



Redevelopment of Mill Cottage and Land

Report Title: Phase 2 Habitat Survey with Dusk and Dawn Results

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Phase 2 Habitat Survey with Dusk and Dawn Results

Document Title	Phase 2 Habitat Survey with Dusk and Dawn Results (Bats)
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Reviewed by	Mrs. Kylee Wilding		
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Executive Summary

As part of a planning application regarding Mill Cottage, Marchweil Hall, Wrexham, proposals include the redevelopment of the existing building for use as a residential dwelling, although a proposed site plan has not yet been finalised. It is also understood that these proposals further entail partial site clearance removing vegetation that has developed on areas historically managed as a residential garden in addition to two outbuildings.

The site that is impacted upon by these proposals is adjacent to areas of Ancient Semi-natural Woodland (ASNW) to all aspects and Sontley Marsh SSSI to the south and west. As a consequence, Tyrer Ecological Consultants Ltd were commissioned to undertake an NVC (Phase 2) habitat survey across the application site, in accompaniment to updated bat survey; a Phase 1 survey was conducted complementary to Phase 2 survey. The results, conclusions and recommendations of these surveys are displayed within sections 8.0-11.0 of this report.

In accordance with paragraph 6.4.4 of Planning Policy Wales (PPW), a series of measures have been recommended within section 9.0 to ensure that the proposed development for Mill Cottage does not result in biodiversity net loss, and that a net gain is achieved relative to vegetation/broad habitats and bats.

Vegetation & Habitats: No species of conservation importance have been identified across the extent of the survey area.

Two invasive plant species were identified within the survey boundary in the form a Rhododendron (*Rhododendron ponticum*) and Variegated Yellow Archangel (*Lamium galeobdolon* subsp. *argenteum*) (Figure 4). *It is therefore recommended that these species are eradicated prior to the commencement of site operations. Any spoil removed off site following eradication is to be treated as controlled waste and disposed of at a landfill authorised to accept such refuse.*

Habitats included within the survey boundary are low-value relative to their floristic assemblages, which have developed on areas of former garden. However, areas extending immediately off site to all aspects includes high-value habitat contained within the Sontley Marsh SSSI and ancient woodlands in the locale. *A series of recommendations are made within section 10.0.*

Bats: Following on from an initial inspection of Mill Cottage during 2015 (Appendix VI) with the inclusion of dusk/dawn surveys (2016), updated dusk/dawn surveys were undertaken over 3rd, 17th and 31st July 2019. The results of these updated dusk/dawn surveys conclude that the property's status relative to bats has changed and is host to a day roost for Common pipistrelle & Soprano pipistrelle as well as a Soprano Pipistrelle satellite roost. It is also host to a day roost for Whiskered/Brandt's bats and maternity roost for Brown long-eared bats. The outbuilding is used as a day roost by a Lesser Horseshoe Bat. *Mitigation for bats is proposed within section 11.0.*

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1.0 Introduction & Reason for Survey

1.1 As part of a planning application regarding Mill Cottage, Marchwiell Hall, Wrexham, proposals include the redevelopment of the existing cottage building for use as a residential dwelling, although a proposed site plan has not yet been finalised. It is also understood that these proposals also entail partial site clearance removing vegetation that has developed on areas historically managed as a residential garden in addition to two outbuildings.

The site that is impacted upon by these proposals is adjacent to areas of Ancient Semi-natural Woodland (ASNW) to all aspects and Sontley Marsh SSSI to the south and west. As a consequence, Tyrer Ecological Consultants Ltd were commissioned to undertake an NVC (Phase 2) habitat survey across the application site, in accompaniment to updated bat surveys; a Phase 1 habitat survey was conducted complementarily to these. The results, conclusions and recommendations of these surveys are displayed within sections 8.0-11.0 of this report. **These recommendations are indicative given that proposed site plans are not yet finalised.**

1.2 Ecological surveys, particularly where a specially protected species is or may be present, are generally required as part of the Local Authority's Planning Policies; Mr.Mark Creighton, the site owner commissioned the survey and report.

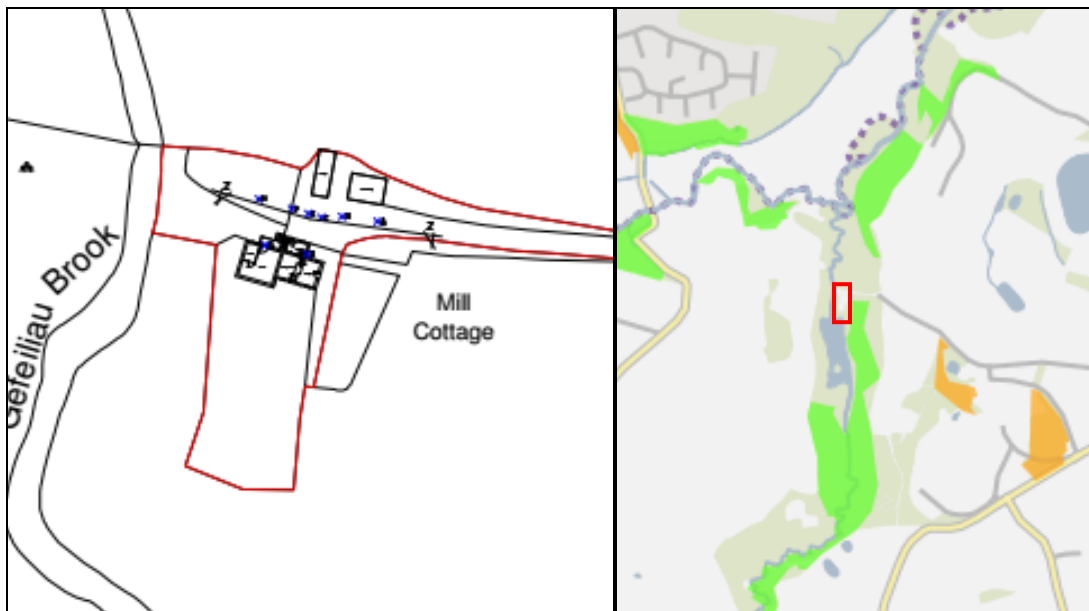


Figure 1: Location plan (left) and position of ancient woodlands in vicinity (Ancient Woodland Directory right)

1.3 The basic objective of the Phase 2 survey was to ascertain the nature of the land to be impacted upon in terms of the proposed development site, potential mitigation area/s, and where possible obtain information on any sensitive wildlife habitats or species that may be present and if so if they will be affected by future development. To achieve this objective the survey aimed to identify/assess any of the following:

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- The presence of species with non-statutory conservation designations.
- The presence / potential presence of species protected under the Wildlife and Countryside Act (1981) (as amended) or the Conservation of Habitats and Species Regulations (2017).
- Identify any species or habitats that require special consideration during future development including BAP & Annex I habitats.
- Identify the presence of statutory or non-statutory designated sites in close proximity.
- If the above are present assess any impacts that may occur as a result of development.

1.4 If the habitat was found to be suitable for the aforementioned species, or signs of use were found then more detailed surveys would be recommended.

1.5 In accordance with paragraph 6.4.4 of Planning Policy Wales (PPW), Biodiversity Net Gain: Good practice principles for development (CIEEM *et al*, 2019) have been adopted whereby appropriate enhancement opportunities have been recommended within the report to ensure that a “biodiversity net gain” is obtained as a key component of the development scheme (Appendix VI).

2.0 UK Biodiversity Plans

2.1 The UK Biodiversity Action Plan (BAP) provided a baseline for lists of habitats and species of national conservation importance, now transposed under section 7 of the Environment Act 2016 (for Wales). Based upon the site visit, there is the potential for a number of priority species to be present / using the site (see Table 1).

2.2 One priority habitat exists within the survey area/s in the form of ‘Lowland Broadleaved Deciduous Woodland’.

Table 1: examples of s.7 species that are likely to be in the immediate locality

Common name	Species name
Purple Ramping Fumitory	<i>Fumaria purpurea</i>
Garden Tiger	<i>Arctia caja</i>
Cinnabar Moth	<i>Tyria jacobaeae</i>
Common Toad	<i>Bufo bufo</i>
Great Crested Newt	<i>Triturus cristatus</i>
West European Hedgehog	<i>Erinaceus europaeus</i>
Brown Hare	<i>Lepus europaeus</i>
Otter	<i>Lutra lutra</i>
Noctule	<i>Nyctalus noctula</i>
Common Pipistrelle	<i>Pipistrellus pipistrellus</i>
Soprano Pipistrelle	<i>Pipistrellus pygmaeus</i>
Brown Long-Eared Bat	<i>Plecotus auritus</i>
Black-Headed Gull	<i>Choricocephalus ridibundus</i>

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Kestrel	<i>Falco tinunculus</i>
Herring Gull	<i>Larus argentatus</i>
House Sparrow	<i>Passer domesticus</i>
Tree Sparrow	<i>Passer montanus</i>
Hedge Accentor	<i>Prunella modularis</i>
Common Starling	<i>Sturnus vulgaris</i>
Song Thrush	<i>Turdus philomelos</i>

2.3 No Annex I habitats were located within the survey boundary.

3.0 Local Biodiversity Action Plan

3.1 Local Biodiversity Action Plans (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 (SLBI) per se, the presence of a protected species within them would attract the usual protection afforded to it / them.

3.3 The Wrexham Biodiversity Action Plan (WBAP) 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. Upon completing the desk-top study for this report, no online resource made available the local (Wrexham) BAP; therefore assessment of the site to support local BAP species/habitats is not possible for the purposes of this report.

4.0 Site-relevant Legislation

4.1 Relevant legislation considered for the purposes of this report includes the following:

- Protection of Badgers Act (1992)
- The Conservation of Habitats and Species Regulations (2017)
- The Countryside Rights of Way (CROW) Act (2000)
- The Wildlife and Countryside Act (1981) (as amended)

These acts entail relevance to both protected and invasive species. The degree of protection offered to taxa provided within existing UK and EU legislature often varies depending on species/species group, for example, some species may purely be protected during one of its life stages (e.g. common species of breeding bird whilst nesting/with eggs/young); some species may receive full protection within the EU (e.g. Otter), whereas others may be protected solely on a national basis (e.g. Grass Snake).

4.2 See Table 2 below entailing legislature appropriate to each species/group respective to the land at Mill Cottage, and the relevance of said legislation.

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Table 2: Site-relevant legislation

Species/Species Group	Relevant Legislature	Level of Protection
Bats	CRoW Act (2000) Conservation of Habitats and Species Regulations (2017) Wildlife and Countryside Act (1981) (as amended)	All British bats and their roosts are afforded full protection from damage/roost destruction and bats may not be injured/killed/taken at any life stage. Once identified, roosts are protected whether the bat is in occupation or not.
Invasive Plant Species	Wildlife and Countryside Act (1981) (as amended)	Species listed within Schedule 9 as invasive, including Japanese Knotweed (<i>Reynoutria japonica</i>) and Himalayan Balsam (<i>Impatiens glandulifera</i>), for example, carry notoriety regarding development. The Act makes it an offence for any person to grow or cause to grow in the wild any plants listed as invasive.

Additional Species Information

4.3 Up to eleven bat species have been recorded in Wrexham, most of which use built structures, notably occupied residential properties, for roosting purposes. The most frequently encountered species is the Common Pipistrelle bat (*Pipistrellus pipistrellus*) and its abundant status in Wrexham is reflected throughout the UK.

4.4 Although many 'Invasive' species listed within Schedule 9 (Part II) of the Wildlife & Countryside Act (WCA) 1981 are local/rare/absent in Wrexham, species such as Japanese Knotweed (*Fallopia japonica*), Himalayan Balsam (*Impatiens glandulifera*) and Wall Cotoneaster (*Cotoneaster horizontalis*) are widespread; all species carry the same penalty for those who cause the plants to grow in the wild. DEFRA issue the following advice concerning 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.'

4.5 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 the planning permission is granted, otherwise all relevant material considerations may not have been addressed in making the decision."

5.0 Survey Methodology

5.1 Paragraph 6.4.4 of Planning Policy Wales stipulates that *"All reasonable steps must be taken to maintain and enhance biodiversity and promote the resilience of ecosystems and these should be balanced with the wider economic and social needs of business and local communities. Where adverse effects on the environment cannot be avoided or mitigated, it will be necessary to refuse planning permission"*.

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- 5.2 Measures have accordingly been recommended to avoid/mitigate/compensate for biodiversity loss within section 10.0 and 11.0, based upon the findings of the survey.

Desk top study

- 5.3 Prior to the 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 2km 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.
- 5.4 Satellite imagery was reviewed using sources such as Google Earth (© 2019) to determine the nature of the 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.
- 5.5 A data search to include all protected species and designated sites within a 2km radius of the study site was also requested from the Local Biological Records Centre (LRC) serving North Wales (Cofnod) to provide further and otherwise unobtainable information concerning species and their local distributions (see Appendix V).

Field Survey

- 5.6 The Phase 2 site daytime appraisal and updated inspection in relation to bats were conducted over the 3rd and 31st July 2019 by the following surveyor/s:

Table 3: Surveyor credentials

Name	Description
Joshua Styles BSc. ACIEEM AMRSB	Ecologist and botanical specialist with a FISC Level 5. Mr Styles is also an accredited agent on the NRW bat licence of Mrs K. Wildling (S086297/1).
Ms K. Swift MSc	Experienced ecologist and class 2 Natural England bat licence holder (registration number 22801-CLS), more relevantly also an accredited agent on the NRW bat licence of Mrs K. Wildling (S086297/1).
Mark Pritchard FdSc Qualifying CIEEM	Ecologist with a FISC level 3. Mr Pritchard is also accredited upon the NRW bat licence of Ms. K. Wildling.

- 5.7 The Phase 1 habitat 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 and Ecological Impact Assessment (CIEEM, 2016; 2017); habitats were mapped using QGIS software (see Appendix VI).
- 5.8 Field survey methodology for the Phase 2 habitat appraisal followed Rodwell (Ed.) Volumes 1, 3 and 4 (1991-1999) within an optimal period for such surveys (July). Given the relatively small areas individually, stand samples of discrete habitat types were taken

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(as opposed to relevés). Modular Analysis of Vegetation Information System (MAVIS) software was utilised to analyse vegetation data and determine an NVC type with associated confidence interval.

- 5.9 During the survey walkover, botanical assemblages were assessed and the land was investigated for the presence of red-listed (Stroh *et al*, 2014), s.7 and LBAP species alongside specially protected species as listed under Schedule 8 of the Wildlife and Countryside Act (WCA) (1981) (as amended) and / or Schedule 5 Conservation of Habitats and Species Regulations (2017).
- 5.10 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 importance on a geographical scale which is adopted on a site-to-site basis (see Figure 2 below). For a site-relevant species list, see Appendix II.

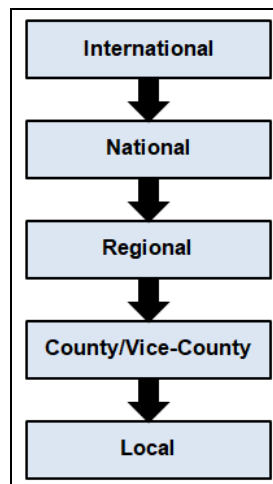


Figure 2: Geographic Frame of Reference entailing degrees of conservation importance

- 5.11 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 (Part II) of the Wildlife and Countryside Act (1981) (as amended).
- 5.12 Dusk and dawn observations were respectively undertaken during July 2019 by a combination of five highly competent surveyors, with four in operation during any one survey (Table 1). The number of surveys and surveyors were adequate relative to the roost potential that has been identified i.e. 'High' and further informed by the results of the 2016 Tyrer Ecological Consultants (formerly The Tyrer Partnership) surveys. The surveyors involved in 2019 dusk/dawn surveys are as follows:

Table 4: Surveyor credentials

Name	Years of Experience as of May 2019	Description
Ms. K. Wilding	11	Director of Tyrer Ecological Consultants Ltd who holds a Natural Resources Wales License = S086297/1
Mr. S. Irwin	30+	Natural Resources Wales bat licence. (Licence no.

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		73156:OTH:CSAB:2016)
Ms. K. Swift	9	A highly experienced Ecologist and holder of Class 2 Natural England Bat Licence (registration number 22801-CLS)
Mr. J. Styles	4	BSc (Hons.) ACIEEM AMRSB, FISC Level 5 Ecologist and accredited agent on the NRW licence of Ms Wilding.
Mr. M. Pritchard	3	Multiple protected species licenced Ecologist and accredited agent on the Class 2 Natural England bat licence of Mrs. K. Wilding (CLS-14227). CL08 (Great Crested Newt Survey Level 1) - 2018-34062-CLS-CLS. Sand Lizard & Natterjack Toad (2019-40216-SCI-SCI)
Ms. A. Watson	1	Trainee Ecologist, in training with Tyrer Ecological Consultants Ltd
Mr. M. Smith	3	An experienced bat surveyor with Tyrer Ecological Consultants Ltd

5.13 Surveyors were located in positions that allowed unrestricted views of the identified roost potential. The surveys were aided with Anabat electronic bat detectors that enable the locating and recording of the high frequency calls that are emitted by bats; echolocation calls were then analysed with computer software to verify field observations.

5.14 A pre-dusk inspection was conducted immediately prior to the first dusk observation on 3rd July 2019 by Ms K. Swift. The entire loft area could not be fully inspected due to access restrictions.

5.15 Trees were also re-assessed relative to existing roost suitability.

5.16 The survey methods, results, conclusions, and recommendations have been assessed by Mrs K Wilding, director of Tyrer Ecological Consultants Ltd, and her assessment concurs with that of Mr. Styles, Ms. Swift and Mr. Pritchard.

6.0 Limitations

6.1 This report does not contain a comprehensive list entailing the totality of botanical/invertebrate taxa on site. Species listed within Appendix II were noted from observations at the time of the survey; many plant species are only evident at certain times of the year and so some plant species may have gone undetected.

6.2 Deciduous trees were re-assessed in relation to bat roost potential at a time when foliage is present, which in some circumstances can impede a full assessment of individual trees, however on this occasion it did not significantly impede the investigation.

6.3 During the pre-dusk inspection, internal investigation could not extend into the entirety of the loft void/s due to their aforementioned limited dimensions. Notwithstanding the limitations of the internal inspection evidence of use by Pipistrelle and Brown Long-eared bats was identified in the accessible section. Additionally dusk/dawn observations were conclusive in that the former Mill Cottage remains a roost for multiple bat species and concludes with the 2016 report.

- 6.4 Having considered the constraints in the context of the site, it is considered that on balance, there were no significant constraints would otherwise hinder the gathering of ecological information on site.

7.0 Desk study results

- 7.1 Mill Cottage is located within the Marchwiell estate and consists of large country parkland with approximately 150 acres of woodland, farmland and mature gardens associated with the estate. The cottage is a Grade two listed building which up until several years ago had been tenanted by a retired employee of the estate. It is accessed from the busy A525 located at just less than two kilometres south of Wrexham town centre within a rural environment notably amid mixed woodland close to Gefeilliau Brook. Sontley Marsh SSSI which is noted for its diverse invertebrate community lies immediately adjacent to the application boundary along with the River Clywedog (LBAP Habitat) at 171 metres south of the site boundary and ancient woodlands to all aspects (see Figure 3).

Collectively, the aforementioned semi-and natural features represent a long standing ecological network of high value; as a result it will provide connectivity and a highly suitable habitat for bats and breeding birds. Whilst immediate habitats are of high ecological notability, on-site habitats are noted to be secondary in nature and a result of successional change to areas previously maintained as garden.

- 7.2 The contiguous landscape continues to the same nature as the immediate with the addition of further favourable environs including scattered water bodies and extending areas of ancient woodland. The previously identified immediate and extending habitats are nationally recognised as being of high ecological value, particularly for the number and diversity of the species that they support (Figure 3).



Figure 3: Location of the site within the contiguous landscape (left) and position of site in proximity to nearest areas of ancient woodland highlighted green (right)

- 7.4 The proposed works at the application site are sited immediately adjacent to the Sontley Marsh SSSI and has the capacity to result in a direct and /or indirect impact upon localised sections of it. The application site is also in close proximity to a number of irreplaceable habitats that could be affected by the proposals, namely including ancient woodlands. Paragraph 5.2.9 of Planning Policy Wales gives the following in relation to ancient woodlands:

‘Ancient and semi-natural woodlands are irreplaceable habitats of high biodiversity value which should be protected from development that would result in significant damage.’

- 7.5 The 2km data search from Cofnod identified a number of protected species in close proximity to the survey area, namely including common pipistrelle, Noctule, soprano pipistrelle and whiskered/Brandt’s bat which were recorded on site (see Appendix V). A number of notable species are also recorded for the locale including grass snake, great crested newt and water vole. This report however, has addressed vegetation, habitats and bats as requested.

8.0 Field survey results

8.1 Vegetation

- 8.1.1 No species of conservation importance were located across the extent of the survey area, though extending off site are abundant areas of species such as Enchanter’s Nightshade (*Circaea lutetiana*), Ramsons (*Allium ursinum*), Wood Speedwell (*Veronica montana*) and Yellow Pimpernel (*Lysimchia nemorum*); all of which are significant indicators of ancient woodland (Rose, 1999).
- 8.1.2 Two species notified as invasive under Schedule 9 Part II) Wildlife & Countryside Act (1981) (as amended) were identified across the extent of the survey area (see Figure 4). These are in the form of Variegated Yellow Archangel (*Lamium galeobdolon* subsp. *argenteum*) and a Rhododendron (*Rhododendron ponticum*).

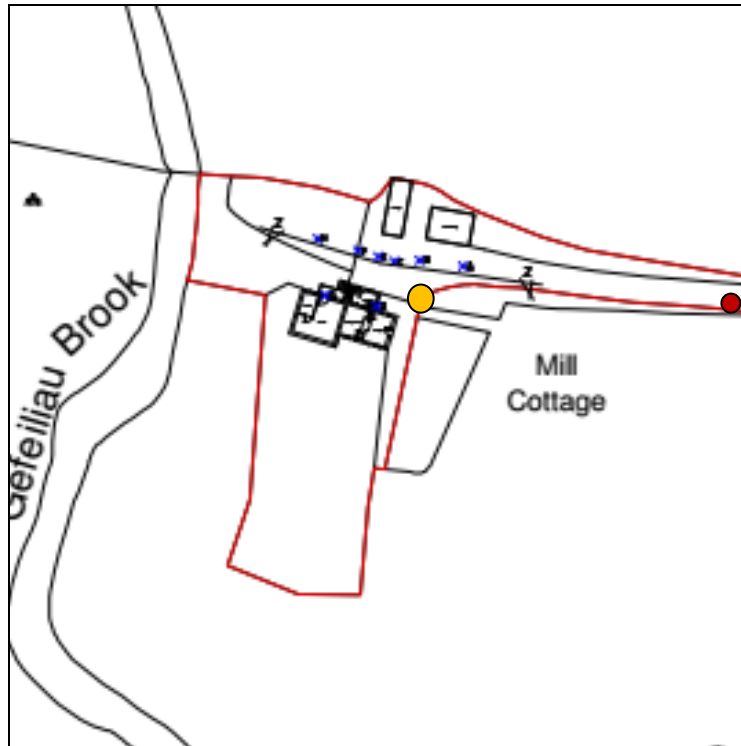


Figure 4: Positions of Variegated Yellow Archangel (orange-fill) and Rhododendron (red-fill)

8.2 Bats

- 8.2.1 A pre-dusk inspection conducted on 3rd July 2019 found that the main structure (Mill Cottage), nor the brick-built outbuilding had changed significantly since the initial inspection conducted by Tyrer Ecological Consultants Ltd (formerly The Tyrer Partnership) during 2015. Access into the entire loft space could not be obtained at the time of this pre-dusk inspection due to the restrictive nature of the entrance and loft void/s itself. However, the accessible areas of the loft space were found to be less than 0.5 metres high with insulation present throughout. The space is cluttered due to the presence of pipework and insulation with such limited dimensions however it is warm and free from illumination and draughts. Notwithstanding this, a total of 10 droppings were identified within the area accessed, and are indicative of the Pipistrelle bat. Additionally, 15 recent Brown Long-eared bat droppings were observed within the inaccessible area, and is it thus likely that further accumulations are present out of reach. Droppings were photographed out of situ in an area of loft where this was achievable (plate 3).

The conclusion of this pre-dusk assessment, notwithstanding an absence of a full internal inspection, concurs with the diurnal assessment provided within the original report (see Appendix IV). Both the brick-built outbuilding to the north-east and Mill cottage were concluded to pertain to 'high' roost suitability, whilst fresh evidence of bats was noted to the exterior to Mill Cottage in the form of fresh droppings identified to be that of the Brown Long- Eared bat and Pipistrelle species, indicating that the structure remains in-use as a roost by bats.

- 8.2.2 Updated results of dusk/dawn surveys were conducted over July 2019 and are as follows:

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Table 5: Survey results 2019

Times of Survey	Date	Weather Conditions
Dusk survey 2110 - 2315	3 rd July 2019	Sunset: 2142: dry, calm, 75 % cloud cover Start temp: 16 °C End temp: 15 °C
Dawn survey 0330-0500	17 th July 2019	Sunrise: 0500: dry, humid, 10% cloud cover Start temp: 13 °C End temp: 13 °C
Dusk survey 2048 - 2235	31 st July 2019	Sunset: 2108: dry, light air, 100% cloud cover. Start temp: 17 °C End temp: 15 °C

Table 6: Survey results 2019

Survey	Date	Results
Dusk survey	3 rd July 2019	<u>Summary</u> –Seven common pipistrelle, four soprano pipistrelle and fourteen brown long-eared bats emerged from various points across Mill Cottage. 2126 – 2205 hrs: A total of two common pipistrelle bats emerged at the western gable elevation at eaves level at Mill cottage. 2137 hrs: A single common pipistrelle bat emerged from beneath boarding on the northern window at Mill cottage. 2140 – 2201 hrs: A total of 14 brown long-eared bats emerged from various points in close proximity on the northern elevation including ridge tile at Mill cottage. 2141 – 2251 hrs: A total of four common and four soprano pipistrelle bats emerged from a southern gable elevation at Mill cottage at both roof verge and eaves level at Mill cottage. 2157 hrs: Daubenton's bat commuted from north of the site to the south. Constant high level foraging/commuting

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		activity took place by common and soprano pipistrelle bats, brown long-eared and Daubenton's throughout the survey with echolocation calls also from Natterer's and lesser horseshoe bats.
Dawn survey	17 th July 2019	<u>Summary</u> – Re-entry of a total of twenty bats into Mill Cottage comprising of 3 Whiskered/Brandt's, 17 Pipistrelle bats. One Lesser Horseshoe bat entered into the outbuilding. Brown Long-eared activity was minimal in comparison to both the former and latter surveys of 2019. 0413 hrs: Whiskered bat heard on site 0414 hrs: Brown Long-eared bat heard not seen 0415 hrs: Soprano Pipistrelle bat re-enters under eaves on the south elevation 0415 hrs: Lesser Horseshoe Bat commutes from a northerly direction and enters out building. 0420 hrs: Brown Long-eared bat commutes through site towards stream 0425 hrs: Without echolocation Pipistrelle bat commutes onto site and re-enters building at barge 0427 hrs: Common Pipistrelle bat re-enters building at the barge 0428 hrs: Two Soprano Pipistrelle bats re-enter under the eaves on the south elevation 0433: One bat re-enters under eaves on south facing elevation without echolocation, identified by flight as Pipistrelle bats. 0435 hrs: Brown Long-eared bat heard not seen 0437 hrs: Common Pipistrelle bat enters site, briefly forages and re-enters building at verge 0442 hrs: Two Pipistrelle bats enter western gable 0443 hrs: Whiskered bat enters western

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		elevation under barge boards 0448 hrs: One Pipistrelle bat enters the southern elevation under the eaves 0450 hrs: 3 Soprano Pipistrelle bats enter western elevation at the verge without echolocation 0452 hrs: One Pipistrelle bat enters southern elevation under the eaves 0454 hrs: One Pipistrelle bat enters southern elevation under the eaves 0459 hrs: Two Pipistrelle bats went in under eaves on southern elevation 0502 hrs: Whiskered bat enters under barge at western roof verge 0503 hrs: Whiskered bat in at western roof verge 0507 hrs: Whiskered bat in at western roof verge Foraging activity around the grounds during the observation period was minimal with bats largely commuting immediately to areas of re-entry with no large swarming displays.
Dusk Survey	31 st July 2019	<u>Summary-</u> Emergence of eleven common pipistrelle, eight soprano pipistrelle and ten brown long-eared bats from Mill cottage. One common pipistrelle bat emerged from the brick-built outbuilding. 2053 -2123 hrs: A total of ten common pipistrelle bats emerged from the western gable elevation of Mill cottage beneath barge boards. 2100-2116 hrs: Seven soprano pipistrelle bats emerge from roof verge gap and under soffit at the south-western gable elevation at Mill cottage. 2108hrs: One common pipistrelle bat emerged at the front (north-eastern) gable at roof verge at Mill cottage. 2117-2118 hrs: Two soprano pipistrelle bats emerged from verge gap and under soffit at the south-eastern dormer of Mill cottage.

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		2121-2215 hrs: Five brown long-eared bats emerged from roof gap and under soffit and the south-western gable elevation of Mill cottage. 2125 hrs: One common pipistrelle bat emerged from inside the brick-built outbuilding to the north. 2135 – 2216 hrs: Five brown long-eared bats emerged from gable apex at ridge tile to the north of Mill Cottage. Activity continuous throughout.
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Figure 5: Emergence points at Mill Cottage indicative



Figure 6: Emergence point of common pipistrelle and lesser horseshoe bat at the outbuilding to the north-east

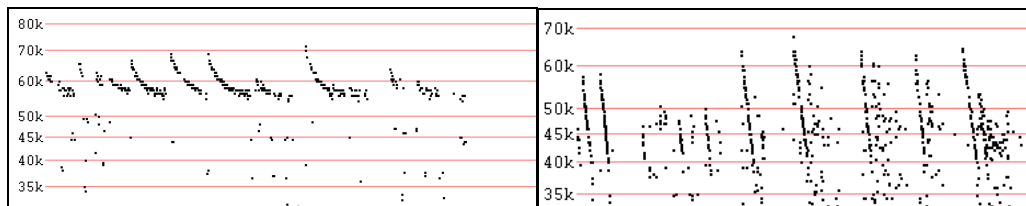


Figure 7: Sonograms of Soprano Pipistrelle bats and Brown Long-eared bats recorded at Mill Cottage



Key			
	Site Boundary		Foraging activity
	Surveyor Positions		Commuting activity
	Point of bat emergence/re-entry		

figure 8: Dusk/dawn survey results 2019

- 8.2.3 **Trees:** All trees located within the confines of the application boundary are determined to be absent of potential roost features such as natural/woodpecker holes, cracks, crevices / fissures or loose bark. Trees are therefore concluded to possess 'negligible' bat roost suitability, in line with up-to-date BCT guidelines.

8.3 PHASE 1 HABITAT SURVEY:

All species nomenclature for vascular plants follows Stace, C. (2019) – definitive English names

(Refer to Appendix VI for the location of all described habitats)

Table 7: Phase 1 habitat types within the survey area

Habitat Code	Broad Habitat	Description
A2.2	Scattered scrub	Areas of scattered scrub are apparent throughout the site consisting of a variety of woody plants including Blackthorn (<i>Prunus spinosa</i>), Hawthorn (<i>Crataegus monogyna</i>), Grey Willow (<i>Salix cinerea</i>) and Goat Willow (<i>Salix caprea</i>) for example.
A3.3	Scattered trees (mixed)	Scattered trees exist across the area, particularly to the north and consist of a mix of indigenous semi-mature specimens overlapping from the adjacent woodland, and planted species such as Cedar (<i>Thuja</i> sp.). Indigenous specimens include Pedunculate Oak (<i>Quercus robur</i>), Downy Birch (<i>Betula pubescens</i>) and Beech (<i>Fagus sylvatica</i>).
F1	Swamp	Swamp habitats have developed across areas formerly treated as garden and are dominated by a swathe of plants indicative of such a habitat, notably including Giant Horsetail (<i>Equisetum telmateia</i>), Soft Rush (<i>Juncus effusus</i>), Marsh Woundwort (<i>Stachys palustris</i>) and Water Mint (<i>Mentha aquatica</i>). A range of garden species were noted to still persist over areas of developing swamp habitat including Evening-primrose (<i>Oenothera</i> sp.), Spear Mint (<i>Mentha spicata</i>) and Snowberry (<i>Smphoricarpus albus</i>).
J3.6	Building	N/A

8.4 PHASE 2 HABITAT SURVEY:

- 8.4.1 Following MAVIS analysis, the following habitat classifications are what most closely resemble areas surveyed, in line with Rodwell (ed.) (1991-1999); confidence intervals for said community approximations are given in Table 8 below. Floristic communities are dynamic and often transitional. This dynamic nature can account for disparity between two discrete NVC categories and a confidence interval. The higher this interval, the closer a habitat resembles its ascribed community.
- 8.4.2 NVC methodology is routinely incorporated into detailed ecological reports, particularly including Ecological Impact Assessments as standard practice, given that phase 1 survey is not considered an appropriate level of detail to determine the baseline ecological conditions for more complex sites (CIEEM, 2016: Guidelines for Ecological Impact Assessment in the UK and Ireland) (for a map of all NVC communities, see Appendix V).

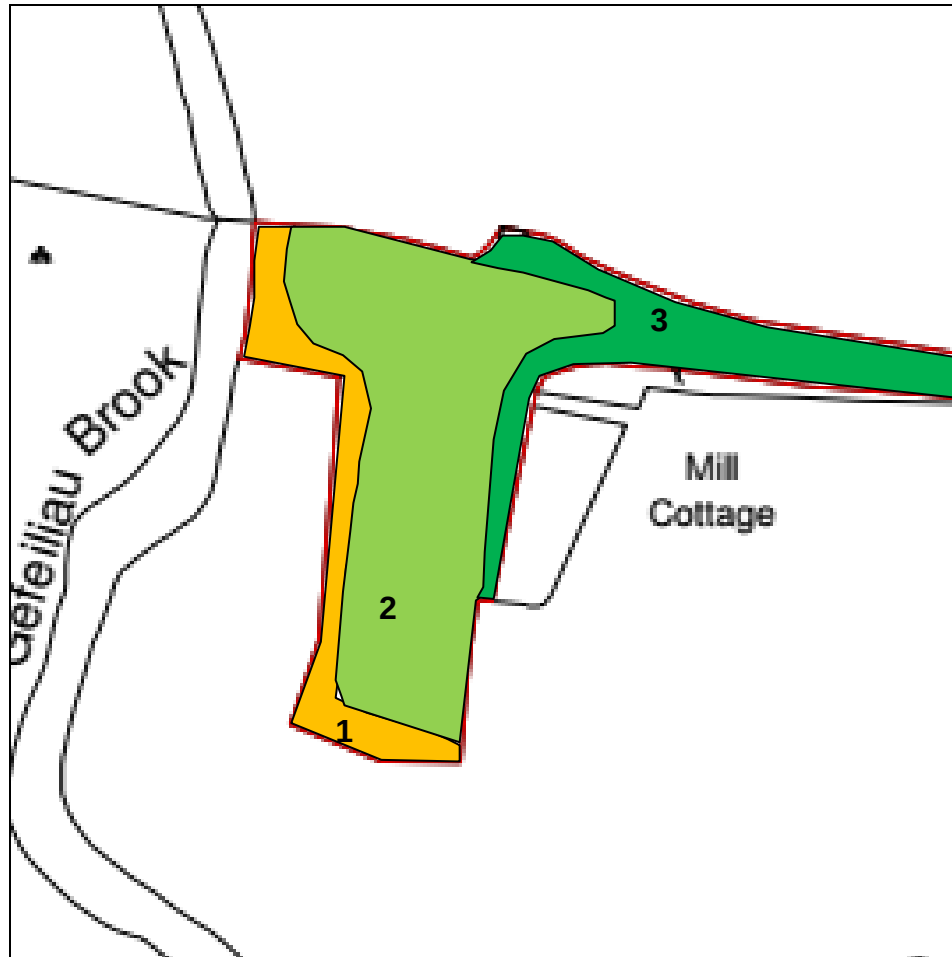


Figure 5: Sample areas 1-3 indicative

Table 8: MAVIS output

Area Sampled	Sample type	Community	Confidence Interval (%)
Area 1	Stand sample	W1	19.49
Area 2	Stand sample	S28	23.81
Area 3	Stand sample	W10	26.56

8.4.3 Identified community types are surmised below:

- **S28** - *Phalaris arundinacea* tall-herb fen
- **W1** - *Salix cinerea-Galium palustre* woodland
- **W10** - *Quercus robur-Pteridium aquilinum-Rubus fruticosus* woodland

8.4.4 All identified stand types show a very poor fit to ascribed communities, with confidence intervals all below 30%. This has been attributed to the transitional nature of the habitats contained within the areas of former garden at Mill Cottage. Whilst areas surveyed were historically treated as a garden, these are still in the process of assimilating into semi-natural habitats from a very much anthropomorphic one.

8.4.5 No stand types are of conservation importance (i.e. s.7 and/or Annex I habitats).

9.0 Conclusions & Recommendations

Vegetation & Habitats

- 9.1 No species of conservation importance were located throughout survey area. Furthermore, habitats contained within the red-line boundary are all secondary in nature, and developed from areas treated as pathway and former garden. Whilst habitats extending immediately off site are of high ecological value and irreplaceable in nature, those contained within the red-line boundary are not.
- 9.2 Two invasive plant species in the form of Variegated Yellow Archangel and a Rhododendron (*R. ponticum*) were identified at the application site (see Figure 4). It is therefore recommended that these species be eradicated prior to the commencement of site operations. Any spoil removed off site must be treated as controlled waste and disposed of at a landfill authorised to accept such refuse.
- 9.3 Given the proximity to highly sensitive habitats including ancient woodland and areas contained within the Sontley Marsh SSSI, landscaping is recommended to include indigenous woody species only. Non-native species used in landscaping have the capacity to spread into nearby semi-natural habitats, therefore displacing indigenous plants and negatively impacting these important sites. Species suitable for the area are identified within Table 8 below.

Trees	Woody Shrubs
English Oak (<i>Quercus robur</i>)	Hawthorn (<i>Crataegus monogyna</i>)
Rowan (<i>Sorbus aucuparia</i>)	Honeysuckle (<i>Lonicera periclymenum</i>)
Wild Service Tree (<i>Sorbus torminalis</i>)	Guelder Rose (<i>Viburnum opulus</i>)
Silver Birch (<i>Betula pendula</i>)	Elder (<i>Sambucus nigra</i>)
Ash (<i>Fraxinus excelsior</i>)	Wild Privet (<i>Ligustrum vulgare</i>)
Goat Willow (<i>Salix caprea</i>)	Blackthorn (<i>Prunus spinosa</i>)
Beech (<i>Fagus sylvatica</i>)	
Wild Cherry (<i>Prunus avium</i>)	

Bats

- 9.4 From the survey results it can be concluded that all trees are absent of bat roost suitability. Whilst proposed site plans are not yet finalised, it is understood that limited trees are to be removed. Trees immediately adjacent to the survey area that bats used at the time of dusk/dawn observations are to be retained.
- 9.5 From the evidence gathered during the three dusk / dawn surveys at Mill Cottage, in combination with the pre-dusk inspection, the cottage building is confirmed as being used by five species of bat(s) for roosting purposes; the brick-built outbuilding to the north-east is a confirmed roost for two species. Species roosting at the Mill Cottage site are as follows:
- Whiskered/Brandt's (*Myotis mystacinus* / *M. brandtii*): a small **day roost**. Due to restricted access to this western elevation any droppings likely to be present are not accessible for DNA analysis. Bats are entering mainly at barge boards to the west elevation.

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- Brown long-eared (*Plecotus auritus*): a **maternity roost** exists at the cottage building and bats have been recorded using northern and southern aspects of the building. Evidence of this species in the form of droppings were located within the loft space.
- Soprano pipistrelle (*Pipistrellus pygmaeus*): a **satellite roost** has been identified at the cottage; bats have been identified using southern and western aspects of the cottage building with droppings identified within the loft space.
- Common pipistrelle (*Pipistrellus pipistrellus*): a **day roost** has been identified. A satellite roost has been found at Mill Cottage, whilst a singular bat was identified to be using the brick-built outbuilding with droppings identified within the loft space.
- Lesser horseshoe (*Rhinolophus hipposideros*): a **day roost** has been identified at the outbuilding to the north-east.

9.6 Bat Conservation Trust (BCT) Bat Surveys Good Practice Guidelines (2016) describe different roost types, and how they are categorised:

Maternity roost: where female bats gather in a colony to give birth and raise their young to independence.

Satellite roost: a roost used by female bats within the breeding season for roosting in proximity to the main breeding (maternity roost).

Day roost: a place where individual bats, or small groups of males, rest or shelter in the day but are rarely found present by night in the summer.

9.7 The permanent destruction/modification of bat roost(s) will need to be addressed from both a conservation and legal perspective along with the application of appropriate mitigation. A European Protected Species Mitigation Licence (EPSML) will be required to legally destroy or modify a place(s) that is used for breeding, rest or shelter (roost) by bats, in this case the roost(s) identified at Mill Cottage.

9.8 In order that the LPA can implement its obligations under the Conservation of Habitats & Species Regulations 2017, appropriate and proportionate mitigation will need to accompany the planning application, or scheme of works, which will demonstrate that the “*favourable conservation*” of the species concerned can be maintained.

9.9 Notwithstanding that Planning Consent is granted or equally if the work is undertaken outside of the planning system whereby projects that do not require planning consent may affect bats or their roost, including disturbance, it does not absolve the applicant, site owner, developer or any other party involved with the work from ensuring that an application is made for a Natural Resources Wales (NRW) Mitigation licence to legally undertake work that will affect bat(s) or their roost/place of shelter. If work is undertaken without a licence and bat/s or their roost/s is/are affected then a breach of current wildlife legislation will occur for which penalties are high.

10.0 Scheme of Bat Roost Mitigation

10.1 The following procedures and mitigation are designed to allow the Local Planning Authority in association with their ecological advisers to determine a Planning Application where a European Protected Species has been identified and will be affected by the work for which the Planning Application seeks consent. In addition Local Planning Authorities in accordance with the obligations placed upon them by way of their duties under the Conservation of Habitats & Species Regulations 2017 (as amended) have to take into consideration the presence of a European Protected species before determination of an application where it/they have been identified.

10.2 No foraging or commuting habitat will be lost as a result of the proposals nor will the new roosts be at any further distance from foraging places. The redevelopment of Mill Cottage and the brick-built outbuilding is an essential part of the owner's plans for the site, but it is acknowledged that the presence of multiple bat roosts needs to be addressed from both a legal and conservation perspective. The mitigation proposals are seen to be the most productive way forward that will retain opportunities for bats.

Given that a proposed site plan / elevation drawings are not yet available, the following mitigation proposals are indicative only.

10.3 To ensure that bats are not left without a roost while the redevelopment work at both structures takes place, five Schwegler 2F bat boxes (or equivalent) will be erected onto mature trees to the west and north of the site; they will be indefinitely retained during and after the work schedule and will also act as a receptor if bats have to be captured during the work schedule (see Figure 6).



Figure 6: Indicative positions of receptor boxes

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- 10.4 The ecologist is to undertake induction on possible bat presence and documents that from the licence i.e. License, Method Statement and Work Schedule to be kept on site for the duration of the work.
- 10.5 Prior to any work being undertaken the presence/absence bats, as far as possible, will be established by undertaking detailed investigation of the areas at which bats have been located at Mill cottage and the brick-built outbuilding; typically under eaves, at roof verge and beneath ridge tiles and roof slates which will include torchlight endoscopic examinations. In addition, wherever opportunities for bats exist in other parts of the both buildings the inspection will extend to these areas.
- 10.6 The ecologist will also supervise careful dismantling of all places that will be removed as part of the proposed work which have been identified as offering roost potential as due to the number of opportunities for bats at both buildings exclusion is unlikely to be successful and cannot be relied upon. In addition wherever opportunities for bats exist in other parts of the both buildings the supervised dismantling will extend to these areas with strategies for safely removing bat(s) as long as a maternity colony is considered not to have taken up occupancy of either building.
- 10.7 All dismantling of roost and roost features at Mill Cottage will be undertaken during favourable weather conditions and outside of the breeding and hibernation season, broadly during the months of September-October and/or March-April. Dismantling of roost features at the brick-built outbuilding will be undertaken outside of the hibernation season which is within the period November-February.
- 10.8 External lighting is predicted to be above what currently exists throughout the survey area, though where present is to be directed away from bat roost access points, flight paths and foraging areas, further details provided in section 10.15.
- 10.9 Mitigation subject to the approval of Natural Resources Wales.
- 10.10 The roost provision on site will be dedicated for bats and permanent.

Work undertaken by the Ecologist

- 10.11 **Capture/Exclusion:** Once an EPSML licence is in place from NRW the contractor will provide a safe means of access to allow the ecologist to investigate all roost potential for bat presence at Mill cottage and the brick-built outbuilding.
- 10.12 Due to the numerous areas of bat roost potential, exclusion is considered to be unproductive, thus the ecologist will supervise careful and controlled removal of bat roost area(s). In addition wherever opportunities for bats exist in other parts of the both buildings the supervised dismantling will extend to these areas. In the event of bat(s) being present, providing they are species and numbers for which the license has been granted, then it/they will be removed, placed in a secure box with soft tissue and immediately transferred into a bat box that will have previously been erected on one of the trees to the north/west. Once it has been established by the ecologist that bat(s) are absent the conversion and restoration work will continue to completion.

- 10.13 In the unlikely event that bats are found outside of supervision time, then as legal requirement and conditions of the licence work will immediately cease and the ecologist contacted for further advice; contractors must not touch, handle or in any way cause bats to move.

Work to be undertaken by the building contractor

New Roost Creation:

- 10.14 Proposals for the site have not yet been finalised, therefore, mitigation for bats will be finalised when proposed elevations and/or a proposed site layout is provided. However, mitigation will provide typical features favoured by both crevice-dwelling and loft-dwelling bats, notably Common Pipistrelle, Soprano Pipistrelle, Brown Long-Eared, Whiskered/Brandt's and Lesser Horseshoe bats as follows:-

- Ridge access will be instated at Mill Cottage at least at four localities on the building (see Figure 9).
- Bitumen 1F underfelt will be used as the roof lining across the entirety of Mill Cottage as opposed to breathable membrane. A breathable membrane must not be used in any area at Mill Cottage or the stand-alone roost. The slate roof coverings as proposed/required are not a sealed unit and the risk of bats coming into contact with the membrane on the roof is high. BRM poses a direct risk to roosting bats where their fine claws cause the long fibres to loosen, creating a web affect which results in entanglement and death.
- Soffit and barge access shall be re-instated across areas currently used by pipistrelle, whiskered/brandt's and brown long-eared bats and will allow access into existing loft voids at Mill cottage.
- A stand-alone roost will be incorporated into the proposals to the north which will entail the development of a separate building at a minimum of 3.5-4 metres off ground floor level (see Figures 7-8); the interior enclosed space will be to the dimensions 6 metres length by 4 metres width.

The stand-alone roost will incorporate timber cladding backed with bitumen 1F underfelt to the western gable elevation with gaps along cladding of minimum width 15-18mm and length of 75mm (see Figure 7). Sited on the roof of the stand-alone roost to the south-east will be dedicated access for Lesser Horseshoe bats which will provide open access for bats to fly directly into the loft space, whilst not allowing for illumination in the loft space. The roof of the stand-alone roost will comprise slates backed with bitumen 1F underfelt as opposed to breathable membrane or any other underfelt material.

- 10.15 The roost(s) will be permanent and dedicated for bats; they cannot be used for any other purpose. Management requirements for the roost/s are considered to be absent. Lighting will not be directed at or close to the roost areas nor will it affect nearby foraging places or flight lines. To ensure this, full lighting proposals should be included with the planning documents. Artificial lighting should be included in the compliance checks that form part of all mitigation proposals.

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Consideration of artificial lighting should include reference to currently absent artificial lighting on the site and proposed lighting with reference to external to mitigation features, proposed stand-alone bat roost and key bat flyways.

Should light levels be significantly increased within the parameters of Mill Cottage screening should be incorporated to prevent illumination of key features and flight lines as described.

Examples of physical light screening options

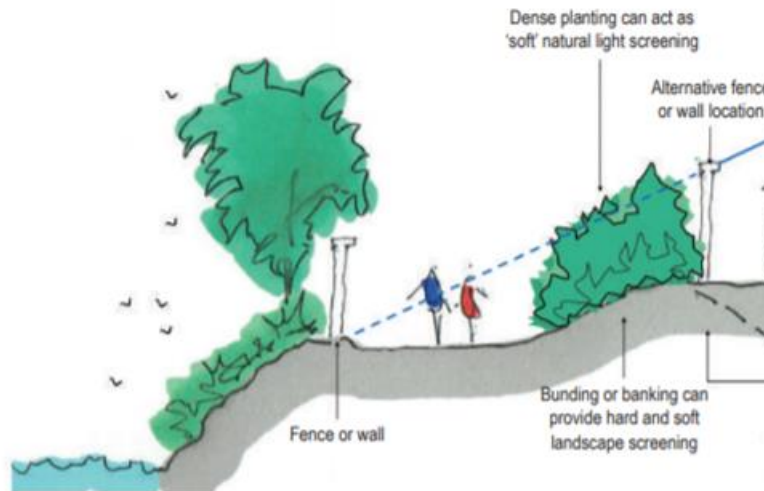


Figure 7: Light screening options for consideration



Figure 8: Indicative stand-alone roost showing elevation with gaps in timber cladding



Figure 9: Indicative Lesser Horseshoe bat access



Figure 10: Indicative ridge tile access specification

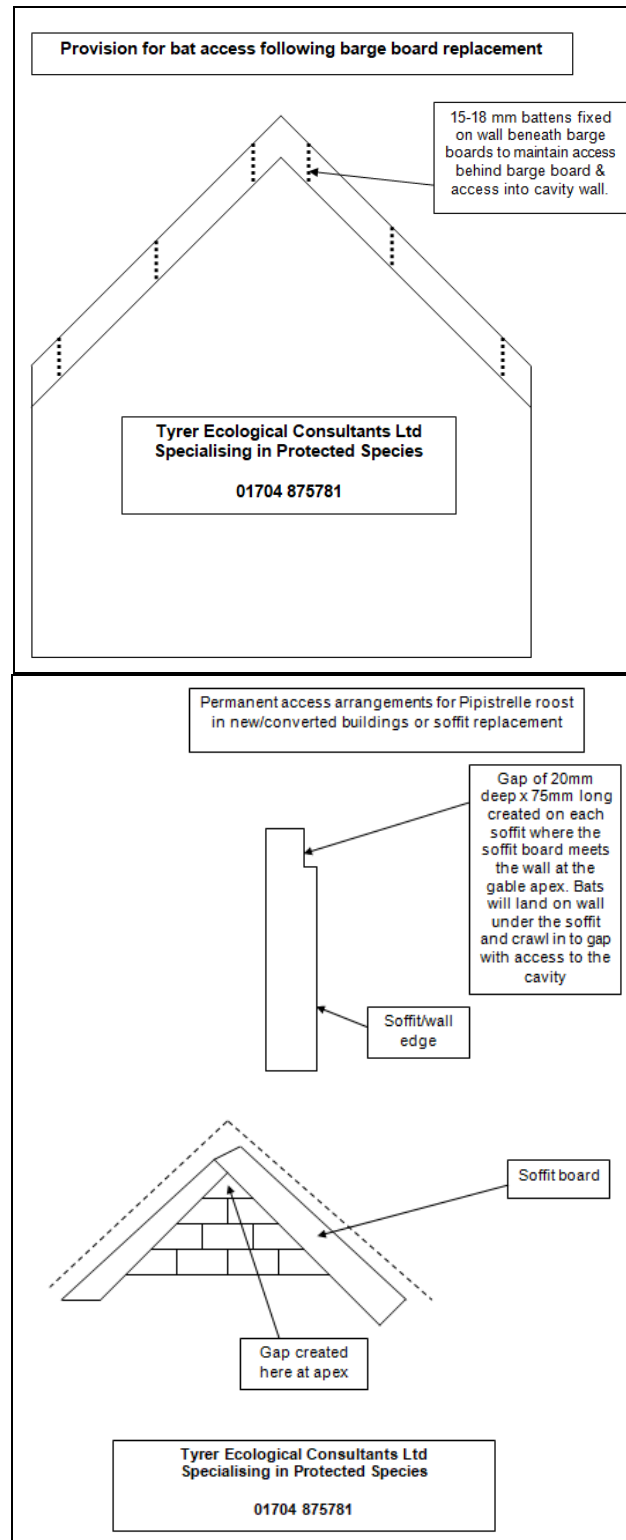


Figure 10: Barge/soffit access indicative

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Appendix I: Site Photographs



Plate 1: Indicative nature of the site

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Plate 2: Mill cottage elevations



Plate 3: Pipistrelle and Long-eared Droppings (moved for photo)



Plate 4: Accessible areas of loft space within Mill Cottage



Plate 5: Brick-built outbuilding



Plate 6: Variegated Yellow Archangel indicative

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Appendix II: Site-Specific Botanical Species List

<u>Class</u>	<u>Common Name</u>	<u>Scientific Name</u>
<u>Bryopsida</u> <u>(Mosses & Liverworts)</u>		<i>Calliergonella cuspidata</i>
		<i>Grimmia pulvinata</i>
		<i>Orthotrichum anomalum</i>
		<i>Orthotrichum pulchellum</i>
		<i>Rhytidiadelphus squarrosus</i>
		<i>Ulota</i> sp.
<u>Equisetopsida</u> <u>(Horsetails)</u>	Field Horsetail	<i>Equisetum arvense</i>
	Giant Horsetail	<i>Equisetum telmateia</i>
	Marsh Horsetail	<i>Equisetum palustre</i>
<u>Pteridopsida</u> <u>(Ferns)</u>	Hard Shield-fern	<i>Polystichum aculeatum</i>
	Hart's-tongue Fern	<i>Asplenium scolopendrium</i>
	Lady Fern	<i>Athyrium filix-femina</i>
	Male Fern	<i>Dryopteris filix-mas</i>
	Soft Shield-fern	<i>Polystichum setiferum</i>
<u>Magnoliopsida</u> <u>(Flowering Plants)</u>	a Dandelion	<i>Taraxacum</i> sect. <i>Ruderalia</i>
	Alder	<i>Alnus glutinosa</i>
	Apple	<i>Malus pumila</i>
	Ash	<i>Fraxinus excelsior</i>
	Black Knapweed	<i>Centaurea nigra</i>
	Bluebell sp.	<i>Hyacinthoides</i> sp.
	Bracken	<i>Pteridium aquilinum</i>
	Bramble agg.	<i>Rubus fruticosus</i> agg.
	Broad-leaved Dock	<i>Rumex obtusifolius</i>
	Broad-leaved Willowherb	<i>Epilobium montanum</i>
	Brooklime	<i>Veronica beccabunga</i>
	Buddleja	<i>Buddleja davidii</i>
	Cedar sp.	<i>Thuja</i> sp.
	Cleavers	<i>Galium aparine</i>
	Cock's-foot	<i>Dactylis glomerata</i>
	Common Nettle	<i>Urtica dioica</i>
	Common Ragwort	<i>Jacobaea vulgaris</i>
	Creeping Bent	<i>Agrostis stolonifera</i>
	Creeping Cinquefoil	<i>Potentilla reptans</i>
	Creeping Soft-grass	<i>Holcus mollis</i>
	Dove's-foot Crane's-bill	<i>Geranium molle</i>
	Elder	<i>Sambucus nigra</i>
	Enchanter's Nightshade	<i>Circaea lutetiana</i>
	Evening-primrose sp.	<i>Oenothera</i> sp.
	False Brome	<i>Brachypodium sylvaticum</i>

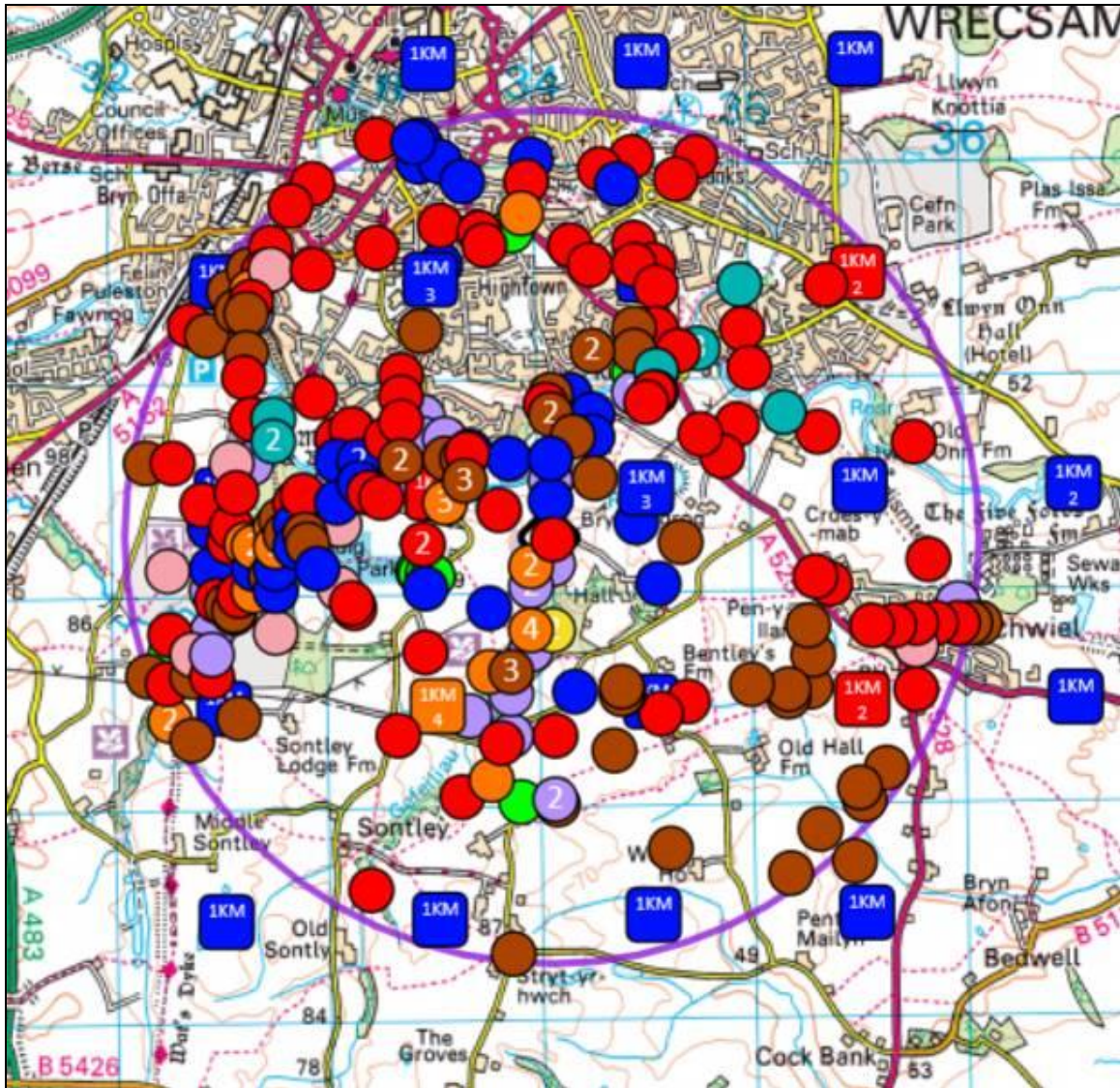
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	Foxglove	<i>Digitalis purpurea</i>
	Garden Lady's-mantle	<i>Alchemilla mollis</i>
	Goat Willow	<i>Salix caprea</i>
	Great Willowherb	<i>Epilobium hirsutum</i>
	Grey Willow	<i>Salix cinerea</i>
	Hawthorn	<i>Crataegus monogyna</i>
	Hedge Bindweed	<i>Calystegia sepium</i> subsp. <i>sepium</i>
	Hedge Woundwort	<i>Stachys sylvatica</i>
	Herb-Robert	<i>Geranium robertianum</i>
	Hoary Willowherb	<i>Epilobium parviflorum</i>
	Hogweed	<i>Heracleum sphondylleum</i>
	Holly	<i>Ilex aquifolium</i>
	Hybrid Willow	<i>Salix x fragilis</i>
	Ivy	<i>Hedera helix</i>
	Large Bindweed	<i>Calystegia silvatica</i>
	Lesser Burdock	<i>Arctium minus</i>
	Marsh Thistle	<i>Cirsium palustre</i>
	Marsh Woundwort	<i>Stachys palustris</i>
	Meadow Vetchling	<i>Lathyrus pratensis</i>
	Nipplewort	<i>Lapsana communis</i>
	Pedunculate Oak	<i>Quercus robur</i>
	Pendulous Sedge	<i>Carex pendula</i>
	Plum	<i>Prunus domestica</i>
	Red Campion	<i>Silene dioica</i>
	Remote Sedge	<i>Carex remota</i>
	Rhododendron	<i>Rhododendron ponticum</i>
	Rose sp.	<i>Rosa</i> sp.
	Rosebay Willowherb	<i>Chamaenerion angustifolium</i>
	Rough Meadow-grass	<i>Poa trivialis</i>
	Russian Comfrey	<i>Symphytum x uplandicum</i>
	Selfheal	<i>Prunella vulgaris</i>
	Short-fruited Willowherb	<i>Epilobium obscurum</i>
	Silver Birch	<i>Betula pendula</i>
	Snowberry	<i>Symphoricarpos albus</i>
	Soft Rush	<i>Juncus effusus</i>
	Spear Mint	<i>Mentha spicata</i>
	Spear Thistle	<i>Cirsium vulgare</i>
	Square-stalked St.John's-wort	<i>Hypericum tetrapterum</i>
	Tall Fescue	<i>Schedonorus arundinaceus</i>
	Teasel	<i>Dipsacus fullonum</i>
	Tufted Hair-grass	<i>Deschampsia cespitosa</i>
	Variegated Yellow Archangel	<i>Lamiastrum galeobdolon</i> subsp. <i>argentatum</i>

Mill Cottage, Marchwiel Hall, Wrexham, LL13 0SS
Phase 2 Habitat Survey with Dusk and Dawn Results

	Water Figwort	<i>Scrophularia auriculata</i>
	Water Mint	<i>Mentha aquatica</i>
	Wavy Bittercress	<i>Cardamine flexuosa</i>
	Wild Angelica	<i>Angelica sylvestris</i>
	Wood Avens	<i>Geum urbanum</i>
	Wood Dock	<i>Rumex sanguineus</i>
	Yorkshire-fog	<i>Holcus lanatus</i>

Appendix III: Data Search Results

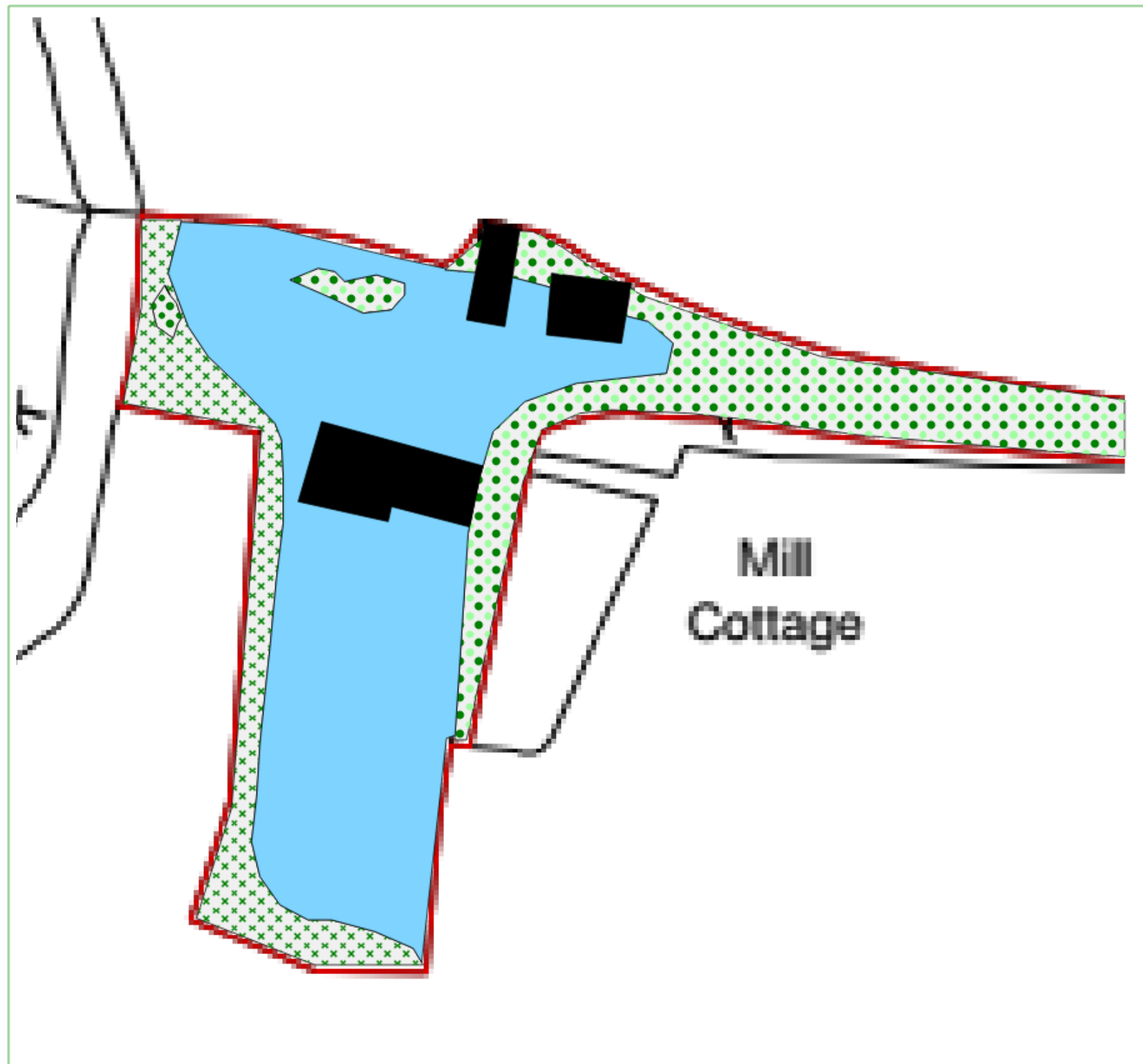


E-mapper data search results

Appendix IV: *Inspection & Assessment in Relation to Bats & Breeding Birds including
Dusk Survey Results (The Tyrer Partnership, 2016)*

Appendix V: Habitat Maps

Phase 1



Site Name: Mill Cottage

Legend

-  A2.2 - Scrub - scattered
-  A3.1 - Broadleaved Parkland/scattered trees
-  A3.3 - Mixed Parkland/scattered trees
-  F1 - Swamp
-  J1.4 - Introduced shrub
-  J3.6 - Buildings

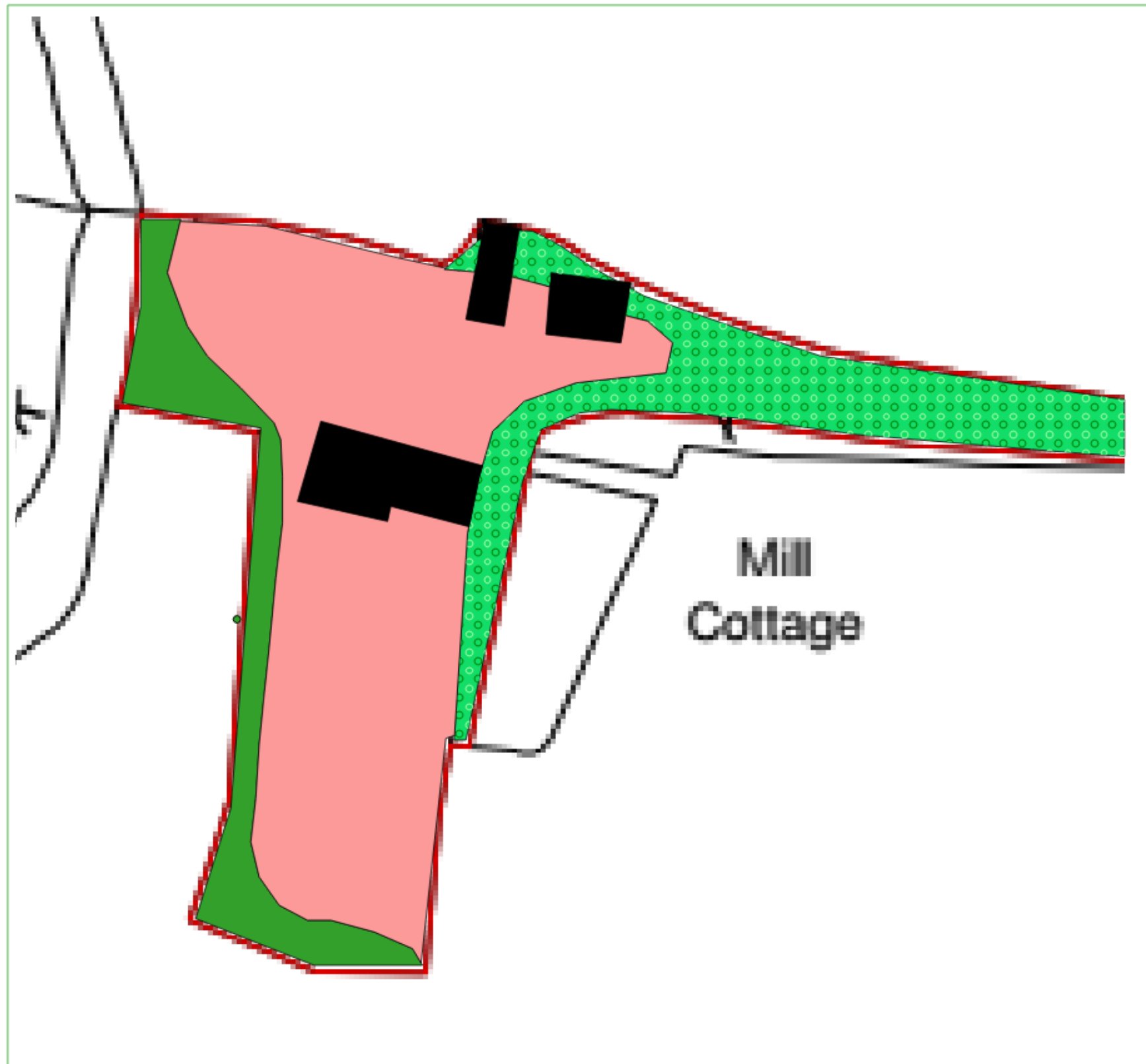
Date: 19/08/2019
Drawn: JS
Checked & Approved: KW



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Phase 2



Site Name: Mill Cottage

Legend

- W1 - Salix - Galium woodland
- W10 - Quercus - Pteridium - Rubus woodland
- S28 - Phalaris tall-herb fen
- Buildings (no ascribed community)

Date: 19/08/2019
Drawn: JS
Checked & Approved: KW



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