Phase 1 Habitat Map - Target Note 6). These areas contain an abundance of materials such as iron sheets, bricks, paving slabs, tyres and general rubble covered by swathes of rough grassland, tall ruderal, scrub and bare earth and lie within close proximity of two breeding ponds. These areas provide optimal conditions for hibernating amphibians most notably GCN, but inclusive of common amphibians such as Common Frog (*Rana temporaria*) and Common Toad (*Bufo bufo*), two species which are anticipated to use the site despite not being encountered during the survey.



Figure 7 - Location of two areas considered optimal hibernacula for amphibians and reptiles

It should also be noted that the site contains pits, areas of excavation and man holes that could inadvertently act as death traps to small animals such as amphibians, given an absence of suitable escape opportunities.

It is understood Pond 1 will be retained as part of the proposals, though approximately 1.6ha of land will be permanently modified and significantly impacted through mechanical operations, demolition, excavation and removal of terrestrial features (including two areas of hibernacula), subsequently followed by development of dwellings and landscaping.

In the absence of mitigation, it is considered that risks to GCN could arise in the form of disturbance, injury or death subject to their presence in the vicinity. In order to determine whether the proposed development will result in the contravention of legislation and therefore subsequently require a development licence the Natural England “Rapid Risk Assessment” tool has been used for the proposed works (Table 6).

Table 6 - N.E Rapid Risk Assessment

Component	Likely effect (select one for each component; select the most harmful option if more than one is likely; lists are in order of harm, top to bottom)	Notional offence probability score
Great crested newt breeding pond(s)	No effect	0
Land within 100m of any breeding pond(s)	>1 ha lost or damaged	0.9
Land 100-250m from any breeding pond(s)	No effect	0
Land >250m from any breeding pond(s)	No effect	0
Individual great crested newts	Killing or injuring newts	0.8
Maximum:		0.9
Rapid risk assessment result:	RED: OFFENCE HIGHLY LIKELY	

8.8 Reptiles

No reptiles or evidence of reptiles is found during the survey; however, the presence of ponds, banked bare earth, open water, rough grasslands, scrub features, scattered debris and hedgerow on site provides suitable basking, hunting, refuge and commuting habitat; furthermore, the results of the desktop search highlights records of Grass Snake within the immediate locality, notably 427metres to the north-west.

The presence of amphibian prey such as Common Frog and Common Toad is highly anticipated, which will attract Grass Snakes to the development site, whilst the presence of piled hibernacula in the boundary north (Figure 7, previous page) could support reptiles as equally as it could support amphibians, as it provides ample platform for both basking and shelter.

9.0 Conclusions & Recommendations

Vegetation

- 9.1 The survey concludes that no notable flora of conservation importance reside within the survey boundary. There are no alien species listed as ‘invasive’ under Sc.9 (Part II) of the Wildlife & Countryside Act (1981) (as amended) present therefore no implications are applicable in relation to invasive species. All five injurious weeds listed by the Weeds Act (1959) occur within the survey area; legislation places a duty of care on landowners to ensure injurious weeds do not spread as to affect agricultural systems.

Habitat

- 9.2 Pond and hedgerow are habitats listed on section 7 of the Environment (Wales) Act 2016, thus both considered notable habitats at local level. Proposals are understood to be retaining both habitats; however, if proposals are to be amended to incorporate the loss of these habitats potential mitigation measures will be applicable and may need to be implemented to offset the loss of local priority habitat

Bats

- 9.3 Six buildings have been categorised as possessing bat roost potential, in accordance with current BCT guidelines. Buildings 1, 2, 3, 5, 6 pertain to having “Moderate” potential and Building 9 pertains to having “Low” potential. It is recommended that a suite of bat surveys should be undertaken at the site within the main active season of bats (May - August) in order to establish if/which buildings are being used by bats and if so identify the species, abundance, roost locations and flight lines following emergence/re-entry. Buildings with moderate potential typically require two dusk/dawn surveys; buildings with low potential require one survey (Figure 8) though the survey protocol will be decided based upon further discussion.

Table 7.3 Recommended minimum number of survey visits for presence/absence surveys to give confidence in a negative result for structures (also recommended for trees but unlikely to give confidence in a negative result).		
Low roost suitability	Moderate roost suitability	High roost suitability
One survey visit. One dusk emergence or dawn re-entry survey ^a (structures).	Two separate survey visits. One dusk emergence and a separate dawn re-entry survey. ^b	Three separate survey visits. At least one dusk emergence and a separate dawn re-entry survey. The third visit could be either dusk or dawn. ^b
No further surveys required (trees).		

^a Structures that have been categorised as low potential can be problematic and the number of surveys required should be judged on a case-by-case basis (see Section 5.2.9). If there is a possibility that quiet calling, late-emerging species are present then a dawn survey may be more appropriate, providing weather conditions are suitable. In some cases, more than one survey may be needed, particularly where there are several buildings in this category.

^b Multiple survey visits should be spread out to sample as much of the recommended survey period (see Table 7.1) as possible; it is recommended that surveys are spaced at least two weeks apart, preferably more. A dawn survey immediately after a dusk one is considered only one visit.

Figure 8 - Bat Conservation Trust extract

NB: Where more detailed bat surveys are recommended, following an initial investigation, then Local Authorities on the advice of their ecological advisors, may not determine the application until such time that all relevant information is gathered, i.e. by conducting dusk/dawn surveys. The advice that is provided by the ecological advisors is also in accordance with the obligations placed upon Local Authorities by way of its duties under the Conservation of Habitats & Species Regulations 2017. Therefore, it would be prudent to make enquiries to the relevant departmental Planning Officer before submitting a Planning Application that includes an ecological survey report that recommends more detailed surveys.

- 9.4 It should be noted that where bat/s or their roost/place of rest/shelter will be affected by the proposed works then to allow developmental works at the site to legally commence an application for a European Protected Species Mitigation Licence (EPSML) and subsequent granting of a licence will be required. Notwithstanding the granting of a licence, works that would affect a roost cannot take place if a maternity colony is in occupation. It should also be noted that before an EPSML can be applied for, all Planning issues, including Consent and any pre-commencement Planning Conditions relative to bats, should be resolved.
- 9.5 One tree has been identified as possessing a non-conclusive level of bat roost suitability, namely the Pedunculate Oak present within the hedgerow along the southern site boundary (Target Note 2). It is understood that no removal/modification plans are in place concerning the Oak, thus, no implications are considered currently applicable; if plans change so as to affect the Oak in any way, further investigative action by a licenced ecologist and arborist is recommended prior to any works.
- 9.6 The overall nature of the site to all aspects is considered to hold good value for foraging and commuting by bats. Installation of lighting as part of any development that exceeds the current low levels may have a negative impact upon bats, particularly if increased light spillage occurs in areas that are currently free from illumination which includes the parameters of the site boundary. If inappropriate and ill designed lighting is implemented, then there is likely to be an adverse impact upon bats; see extract below from Bat Conservation Lighting Guidelines.

Type of lamp (light source): The impact on bats can be minimised by the use of low-pressure sodium lamps or high-pressure sodium instead of mercury or metal halide lamps where glass glazing is preferred due to its UV filtration characteristics.

Lighting should be directed to where it is needed, and light spillage avoided. This can be achieved by the design of the luminaire and by using accessories such as hoods, cowls, louvres and shields to direct the light to the intended area only. Planting can also be used as a barrier or manmade features that are required within the build can be positioned so as to form a barrier.

Predicting where the light cone and light spill will occur: There are lighting design computer programs that are widely in use which produce an image of the site in question, showing how the area will be affected by light spill when all the factors of the lighting components listed above are taken into consideration. This should be a useful tool to inform the mitigation process.

Light levels: The light should be as low as guidelines permit. If lighting is not needed, don't light.

It is recommended that a lighting plan be designed which follows the BCT guidance, in respect of lighting impacts on bats.

Terrestrial Mammals

- 9.7 As proposals involve the removal of woody successional scrub, demolition of dilapidated buildings, digging of excavations and removal of piled heaps; impacts to Hedgehog are anticipated, mainly through loss of refuge habitat. It is considered this impact can be offset through the provision of two Hedgehog homes placed in the boundary east near to the hedgerow, prior to the commencement of works and permanently retained thereafter. See **Appendix IV** for design ideas.

- 9.8 Where open vertical-sided trenches are present or newly excavated on site it should be ensured that they are not left open overnight to avoid Hedgehogs and other small animals falling into them and becoming trapped. If trenches cannot be back filled after the working day, planks of 150 mm wide should be placed in them to serve as an escape mechanism. Excavations should also be checked in the morning on a daily basis for the presence of any animals that may have fallen in during the night. Plastic netting, wire coils or similar hazardous features should not be left on the ground, to avoid entanglement. Aggregates/constructional materials should be stored on pallets as opposed to the storing on the ground.

Breeding Birds

- 9.9 There are no implications in relation to Schedule 1 protected birds such as Barn owl, despite immediate environs being considered valuable hunting habitat and despite the site containing several suitable dilapidated buildings that could support this species for breeding/nesting. No further recommendations are necessary concerning this species.
- 9.10 In respect of common birds, a host of species were observed, including three section 7 species and historic nests attributed to two of those section 7 species, namely House Sparrow and Swallow, within 5 of the buildings.

House Sparrow are 'Red listed' birds under Birds of Conservation Concern 4 (BoCC 4) (2015). Red listed birds are species classified as globally threatened, having suffered a significant reduction in range as well as local declines over recent years; red-listed birds also frequently feature on local biodiversity action plans (LBAP) which are designed to encourage the kind and careful consideration of wildlife in planning.

Swallows are a migratory species, faithful to their nesting sites and will return to them on an annual basis. Building demolition is likely to impact on this species nesting sites.

As a general recommendation, any building demolition and removal of any woody vegetation from site is conducted outside of the breeding bird season (March – August) unless it can be conclusively established by an ecologist immediately beforehand that breeding birds are absent from features.

NB: *All wild birds (with only minor exceptions) and their nests whilst being built or containing eggs or dependant young are protected under the Wildlife & Countryside Act 1981 (as amended). It is a punishable offence to interfere in any way with active nest, including disturbance*

Enhancement for nesting House Sparrow and Swallow is recommended as a planning condition.

See Appendix IV for ideas.

Amphibians

- 9.11 Two ponds have been categorised as “Excellent” and “Average” in relation to Great Crested Newt suitability, described terrestrial habitat on site is considered moderate/high value in relation to GCN.
- 9.12 GCN presence/absence surveys are required to be undertaken prior to any development to inform the current population level, in order to avoid an offence occurring under the Conservation of Habitats & Species Regulations 2017 and in order to inform appropriate mitigation strategy for the scheme. Aquatic surveys need to be undertaken at Ponds 1 and 2, requiring permission from the landowner of Pond 2, which is the responsibility of the developer to seek.

The survey methods should follow those outlined by English Nature’s publication GCN Mitigation Guidelines (2001) and guidance provided by Gov.UK, Protected species licences (2015). Field techniques for surveying Great Crested Newt primarily involve using three methods from the following:

- netting,
- egg search,
- terrestrial refuge search,
- torching,
- aquatic funnel (bottle) trapping

Four surveys are to be undertaken per pond within the recommended period of mid-March to mid-June, with at least two visits during the peak activity period of mid-April to mid-May. If GCN are observed within a water body then an additional two visits are required to estimate population, size-class present, required informing the strategy of mitigation. If GCN are present it is highly likely that a European Protected Species Mitigation Licence (EPSML) application will be required to be made to Natural Resources Wales, after planning permission has been granted, to allow the development to legally proceed.

Mitigation will then be required in the form of new and/or enhanced habitat to replicate what is to be lost. The particular details of mitigation will require concise consideration once the results of the newt surveys are known and confirmed during consultation with Natural Resources Wales as part of the licence process.

Mitigation is likely to include:

- The capture and removal of GCN from the development risk area, including translocation to a new or existing receptor area, in order to minimise the risk of harm/injury/death to newts by exclusion from works.
- Retention of existing habitats suitable for GCN, particularly rough grassland and hibernacula. This can include new planting and habitat manipulation in order to create and enhance new areas of habitat.
- The monitoring of the population on an annual basis during an appropriate “aftercare” period, in order to assess the success of the mitigation strategy and ensure the population is maintained at a favourable conservation status

- 9.13 It should be stipulated that GCN will use accumulated piles for shelter and/or hibernacula during the terrestrial and/or overwintering stage of their life cycle, inclusive of the two large areas of hibernacula noted in the north of the site (Figure 6, Page 28). Contractors are required to leave these areas well alone in advance of GCN surveys, and it is recommended that contractors cease from creating any further piles of debris/aggregates/rubble around the site from henceforth, in order to prevent incidental animals in the locality from taking up residence in an area close to a potential breeding pond.

At no point should any person handle a GCN or suspected GCN. Unlicensed handling and/or disturbance to GCN is illegal and may cause the newt unnecessary stress and injury, almost certainly resulting in the contravening of legislature. An ecologist should be contacted to provide guidance on the correct course of action if GCN are found on your site. Offences to protected species can instigate fines of up to £5000 per animal and a 6-month jail term.

Reptiles

- 9.14 Though not encountered during the survey the presence of Grass Snake is anticipated on site, due to Cofnod records confirming their presence within 500 metres within the previous 5 years, favourable connectivity to confirmed areas and favourable habitat present within the development site, which both supports their prey and offers refugia/basking platform.
- 9.15 In cohesion with the recommendations of TEP (2015) it is considered that a statement of reasonable avoidance measures (RAMS) should be created tailored to reptiles. The measures will then need to be adhered too by site contractors, in order to avoid potential impacts occurring to localised reptiles which may be in the area, namely Grass Snake but inclusive of other reptiles. The RAMS should include the ecologist supervised dismantling of two areas of refugia found in the north of the site, however, due to the legal implications with regards to Great Crested Newt as outlined above and the possible requirement of a EPSML prior to developmental works, the production of the RAMS should be completed after such time as further information is gathered by the ecologists regarding GCN on site - i.e. - designed following GCN presence/absence surveys.

These measures and recommendations will also need to be agreed with the LPA.

10.0 References & Further Reading

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Appendix I: Site Photographs

(Images below are site generic, for pictures of buildings see section 8.4, for ponds see section 8.7)



Plate 1 - Scrub around Buildings 5-6



Plate 2 - Hibernacula in the north-west of the site



Plate 3 - Alternative view of Hibernacula in the north-west of the site



Plate 4 - Bonfire damage in the north of the site, Target Note 4



Plate 5 - Evidence of nesting birds in Building 4



Plate 6 - A second area of hibernacula in the central-north of the site



Plate 7 - Larder of Brown Rat prey found on hay inside Building 8a (Target Note 3)



Plate 8 - Image taken from the centre of the site looking south, you can see Buildings 3 (red brick centre left) and 6 (red brick, centre right)



Plate 9 - Kestrel feather find by the entrance of Building 8a



Plate 10 - Newly built building foundation, Target Note 5



Plate 11 - Image taken of the former dwelling (B1) now burnt out, taken from outside the site

Appendix II: Botanical Species List

Each species recorded was given an abundance value according to the standard DAFOR scale, where:

D	=	Dominant
A	=	Abundant
F	=	Frequent
O	=	Occasional
R	=	Rare

*These values can be prefixed by the letter L (locally), to provide more subtle biogeographical data.

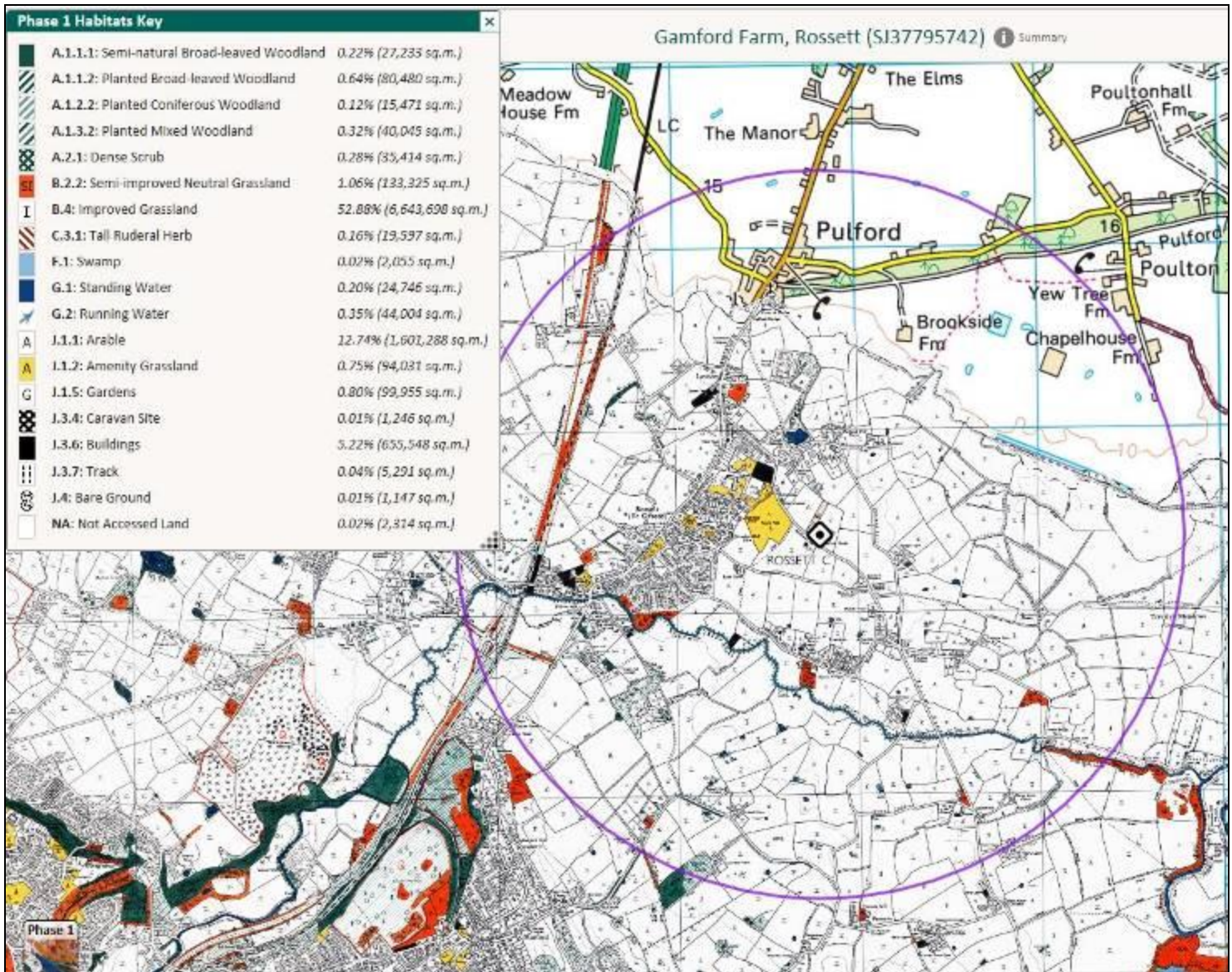
P, meaning Present, is given where an abundance value has not been calculated.

Common Name	Scientific Name	DAFOR
Cow Parsley	<i>Anthriscus sylvestris</i>	F
Mugwort	<i>Artemisia vulgaris</i>	O
Daisy	<i>Bellis perennis</i>	O
Soft Brome	<i>Bromus hordeaceus</i>	R
Butterfly-bush	<i>Buddleja davidii</i>	LF
Common Mouse-ear	<i>Cerastium fontanum</i>	F
Creeping Thistle	<i>Cirsium arvense</i>	O
Spear Thistle	<i>Cirsium vulgare</i>	O
Hazel	<i>Corylus avellana</i>	P
Hawthorn	<i>Crataegus monogyna</i>	A
	<i>Crepis sp.</i>	P
Cock's-foot	<i>Dactylis glomerata</i>	A
Perennial Wall-rocket	<i>Diplotaxis tenuifolia</i>	R
Male-fern	<i>Dryopteris felix-mas</i>	R
	<i>Epilobium sp.</i>	F
Petty Spurge	<i>Euphorbia peplus</i>	R
Beech	<i>Fagus sylvatica</i>	R
Red Fescue	<i>Festuca rubra</i>	A
Common Ramping-fumitory	<i>Fumaria muralis</i>	LA
	<i>Fumaria sp.</i>	P
Cleavers	<i>Galium aparine</i>	A
Dove's-foot Crane's-bill	<i>Geranium molle</i>	F
Hedgerow Crane's-bill	<i>Geranium pyrenaicum</i>	R
Common Ivy	<i>Hedera helix subsp. helix</i>	LF
Hogweed	<i>Heracleum sphondylium</i>	F
Yorkshire-fog	<i>Holcus lanatus</i>	A
Tutsan	<i>Hypericum androsaemum</i>	R
Holly	<i>Ilex aquifolium</i>	R
	<i>Iris ssp.</i>	LF
White Dead-nettle	<i>Lamium album</i>	O

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Red Dead-nettle	<i>Lamium purpureum</i>	R
Oxeye Daisy	<i>Leucanthemum vulgare</i>	LO
Perennial Rye-grass	<i>Lolium perenne</i>	A
Black Medick	<i>Medicago lupulina</i>	F
Common Reed	<i>Phragmites australis</i>	LO
Norway Spruce	<i>Picea abies</i>	P
Scots Pine	<i>Pinus sylvestris</i>	P
Ribwort Plantain	<i>Plantago lanceolata</i>	O
Greater Plantain	<i>Plantago major</i>	F
Annual Meadow-grass	<i>Poa annua</i>	O
Flattened Meadow-grass	<i>Poa compressa</i>	P
	<i>Poplar sp.</i>	P
Blackthorn	<i>Prunus spinosa</i>	P
Pedunculate Oak	<i>Quercus robur</i>	P
Creeping Buttercup	<i>Ranunculus repens</i>	O
Japanese Rose	<i>Rosa rugosa</i>	R
Bramble	<i>Rubus fruticosus agg.</i>	A
Common Sorrel	<i>Rumex acetosa</i>	O
Curled Dock	<i>Rumex crispus</i>	O
Broad-leaved Dock	<i>Rumex obtusifolius</i>	O
Grey Willow	<i>Salix cinerea subsp. cinerea</i>	A
Osier	<i>Salix viminalis</i>	R
Elder	<i>Sambucus nigra</i>	O
Common Ragwort	<i>Senecio jacobaea</i>	F
Perennial Sow-thistle	<i>Sonchus arvensis</i>	O
Smooth Sow-thistle	<i>Sonchus oleraceus</i>	O
Common Chickweed	<i>Stellaria media</i>	O
Dandelion	<i>Taraxacum officinale agg.</i>	F
White Clover	<i>Trifolium repens</i>	F
Scentless Mayweed	<i>Tripleurospermum inodorum</i>	O
Common Nettle	<i>Urtica dioica</i>	A
Germander Speedwell	<i>Veronica chamaedrys</i>	R

Appendix III: Data Search Results



Phase 1 habitat within 2km of Gamford Farm, provided by COFNOD

Appendix IV: Biodiversity Enhancement Strategy

West European Hedgehog

It is further recommended that x2 Hedgehog homes are provisioned within the east of the subject site boundary to compensate for loss of existing shelter platforms. It should be sited in a quiet position out of prevailing wind in an area with some nearby cover - in this instance beneath the hedgerow and scrub. Several design suggestions can be found below.



See - www.nhbs.com/igloo-hedgehog-home

House Sparrow

The Sparrow Terrace has been designed to help redress the balance of falling House Sparrow numbers. The current UK population is half what it was in 1980 and this is thought to be due to habitat destruction and lack of suitable nesting spaces. Sparrows are social birds and like to nest in company, therefore, this terrace provides ideal nesting opportunities for three families.

The terrace can be fixed on to the surface of a suitable wall or incorporated into the wall. It is suitable for all types of agricultural buildings such as barns.



See - www.nhbs.com/1sp-schwegler-sparrow-terrace

Swallow

These amazing birds follow the warm weather southwards every autumn and spend their winters in the southern tip of Africa. They make the return journey every spring arriving in April. Upon their arrival their first priority is to find a nest site but this is becoming harder as old buildings are demolished or repaired, farm buildings are secured or converted and some established nests are even deliberately removed in 'tidy-up' operations.

Fortunately, Swallows will use a special open nest box in an enclosed area such as a porch or outbuilding. A Swallow Nest should be sited inside a building which allows easy access for the birds via an open door or window, such as a garage or outhouse.

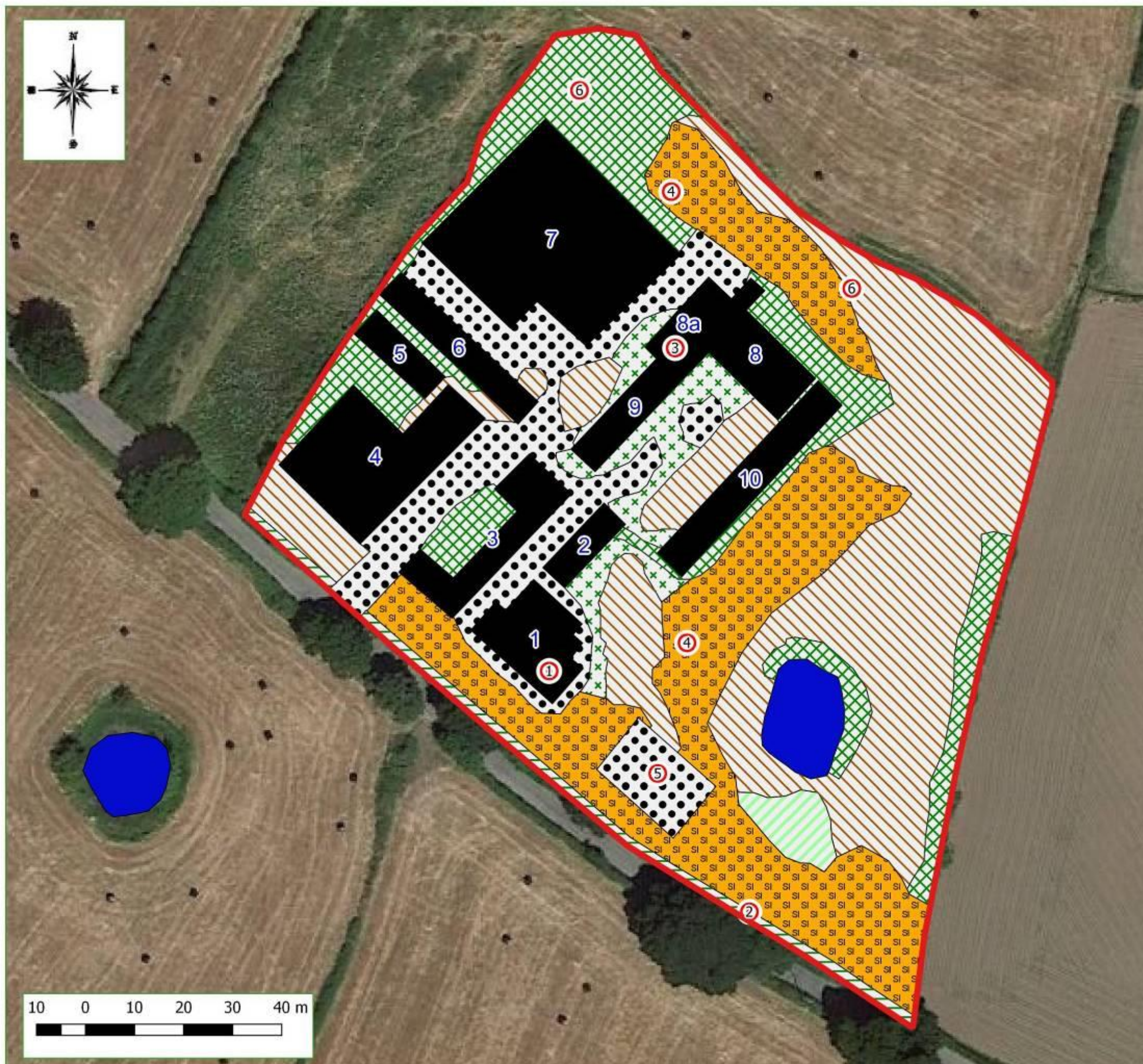
This WoodStone® Swallow Bowl is made from durable WoodStone®, a mixture of concrete and wood fibres, that is guaranteed to last for years and is mounted on an exterior grade plywood board.



See - www.nhbs.com/woodstone-swallow-nest-bowl

Appendix V: Phase 1 Habitat Map

Overleaf



Site Name: Gamford Farm, Rossett

Key

- Survey Site Boundary
- Target Note
- A1.2.2 - Coniferous woodland - plantation
- A2.1 - Scrub - dense/continuous
- A2.2 - Scrub - scattered
- B2.2 - Neutral grassland - semi-improved
- C3.1 - Other tall herb and fern - ruderal
- J2.1.2 - Intact hedge - species-poor
- J3.6 - Buildings
- J4 - Bare ground
- G1 - Open Water

Contains imagery courtesy of USGS Landsat data

Date: 26/11/2018
 Drawn: MJP
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