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Jubilee House, Sun Lane, Bowling Bank, Wrexham, LL13 9RP
(Grid Ref: SJ 40568 48014)

Ecological Appraisal

Prepared for:

Blueprint Architectural Services
Office 3k4, Redwither Tower
Abbey Road
Wrexham Industrial Estate
Wrexham
LL13 9XR

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Summary

It is proposed to convert a barn currently utilised as a workshop at the property known as Jubilee House. As part of the planning application Blueprint Architectural Services commissioned the Tyrer Partnership (Ecological Consultants) to undertake the Ecological appraisal.

The survey was conducted on 9th March 2016 when the barn that will be converted was inspected for potential places that may be of value to bats and if evidence of use was present. The barn features one area of an upper floor along with numerous compartments at ground level all of which were inspected with the use of high powered torchlight for the presence of bats or evidence of use, such as droppings or prey remains. The exterior elevations were investigated from ground floor level with the aid of close focussing binoculars for places that are frequently used by bats as roosts or as access into roost chambers.

The daytime survey was conducted by Ms K. Swift who is an experienced bat and field ecologist holding a Master's Degree in Conservation Management, Ms Swift also holds a Class 2 Natural England Bat Licence. More relevant to the site/location she is an accredited agent on the Natural Resources Wales bat licence held by Mr S Irwin. (51880:OTH:CSAB:2014)

Breeding opportunities for loft dwelling species are absent within the structure and the barn possesses localised potential for crevice dwelling bat species. The extending habitat offers potential foraging opportunities for typical crevice dwelling species such as hedgerows and mature tree lines. The results of the survey will instigate a recommendation for nocturnal survey work to be carried out on site prior to the commencement of the proposed conversion.

If bat/s or their roost/place of rest/shelter is subsequently affected by the work then a Natural Resources Wales (NRW) Mitigation Licence would be required to legally proceed with the development.

There are no current implications in relation to barn owls that would prevent the conversion of the building taking place and the proposals would not result in the loss of a site that is used by barn owls for breeding or roosting purposes. The presence of other nesting birds was found to be present in the form of House Sparrow, which was observed during the visit. Droppings were noted in numerous places within the barn suggesting that Swallows have been inside the barn some stage; however no evidence of nesting was located at the time of the survey.

During the survey of the site and localised habitat no evidence of badger either in the form of foraging activity or sett construction was found. Hedgehogs are, however, likely to be active within the locality and the general nature of the site would provide foraging resource for this species.

In relation to Great Crested Newts the onsite pond has only recently been established; the area immediate to the pond area is heavily disturbed. Along with the nature of the ground around the building and the scope of the works the report concludes that there will be no recommendations for presence/absence surveys on onsite pond or localised ponds but precautionary measures will be recommended. It is understood that the proposed conversion will not result in the clearance of any trees/hedges and that the soil/rubble heap around the pond will not be removed/disturbed.

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APPENDIX I - Site Photographs

1.0 Introduction & Reason for Survey

- 1.1 As part of the planning application regarding a barn and the immediate land that are located within the grounds of Jubilee House, Sun Lane, an ecological appraisal of the site was conducted by The Tyrer Partnership. Blueprint Architectural Services, on behalf of the site owner commissioned the inspection and report. It is understood that the proposals involve the conversion of the existing barn. As part of the Local Authority's Planning Policies ecological surveys are generally required, particularly where a specially protected species is or may be present and could be affected by the proposals for which the Application seeks consent.
- 1.2 The aim of the inspection was to initially ascertain if the building is of value to bats or breeding birds; if it was found to be suitable for bats, signs of use were located or the survey was inconclusive then more detailed surveys would be recommended i.e. dusk/dawn emergence/re-entry surveys during the main active season of bats which is May – August. If bat/s or their roost/place of rest/shelter is subsequently affected by the work then Natural Resources Wales (NRW) Mitigation Licence would be required to legally proceed with the development.
- 1.3 The optimum time to investigate any structure for evidence of a bat roost is May – August, however that is not to say they cannot be inspected and assessed outside of that time and frequently the results can be conclusive, which can save time and expense for Planning Applicants. It should be borne in mind that equally the inspection can be inconclusive.
- 1.4 Also included in the survey was an assessment/investigation for the possible presence of badgers or amphibians or any other ecological interest.

2.0 Site Related Protected Species

- 2.1 All UK 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 2010 (as amended). When dealing with cases where a European Protected Species (all UK bats) may be affected, a planning authority is a competent authority within the meaning of the Regulation 7 of the 2010 Regulations and therefore has a statutory duty to have due regard to the provisions of the Regulations in the exercise of its functions.

2.2 Use of Buildings by Bats:

- a) Summer breeding roost.
- b) Hibernation.
- c) Transitional or temporary roost.

Roost selection is often closely correlated to suitable foraging habitat within a reasonable commuting distance from the roost and different sites are used depending upon insect densities and abundance, climatic conditions can also affect their ability to successfully forage. All British bats are insectivorous.

** The term roost is generically referred to as a place that bat/s use for the any of the above reasons, however it should be noted that under the Conservation of Habitats & Species Regulations 2010 (Regulation 41) the term roost is not used but refers to “a *breeding site or resting place of such an animal*” and is afforded legal protection. The roost, breeding site or resting place of bats, which ever terminology is used is legally protected whether or not bats are in occupation.

- 2.3 Up to eleven bat species have been recorded in North Wales most of which use built structures, notably occupied residential properties, for roosting. The most frequently encountered species is the Pipistrelle bat (*Pipistrellus*) and its abundant status in North Wales is reflected throughout the UK.
- 2.4 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). Birds listed on Schedule 1 e.g. barn owls are afforded a greater level of protection. Where nesting birds are present then work should be Barn owls are regularly recorded within North Wales where an agricultural matrix that includes suitable bank sides of drainage ditches or rough pasture that will provide habitat for their main prey i.e. small mammals; however they are constantly under threat from loss of habitat and nest sites, which is a situation that is mirrored throughout most of the UK.
- 2.5 Badgers are a common mammal in North Wales, particularly where there is the combination of woodland and pasture but heavy mortality occurs on the region roads; they are afforded protection under the “Protection of Badgers Act 1992.”
- 2.6 The North-east Wales Important Areas for Ponds (IAPs) project AP covers the three counties of Flintshire, Denbighshire and Wrexham. This area supports large numbers of natural and man-made ponds with a very high pond density exceeding 30 ponds per square kilometre (18 times the national average) in parts of Wrexham County.

The North-east Wales IAP has three SACs and a number of SSSIs designated for their Great Crested Newt (*Triturus cristatus*) populations. The presence of a high density of populations of the Habitats Directive Annex II species Great Crested Newt is justification for making the whole of North-east Wales an IAP of European importance.

The above is relevant to the site as it appears that several ponds are within the locality that range from approximately 111 - over 250 metres from Jubilee farm.

3.0 UK Biodiversity Plans

- 3.1 The United Kingdom Biodiversity Action Plan lists priority species/habitats, which might potentially be present at a given site, based upon the site visit there is the potential for five UK priority species to be present** within or close to the immediate vicinity of the development boundary, these are shown in Table 1. The species list is not based upon actual observations but on an assessment of the nature of the habitat and surrounding habitat including buildings combined with existing population distribution data for the named species.

***Present - based on the location of the site it is geographically feasible in relation to population distributions and the habitat features/attributes on the site to be suitable for or at least partially fulfil the basic requirements of the named species as part of a wider ecological network.*

Table 1

Bird	Mammal	Herptile (Reptile & Amphibian)
Hedge accentor (<i>Prunella modularis</i>)	West European Hedgehog (<i>Erinaceus europaeus</i>)	Common toad (<i>Bufo bufo</i>)
Song thrush (<i>Turdus philomelos</i>)	Soprano Pipistrelle (<i>Pipistrellus pygmaeus</i>)	Great crested newt (<i>Triturus cristatus</i>)
House sparrow (<i>Passer domesticus</i>)		

4.0 Local Biodiversity Action Plan

4.1 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

Local Wildlife Sites

- 4.2 Whilst there is no legal protection for Local Wildlife Sites per se the presence of a protected species within them would attract the usual protection afforded to it/them. The Wrexham Biodiversity Action Plan lists key local species/habitats considered to be rare or declining in the area. Some may be of national concern, while others may only be locally rare. Some are statutorily protected, although the great majority are not.
- 4.3 *Planning Policy Wales* (PPW) (2002) sets out the land use planning policies of the Welsh Government (WG). It is supplemented by a series of Technical Advice Notes (TANs). Procedural advice is given in National Assembly for Wales / Welsh Office circulars. PPW, Ministerial Interim Planning Policy Statements (MIPPS), the TANs and circulars together comprise national planning policy to which local planning authorities in Wales must have regard in the preparation of development plans.
- 4.4 Detailed advice on the preparation of unitary development plans (UDPs) is contained in *Unitary Development Plans Wales*, 2001. Detailed advice on the preparation of Local Development Plans (LDPs) under the Planning and Compulsory Purchase Act 2004 is given in *Local Development Plans Wales*, 2005.
- 4.5 Technical Advice Note (TAN 5 2009) provides advice about how the land use planning system should contribute to protecting and enhancing biodiversity and geological conservation. This guidance note should be read in conjunction with *Planning Policy Wales* (2002), in particular with Chapter 5 *Conserving and Improving the Natural Heritage and Coast* which sets out the Assembly Governments objectives for the natural heritage and the land use planning policies which support these. When determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by applying the following principles:-

If significant harm resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused.

5.0 Survey Methodology

- 5.1 The daytime survey was conducted by Ms K. Swift who is an experienced bat and field ecologist holding a Master's Degree in Conservation Management, Ms Swift also holds a Class 2 Natural England Bat Licence. More relevant to the site/location she is an accredited agent on the Natural Resources Wales bat licence held by Mr S Irwin. (51880:OTH:CSAB:2014)
- 5.2 The building that is due to be converted, was inspected for potential places that may be of value to bats and if evidence of use was present. The exterior elevations were investigated with the aid of close focussing binoculars for places that are frequently used by bats as roosts or as access into roost chambers; additionally, any external gaps that may be used to access them were investigated for stains that can be present when regular use of an ingress point is made by bats.
- 5.3 The optimum time to investigate buildings for evidence of a bat roost is May – August, however that is not to say they cannot be inspected and assessed outside of that time and frequently the results can be conclusive, which can save time and expense for Planning Applicants but it should be borne in mind that equally the inspection can be inconclusive. If potential was found to be high or the results of the survey were inconclusive then recommendations would indicate the requirement for nocturnal observations to be undertaken at the site during the breeding season of bats. (May – August)
- 5.4 A number of factors are used for the bat survey methodology, which include:-
- Knowledge of bat species relevant to the site location
 - Nature of the immediate and surrounding habitat in relation to foraging opportunities
 - Condition of the building
 - 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.
- 5.5 A 'walkover' of the site was conducted which principally involves the identification of habitats and their biophysical composition. Additionally, identification of any actual fauna species and any physical evidence signifying the presence of fauna species would also be documented. This information will subsequently provide a baseline, which will then be used to establish if more detailed surveys and recommendations are required.
- 5.6 Prior to the survey an internet desktop study was undertaken, (Magic mapping) during which time it was searched for European Protected Species Licensed activities and if the application site lies within or close a locally or nationally designated site. In addition a "Priority Species" data search was requested via COFNOD.
- 5.7 **NB:** Where more detailed surveys for protected species are recommended, following a daytime survey, then the Local Planning Authority, on the advice of their ecological advisor, are unlikely to determine an application until such time that all relevant information is gathered, i.e. until all additional survey work has been completed. The advice that is provided by the ecological advisor is also in accordance with the obligations placed upon Local Authorities by way of its duties under the Conservation

of Habitats & Species Regulations 2010 (as amended). Therefore it would be prudent to make enquiries to the relevant departmental Planning Officer or their ecological advisor before submitting a Planning Application, which includes a report that recommends more detailed surveys.

6.0 Constraints

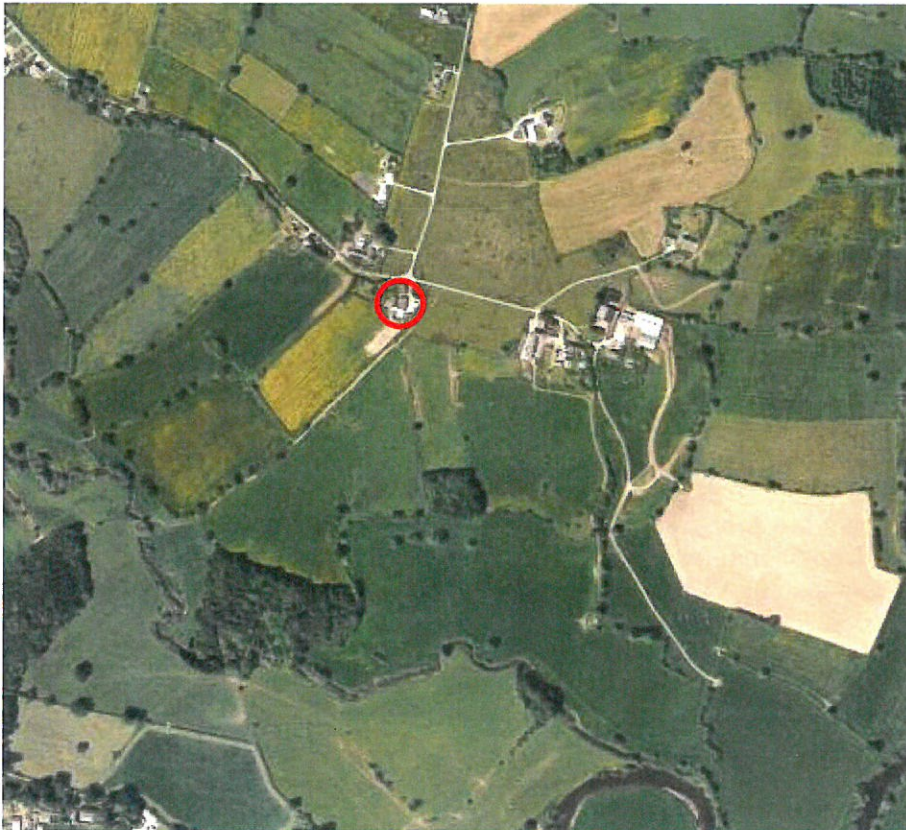
- 6.1 The daytime survey was conducted outside of the breeding season of bats and birds; although full access was achievable to all exterior elevations and interior compartments of the barn.
- 6.2 Although many terrestrial mammal species such as badgers and hedgehogs are less active at this time of year field signs can still be noted and a general assessment of the sites features in relation to its productivity for species can be carried out.
- 6.3 Whilst no constraints were present at the survey area relative to amphibians nearby ponds (if they still exist) could not be accessed in order to evaluate them in context with their suitability for amphibians, notably GCN.
- 6.4 Notwithstanding the above constraints it is established that they were not that sufficiently significant which would prevent the gathering of information on which to base conclusions and recommendations.

7.0 Site Description

- 7.1 The surveyed site at Jubilee house is located within a rural environment 6 kilometres south east of Wrexham town centre within the local government community of Bowling Bank.
- 7.2 The site is accessed directly from Sun Lane, a small lane servicing residential dwellings and active farms. The survey boundary encompasses the barn for which conversion is proposed and a small area of disturbed land to the north of it, on which landscaping is proposed. The immediate landscape features an array of semi-natural habitats all of which possess clear and relatively consistent ecological connectivity; as a result they are potentially productive for rural dwelling fauna. The rural landscape features woodland patches to the north east and due east of the site at distances of just under 200 metres, these features are well linked via hedgerow to further favourable features in the form of linear tree lines, and hedgerow to further more extensive patches of woodland in the same direction at a distance of 700 metres from site both of which have ecological linkages to the River Clwydog and Dee which lie at approximately 550 & 750 metres east and south respectively. South of the site at a distance of less than 250 metres small broadleaved tree patches are present that connect to larger woodland at 400 and 500 metres in the same direction. Numerous tree lines and patches are also present to the west at a distance of 500 metres from the site.
- 7.3 The previously identified habitats can all be considered as being of value for some of the species for which the survey was undertaken, moreover for bats, subject to them being present in the locality. Where such habitat is present close to buildings then the percentage use of those buildings, by bats, increases given that roost opportunities are available and vice versa.

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- 7.4 From the internet Magic Mapping site it appears that several ponds are within the locality that range from approximately 111 - over 250 metres, however the presence/absence of these ponds could not be verified as they are located on private land.
- 7.5 Land at Jubilee House falls with the River Dee SSSI impact zone and within the River Dee SAC; however given the spatial distance from the designated locations and the low level nature of the development impact upon those designated sites is unlikely. Similarly the development will not impact upon the River Clwydog to the south.
- 7.6 Based on information gathered from the site visit there four Action Plans listed within the WBAP for which the nature of the surrounding habitat may be suitable i.e. GCN, Farmland birds, Bats and Hedgehog with the presence of two Local Priority Habitats i.e. Hedgerow and Pond.



Location of the barn and study site within associated land at Jubilee House in Wrexham

Image courtesy of Landstat

8.0 Survey Results

Bats

To all aspects of the site the immediate habitat interconnects with the extending landscape which is considered as being highly favourable for all bat species that are known to be present within the vicinity. Established woodland patches of various composition are evident to all compass points and form a valuable ecological connectivity into the surrounding landscape within which, as established further favourable habitat features are present.

One building is included in the planning application along with a small section of adjacent land but it is understood that no trees/hedgerow or habitat around the pond are proposed for removal/disturbance. The building concerned within the planning application is a former barn, the larger section of which is currently utilised as a workshop that is of approximate dimensions 10 metres long by 12 metres wide with the smaller compartments utilised for storage. It is of redbrick construction and forms a horseshoe shape with a cobbled courtyard to the centre; it is understood that the westerly section is not included within the application.

Internally it is constantly accessed and illuminated by way of fluorescent lighting, no evidence of use by bats was located, however due to the level of disturbance it is deemed that any evidence that may have been present is unlikely to remain intact. Underfelt was noted under the interlocking roof tiles and the roof is of purlin and rafter construction. Whilst the main interior is of ample dimensions to provide the flight space required by loft dwelling bats, such as the Long Eared or Horseshoe bat (*Plecotus/ Rhinolophus*) the level of disturbance and illumination decreases the suitability of the building as a roost. The presence of underfelt will increase opportunities for crevice dwelling species, such as the Pipistrelle bat, which often utilise the crevice scenarios that are formed between roof lining and roof covering should external/internal access between the two exist. The breeding roosts of Pipistrelle bats are proportionally higher in occupied residential dwellings where the warm, dry conditions favour the requirements of a maternity colony but other structures are also used, especially for hibernation or day roosts which do not require the same conditions as a maternity site.

The only upper section present in the barn is of approximate dimensions 5 metres long by three metres wide; due to the level of disturbance/illumination it is not entirely suitable for use by loft dwelling bat species. No crevices were present internally within this section and no evidence of use by bat species was found.

The single storey elements to the barn are multicompartmental and uniformed, they are all approximately 4 metres wide and similar lengths. Internally ceilings are present throughout with no accessible loft spaces, no evidence of bat use was found and these internal spaces are devoid of opportunities for bat species. The south facing element of the barn runs from east to west and is without a roof and devoid of roosting opportunities for bat species and no evidence was found.

During the exterior inspection several areas that can often be favoured by crevice dwelling species were observed; notably at the roof verge to the south facing gable elevation which is entirely open as it is devoid of mortar with access between the horizontal tile battens. The interlocking tile sections are generally tight fitting however there are minor areas where mortar is missing under the ridge tiles.

To the north facing gable, minor gaps are present at the lower sections of the apex. All of the aforementioned features could provide potential ingress opportunities for bats and categorised as "Moderate."

COFNOD records shows the nearest bat record at 750 metres (Common Pipistrelle)

Terrestrial Mammals

During the survey of the site and localised habitat a search was made for evidence of badger activity such as 'runs,' foraging activity, a sett or latrines. Although the site offers some potential for badgers, and there is an element of connectivity into the site from the extending landscape, no evidence of either foraging activity or sett construction was found within relatively close proximity to the site boundary i.e. 30 metres. Hedgehogs are, however, likely to be active within the locality and the general nature of would provide foraging resource for this species. The accumulations of timber posts and general debris could also provide refuge for this species.

COFNOD records contain otter records (confidential location not included)

Breeding birds

Although the surrounding habitat is suitable for barn owls no recent or historic signs of use were observed in relation to breeding/roosting and the building is less than ideal as there are no cavities or secluded places to nest and in addition disturbance is high internally. Signs of other nesting birds that rely upon built structures, e.g. House martin (*Delichon Urbica*) or Swift (*Apus apus*) was, on the day of the survey, absent. However; droppings that appear to be representative of those deposited by the Swallow were noted on and around roof beams but no historic sign of nesting was observed. Small gaps present on the exterior within the brickwork can provide opportunities for House Sparrow and repeated ingress by said species was observed during the site visit. The potential for common woodland/garden birds, some of which are BAP species and are listed in Table 1, is present at the site, as the adjacent tree and hedges could provide breeding habitat for such species however it is understood that none of is proposed for removal. Bird boxes were noted at the north facing gable elevation of the barn and it is understood these are to be retained.

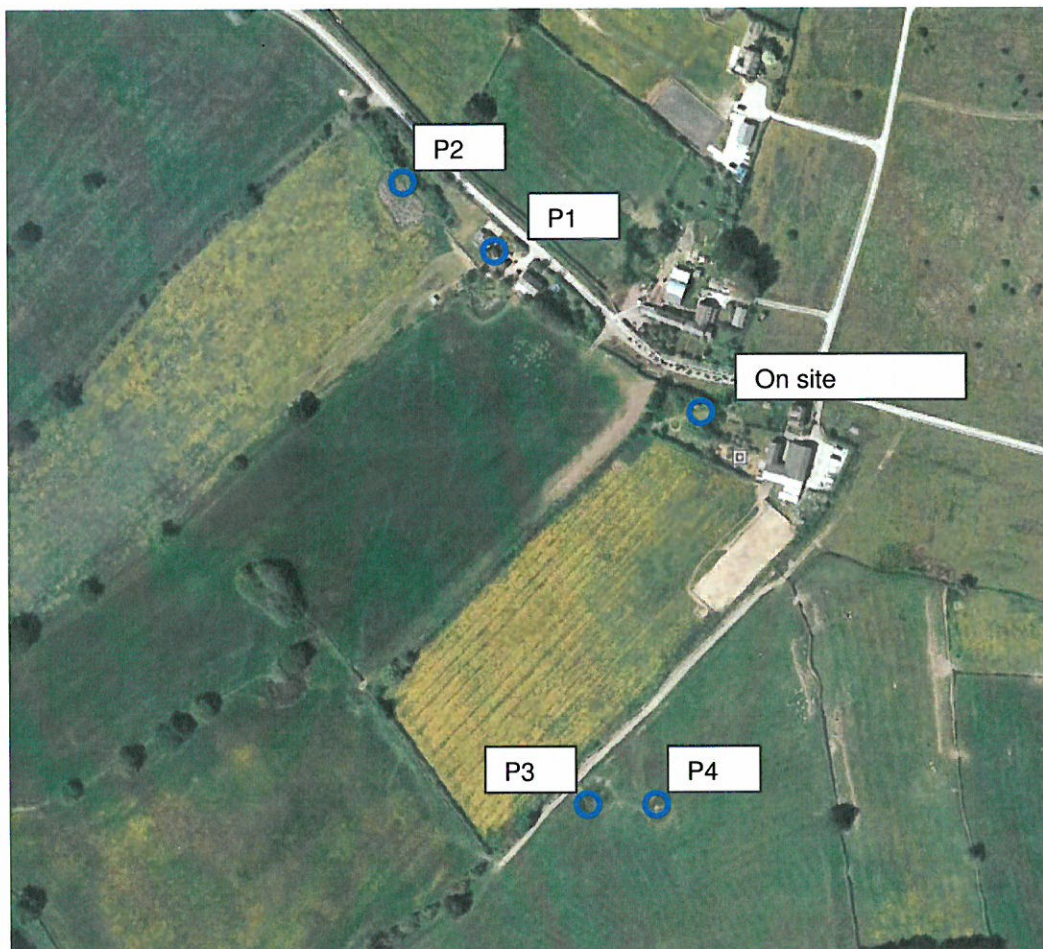
Amphibians

Within 100 metres of the survey boundary a newly created pond (within the last twelve months) is evident. Immediate to the pond vegetation is absent with the area represented predominantly by bare ground although aggregate mounds encircle it. Productive terrestrial habitat immediate to the pond is also absent as the land is heavily disturbed as access to the onsite poly tunnel is frequent. A field scrape is present to the south east of the development boundary however on inspection this was found to be part of a running flow of effluent from an adjacent farm. The pond within the site boundary was assessed using the HSI for Great crested newts, which is a measure of habitat suitability but it is not a substitute for newt surveys. In general, ponds with high HSI scores are more likely to support Great crested newts than those with low scores. The HSI indicates that the pond is rated as "poor" for Great crested newts (see table below for scored criteria). The land within in the site would provide shelter and terrestrial habitats to support Common Frog (*Rana temporaria*) and Toad (*Bufa bufo*). This is subject to them being present in the locality.

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Pond ref	Pond 1	HSI Scores	Pond suitability
SI1 - Location	1	<0.5	= Poor
SI2 - Pond area	0.05		
SI3 - Pond drying	1.0	0.5 – 0.59	= Below average
SI4 - Water quality	0.33	0.6 – 0.69	= Average
SI4 - Shade	1.0	0.7 – 0.79	= Good
SI6 - Fowl	1	>0.8	= Excellent
SI7 - Fish	1		
SI8 - Ponds	0.1		
SI9 - Terr'l habitat	0.01		
SI10 - Macrophytes	0.3		
HSI	0.3		

Records of GCN were noted from the COFNOD search at approximately 946 metres west although an absence of records closer to the site does not conclusively ascertain their absence.



Location of closest Ponds 1-4 (if present) & onsite pond

Vegetation

Within the boundaries it is considered that there is no ecological significance in relation to flora with early pioneer species only present on the recently disturbed ground, however broadleaved tree and hedgerow on the boundaries, which will not be affected offer nesting opportunities for birds, foraging places for bats and are generally functional for wildlife in general.

Wild flowers	Grass & Rush
Herb-Robert (<i>Geranium robertianum</i>)	Perennial rye-grass (<i>Lolium perenne</i>)
Broad-leaved willowherb (<i>Epilobium montanum</i>)	Yorkshire fog (<i>Holcus lanatus</i>)
Common nettle (<i>Urtica dioica</i>)	
Common Purslane (<i>Portulaca oleracea</i>)	
Creeping thistle (<i>Cirsium arvense</i>)	
Daisy (<i>Bellis perennis</i>)	
Broadleaved Dock (<i>Rumex obtusifolius</i>)	
Red dead nettle (<i>Lamium purpureum</i>)	
Common Cats Ear (<i>Hypochaeris radicata</i>)	

9.0 Conclusions & Implications

- 9.1 From the survey results it can be concluded that Moderate roost potential has been identified in relation to crevice dwelling bats, notably as a day roost during the active season. Potential has been identified where ingress opportunity is present beneath roof tiles and at the roof verge on both gable elevations; however the building is unlikely to support a maternity site. Due to the compartmentalisation and current use of the building it is deemed to be unsuitable for loft dwelling bats. The conversion of the building which will include the re-roofing may therefore impact on crevice dwelling bat species should they be present, thus further survey work will be recommended.
- 9.2 On the day of the survey commuting and foraging evidence was not located to suggest the presence of badger activity, additionally there are no badger setts within or close to the development area thus there will be no impact upon this species. Potential refuge for hedgehog has been identified, areas of debris immediate to the building which is to be converted could provide refuge or an area for hibernation therefore, the clearing of debris from the site may have direct impact upon this species should individuals be present.

- 9.3 There are no current implications in relation to Schedule 1 specially protected bird species; nonetheless, trees and hedgerow have been identified as potential nesting resource for some common passerine species immediate to the south boundary. Currently access is available into the interior of the barn and Swallow droppings have been noted although no evidence of nesting was present; their potential presence between the months of May-September cannot be ruled out therefore it must be ensured that no works at the barn result in the entrapment of this species. The presence of House Sparrow was confirmed thus the conversion may impact on this species should this area not be retained.
- 9.4 The onsite pond does not score high within the HIS table but that is just an indication i.e.

The great crested newt Habitat Suitability Index (HSI) is quantitative measure of habitat quality (source: Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000)). Evaluating the suitability of habitat for the Great Crested Newt (Triturus cristatus). Herpetological Journal 10 (4), 143-155). The HSI is number between 0 and 1, derived from an assessment of ten habitat variables known to influence the presence of newts. An HSI of 1 is optimal habitat (high probability of occurrence), while an HSI of 0 is very poor habitat (minimal probability of occurrence). The HSI is calculated on a single pond basis, but takes into account surrounding terrestrial habitat and local pond density.

The HSI for great crested newts is a measure of habitat suitability. It is not a substitute for newt surveys. In general, ponds with high HSI scores are more likely to support great crested newts than those with low scores. However, the system is not sufficiently precise to allow the conclusion that any particular pond with a high score will support newts, or that any pond with a low score will not do so.

There is also a positive correlation between HSI scores and the numbers of great crested newts observed in ponds. So, in general, high HSI scores are likely to be associated with greater numbers of great crested newts. However, the relationship is not sufficiently strong to allow predictions to be made about the numbers of newts in any particular pond.

HSI scoring can be useful in:

- *Evaluating the general suitability of a sample of ponds for great crested newts*
 - *Comparing general suitability of ponds across different areas*
 - *Evaluating the suitability of receptor ponds in a proposed mitigation scheme.'*
- Oldham et al (2000).*

Risk to GCN:

In order to assess risk to the species a number of factors need to be considered, these include;

- Site proximity to potential breeding Pond and to any additional ponds
- Habitat linkage / barriers between potential breeding Ponds and the site
- Nature and extent of available terrestrial habitat around the Pond
- Area of site habitat loss
- Nature of habitat to be lost and its potential value to GCN as refuge/ overwintering habitat.

Site Proximity & Linkage/barriers:

From Magic mapping the site is located at approximately 112 metres from the nearest ponds; (1 & 2) there are a two additional ponds to the south at approximately 200 metres (3 & 4) (Subject to ponds still being present)

Pond 1 is situated behind and close to a residential dwelling but within an arable field, pond 2 appears to be surrounded by dense vegetation; ponds 3 & 4 are within pasture. Connectivity from all ponds to the site exists by way of hedgerow base but the ponds to the south are situated in close proximity to woodland blocks that will of more value than the onsite habitat but there are no conceivable barriers to the site.

Research by Natural England has shown that where such habitat exists around GCN ponds the vast majority of the population is likely to be contained within 100m of the breeding pond creating a 'terrestrial sponge' effect.

Whilst taking into account the close proximity of the site to nearby ponds and the positive but distant record of GCN; the onsite pond does not rate high on the HSI scale, potential or high value terrestrial habitat is absent as the land as been heavily disturbed by the creation of the pond and regular access to a Poly tunnel; furthermore a high percentage of the site is hard standing.

Based on the above evaluation it is concluded that there is no requirement to undertake presence/absence surveys of Ponds 1 – 4 or the onsite pond. This conclusion is based on the assumption/records that GCN are present in the ponds; however due to the presence of suitable terrestrial habitats within 100m of them and the lack of suitable habitat on the site then the risk to the species is low and as such the likelihood of an offence being committed is also low; however Reasonable Avoidance Measures will be recommended.

- 9.5 The site does not support plant species of ecological importance; nor were any notable or invasive species located within the site boundary, i.e. Japanese knotweed.

10.0 Recommendations

- 10.1 It is recommended that in order to establish whether or not bats are using the building, and if present how they are using it, dusk emergence or/and dawn surveys should be undertaken. The surveys will need to be conducted during the active season of bats i.e. between May – August as bats, particularly Pipistrelle bats often alternate between roosts and do not necessarily use one roost over their active season. Two surveys are generally accepted as being a reasonable level of survey effort where moderate potential has been identified but need to be spaced between those months.

(See Figure1: Extract from Bat Conservation Bat Surveys: Good Practice Guidelines)

Bat Conservation Trust

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 (Structures). No further surveys required (trees).	Two separate survey visits. One dusk emergence and a separate dawn re-entry survey.	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.

- 10.2 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 work at the site to legally commence, an application for a Natural Resources Wales mitigation Licence will be required and subsequently granted. 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 a licence can be applied for all Planning issues including Consent and any pre-commencement Planning Conditions relative to bats should be resolved.
- 10.3 Natural Resources Wales provides information and guidance about licensing, however, it is not their role to provide mitigation which should be undertaken by a suitably experience bat ecologist.
- 10.4 During the conversion of the barn and landscaping of the grounds, newly installed external lighting should be implemented in such a way that is it does not illuminate and/or cause light spillage on remaining or adjacent habitats that are of value to bats, i.e. trees and hedgerow to the south in particular (but see extract below from Bat Conservation Lighting Guidelines).

In addition to causing disturbance to bats at the roost, artificial lighting can also affect the feeding behaviour of bats. There are two aspects to this. One is the attraction that light from certain types of lamps has to a range of insects; the other is the presence of lit conditions.

Lighting can be particularly harmful if used along river corridors, near woodland edges and near hedgerows used by bats. In mainland Europe, in areas where there are foraging or 'commuting' bats, stretches of road are left unlit or lighting is designed in such a way as to avoid isolation of bat colonies.

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.

Luminaire and light spill accessories

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.

Lighting column

The height of lighting columns in general should be as short as is possible as light at a low level reduces the ecological impact. However, there are cases where a taller column will enable light to be directed downwards at a more acute angle and thereby reduce horizontal spill. For pedestrian lighting this can take the form of low level lighting that is as directional as possible and below 3 lux at ground level. The acceptable level of lighting may vary dependent upon the surroundings and on the species of bat affected.

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.

Timing of lighting

The times during which the lighting is on should be limited to provide some dark periods. Roads or track ways in areas important for foraging bats should contain stretches left unlit to avoid isolation of bat colonies. These unlit stretches should be 10 m in length either side of commuting route.

- 10.5 It is recommended that if plans change and any of the hedgerow forming boundaries is to be removed during the breeding season of birds (March - August) of any year, then a further site visit, by an ecologist, should be conducted to establish if nesting birds are present. If nesting birds were present during a subsequent visit the work will need to be re-scheduled so as to avoid potential damage to an occupied nest and subsequently committing an offence; the retention of the hedgerow is however preferable.

In relation to nesting birds within the fabric of the building it is advised that the area utilised by the House Sparrow is not obstructed or damaged during the breeding season which is (March - September). It is probable that the nest site will be subsequently lost as part of the conversion but alternative nest boxes are already located on the north elevation and should be retained.

Similarly if work commences during the bird breeding season the barn should be investigated for nesting Swallows and avoidance measures implemented to ensure damage or obstruction to nests does not occur; if this cannot be achieved then work should be delayed until such time nesting has ceased. It must be ensured that no birds become trapped in the barn before or during the conversion.

- 10.6 As the site has been identified as offering possible foraging potential and refuge for hedgehogs, it is recommended that during development provision of low angle sloping boards of approximately 300 mm wide should be placed within any excavations at the end of each working day to facilitate a means of escape.

Wood and similar debris should not be piled up on the site and burnt or removed using heavy machinery as its presence offers refuge for this species. Should piles of debris require removal it should be carried out with care and by hand; if clearance is unavoidable during times of vulnerability for hedgehogs, such as winter hibernation, and if discovered it/they should remain in situ unless in immediate danger in which instance they should be relocated to a safe place offering shelter within the immediate vicinity.

- 10.7 Although GCN breeding potential is low on the site and terrestrial habitat is not high the following recommendations should be implemented during the course of the work:-
- Piles of debris, in particular the discarded timber and corrugated sheeting should be carefully dismantled by or under the supervision of an ecologist.
 - The immediate grassed area around the barn that has been disturbed should be kept low and any scrub not allowed re-generate until completion of the work
 - If the earth banks around the pond will be disturbed it should be conducted by or under the supervision of an ecologist.
 - Trenches should be back filled at the end of the day, where this is not possible then provision of low angle sloping boards of approximately 300 mm wide should be placed within any excavations at the end of each working day to facilitate a means of escape.
 - Building materials that are imported on to the site should be stacked on pallets to be located on the hard standing.
 - If at any time during the work newt/s is/are encountered it/they should be left in situ and advice sought from an ecologist i.e. the identification of the particular species
- 10.8 Where habitat/landscaping enhancement is proposed species of local and native provenance will be of value to most wildlife that can be anticipated as using the site; it should also aim to provide connectivity to the wider landscape.

**APPENDIX I –
Site Photographs**



Recently created pond with highly disturbed ground



Habitat between site and pond



Debris on site which could be used as a potential amphibian refuge

Jubilee House, Sun Lane, Bowling Bank, Wrexham, LL13 9RP
Ecological Appraisal



Barn elevations from within the courtyard



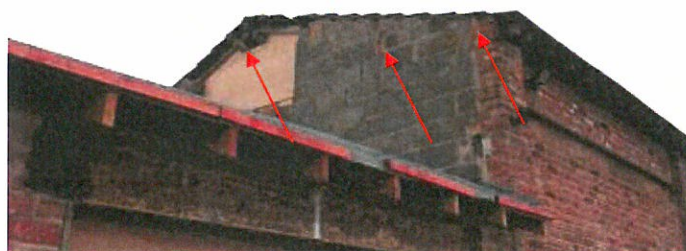
Section to the south on which a roof covering is not present



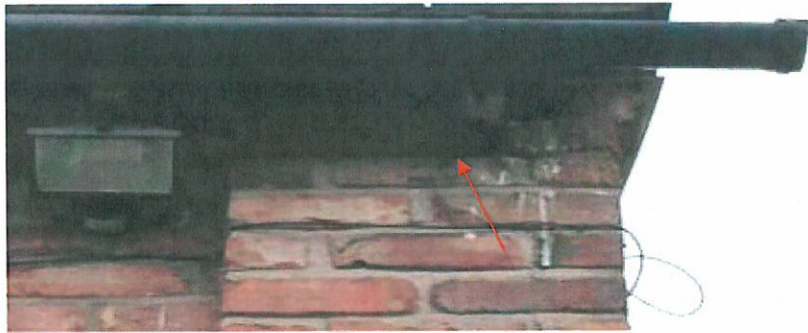
Access opportunity typical of those throughout which would be utilised by nesting birds



Bird droppings on internal beams



Gaps to the verge on the south facing gable elevation that could be accessed by bats



Area at which House sparrow was noted on the corner of the east facing elevation immediate to the north facing gable



North facing elevation on which bird boxes are present

