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Preliminary Ecological Appraisal (PEA)

Project: Land behind Seion Chapel, Pontfadog, LL20 7AS

On behalf of: DPA/ Julian Morris

Date: December 2017

Report Reference: 061217MM



N.B. The contents of this report contains information regarding protected species of a sensitive nature.

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Executive Summary

The contents of this report detail the findings of a Preliminary Ecological Appraisal (PEA) for the proposed erection of dwellings at Land behind Seion Chapel, Pontfadog, LL20 7AS. The site is centred on approximate OSGR SJ 23401 38196.

The proposed works area, set within a small rural village, encompasses semi-mature and mature trees (**T1**) and post and wire fencing (**T2**) within a species-poor grassland (**T3**). An unnamed spring is located along the length of the western site boundary (**T4**). Species-poor moribund hedgerow is located beyond the post and wire fence on the eastern boundary (**T5**).

Although the site offers bat foraging potential along the site boundaries, bats are **not** considered a constraint to the proposed development due to a lack of suitable bat roosting opportunity.

No standing bodies of water was identified within a 250m radius of the site. The site is considered as poor suitability for great crested newts (GCN; *Triturus cristatus*). No records of GCN were obtained within a 1km area. GCN's are **not** considered a constraint to the proposed development.

The site is of poor suitability to reptile species found within the UK. Slow-worm (*Anguis fragilis*) records were retrieved within a 1km search area from the site. Reptiles are **not** considered a constraint.

Trees along the site boundaries offer moderate nesting bird potential. It is recommended that mature trees are left *in situ* along the western site boundary. Vegetation works are to be undertaken outside of the bird breeding season (this is February – August). An ecologist must be consulted if works are to be undertaken outside of this period.

Bat and bird box provision is recommended to enhance the ecological value of the site, as required for new developments.

The spring along the western boundary was surveyed for the presence of white-clawed crayfish (*Austropotamobius pallipes*). None were found. As a tributary to the River Ceiriog, safeguarding measures should be established with the Environment Agency prior to work commencement.

The planting of native hedgerow along existing and newly established boundaries is recommended.

All future, external, artificial lighting is to be directed away from the site boundaries/hedgerows/trees and be of the Passive Infra-Red type, set on a short timer and orientated towards the ground.

No evidence of other protected species was noted during the survey and no adverse impacts upon protected species or habitats of ecological merit are envisaged, provided the provisions detailed in **Sections 3 and 4** of this report are adhered to.

Section 1

Introduction

1.1 Pearce Environment Ltd were commissioned by DPA, on behalf of Julian Morris, to undertake a Preliminary Ecological Appraisal (PEA) in reference to the proposed construction of dwellings at Land behind Seion Chapel, Pontfadog, LL20 7AS (hereafter referred to as 'the site'). The site is centred on approximate Ordnance Survey Grid Reference (OSGR) SJ 23401 38196.

1.2 This report sets out the findings of a desk-based study, site-based study and Preliminary Roost Assessment (PRA) undertaken at the site by Pearce Environment Ltd during December 2017.

1.1 The aims of this report are to:

- Determine the habitat types within and immediately adjacent to the boundary of the site in relation to the proposed development footprint;
- Identify habitats and species constraints pertinent to the development proposals, in accordance with statutory legislation and guidance given in the NPPF¹, with specific focus on nesting birds and bats;
- Detail reasonable avoidance measures, mitigation and compensation measures where necessary;
- Identify opportunities for the proposed development to provide enhancements and add to the biodiversity resource within the site.

¹ Department for communities and Local Government, (2012). *National Planning Policy Framework*

Section 2

Methodology

2.1 This section summarises the methodologies used during the ecological studies undertaken to inform the proposed works, in line with the aims set out in **Section 1** of this report.

Desk Study

2.2 The desk study is an important part of the ecological assessment as it provides contextual information, such as the sites' proximity to designated areas and known records of protected/ notable species (**Table 2.1**).

2.3 This information is used to supplement the findings of a Preliminary Ecological Appraisal (PEA) and supports the recommendations and conclusions set out in **Sections 3** and **4** of this report.

Table 2.1: Summary of resources used and information requested during the desk study (2017)

Organisation/Resource	Information Assessed (search distance from site boundary)
COFNOD ²	• International statutory designations (1km) • National statutory designations (1km) • Statutory designations (1km) • Non-statutory designations (1km) • All recorded flora and fauna (1km)

2.4 The search areas described above and resources used are considered to be sufficient to assess the potential for the proposal to affect protected species and designations of conservation concern. All pertinent information obtained during the desk study is referenced within **Section 3** and **Section 4** of this report.

² COFNOD – North Wales Environmental Information Service (www.cofnod.org.uk)

Preliminary Ecological Appraisal (PEA)

- 2.5 This level of survey does not aim to provide a complete floral and faunal inventory present on site but to identify field signs of, or habitats with, the potential to support protected species, thereby determining the need for further species survey(s).
- 2.6 The main habitat types and plant species present were identified and mapped in **Plan 1**, summarised in **Section 3** and illustrated using photographs included within this report, according to the guidelines set out by the Chartered Institute of Ecology and Environmental Management (CIEEM)³.
- 2.7 The PEA of the site was undertaken on the 6th December 2017 in dry and bright conditions.
- 2.8 The survey was performed by M Morgan BSc (hons), an experienced ecologist with a 1st class degree in Plant Biology, and holder of a great crested newt licence obtained from Natural England.

Limitations

- 2.9 The surveyor had unrestricted access to the entirety of the site and external/ internal areas of the building(s).
- 2.10 Whilst every effort is made to meet the client brief, no site visit can ensure prediction of the natural environment such as movement of species in response to variables such as weather and seasonality.
- 2.11 As with any survey, it is only documenting what the surveyor sees and hears on the specific survey day and their interpretation of that.

Species Surveys

Bats

Preliminary Bat Roost Assessment: Buildings

- 2.12 A daytime assessment of all structures on site was undertaken to determine their potential to support roosting bats. All external features considered potentially suitable for bats were identified and assessed. Signs of bat activity such as droppings, feeding remains and urine stains were also searched for around all accessible areas. The potential suitability of the structures investigated was assigned a rating of low-to-high in accordance with section 5.2 of the “*Bat Conservation Trust’s Good Practice Guidelines*”⁴ (**Appendix 1**). Recommendations for further survey requirements are based on guidelines summarised in Table 7.3 (**Appendix 1**).
- 2.13 An internal assessment of all accessible areas was undertaken by a bat worker for evidence of roosting bats such as droppings, feeding remains and urine staining.

³ *Guidelines for Preliminary Ecological Appraisal* (2013). CIEEM. Technical Guidance Series, 1-8.

⁴ Collins J. (Ed.) (2016) *Bat Surveys for Professional Ecologist: Good Practice Guidelines* (3rd Ed.) The Bat Conservation Trust, London.

Preliminary Bat Roost Assessment: Trees

- 2.14 An assessment from the ground of all suitable trees on the site(s) was undertaken to determine their potential to support roosting bats.
- 2.15 All trees examined were categorised based on the number and types of features known to be suitable to support roosting bats, summarised in section 6.2.4 and classified in Table 4.1 (**Appendix 1**) of “*Bat Surveys for Professional Ecologist: Good Practice Guidelines*”⁵. These features include cracks and splits in limbs, cavities, woodpecker holes, loose bark and thick-stemmed ivy. Where appropriate these features were assessed using binoculars. Recommendations for further survey requirements are based on guidelines summarised in Table 7.3 (**Appendix 1**) of “*Bat Surveys for Professional Ecologist: Good Practice Guidelines*”.

Great Crested Newts

- 2.16 A desk based study was undertaken using OS maps and online mapping resources to identify those waterbodies within 250m of the site boundaries.

Habitat Suitability Index (HSI)

- 2.17 Those ponds identified within the search area not considered to be separated from the application site by major dispersal barriers were assessed for their potential to support great crested newts (*Triturus cristatus*) using the Habitat Suitability Index (HSI), developed by Oldham et al. (2000)⁶. This assessment uses a scoring system, derived from several criteria including pond area, water quality, fish/waterfowl presence and the value of the surrounding, terrestrial habitat. Water bodies with high scores are considered more likely to support GCN than those with lower scores.
- 2.18 This tool has been developed to provide a quantitative measure of the suitability of a pond to support great crested newts and should not be used as a substitute for presence/absence surveys where they are required.
- 2.19 The assessment was performed during the PEA by a Natural England great crested newt licence holder. HSI scores relating to the suitability of the ponds assessed to support great crested newts are described in **Table 2.2**.

Table 2.2: Pond suitability for great crested newts determined using HSI scoring system

HSI Score	Pond suitability to support great crested newts
<0.5	Poor suitability
0.5 – 0.59	Below average suitability
0.6 – 0.69	Average suitability
0.7 – 0.79	Good suitability
> 0.8	Excellent suitability

- 2.20 Appropriate biosecurity measures were undertaken where necessary.

⁵ Collins J. (ed) (2016) *Bat Surveys for Professional Ecologist: Good Practice Guidelines* (3rd Ed.) The Bat Conservation Trust, London.

⁶ 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.

Nesting birds

- 2.21 An internal and external assessment of any built structure(s) on site was undertaken by an experienced ecologist, to identify existing nests and the the presence of habitat/ features suitable for nesting birds.
- 2.22 An assessment from the ground of all trees/ boundary vegetation located on or immediately adjacent to the site was undertaken by an experienced ecologist, to identify the presence of habitat/ features suitable for nesting birds.

Badgers

- 2.23 A thorough site walkover was undertaken to determine the presence of badger (*Meles meles*). Field signs such as setts, scrapings produced during foraging behaviour, latrines, paths and paw prints were searched for. Where present, an assessment of excavations was made, taking into account the shape of the entrance, the quantity of spoil, the presence of fresh bedding and the presence of badger hair/ claw marks.

Reptiles

- 2.24 A thorough site walkover was undertaken to assess the habitat suitability for common reptile species. A terrestrial hand search was undertaken during the PEA for reptiles basking or seeking refuge beneath debris.

Section 3

Results and Recommendations

Site Description

- 3.1 The site is set within the small rural village of Yorton, Shropshire, ~8.5 miles north of Shrewsbury (**Figure 3.1**).

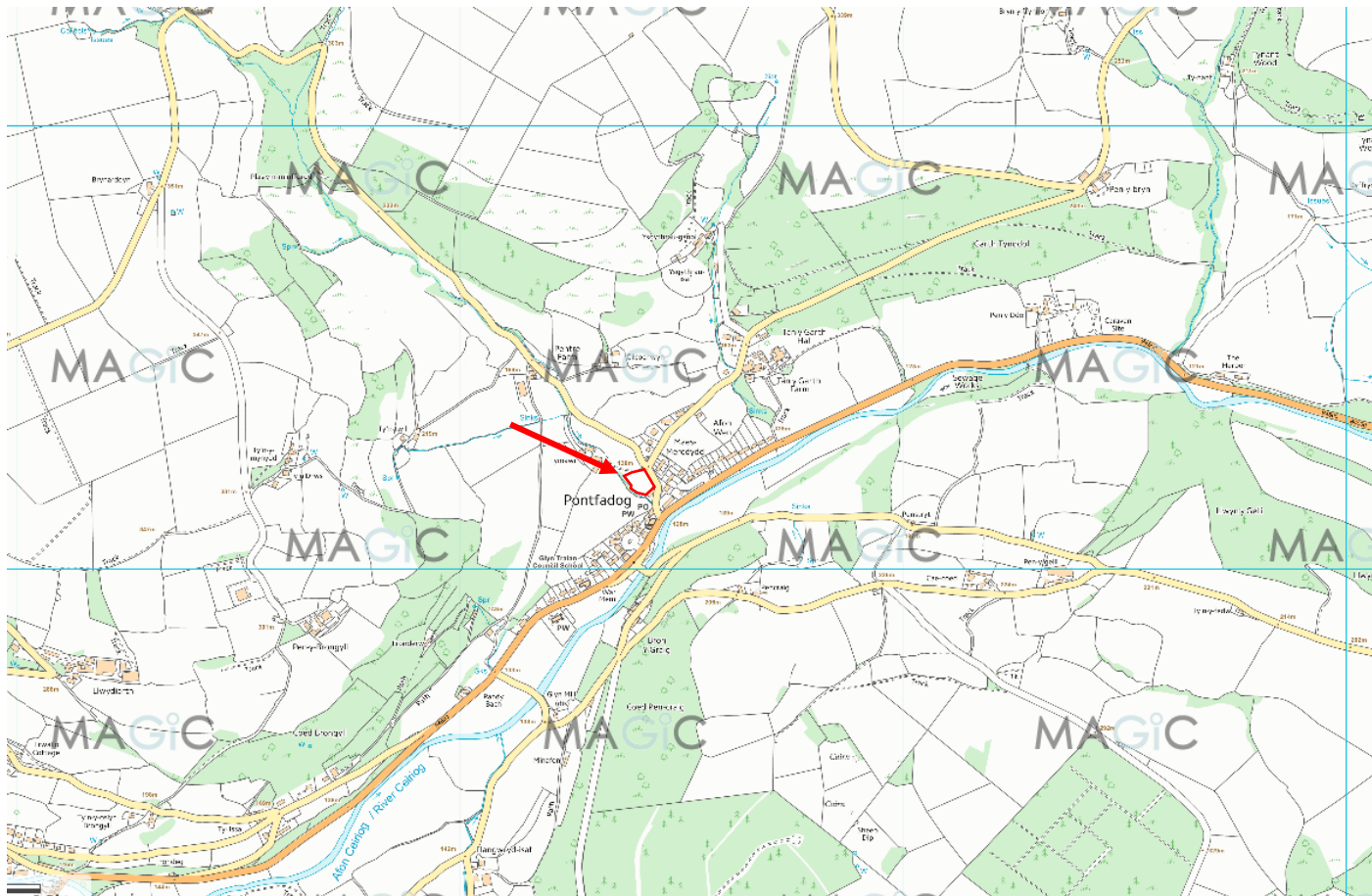


Figure 3.1 Site location (outlined in red) reproduced using freely available online mapping resources (December 2017)

- 3.2 The site is immediately adjacent to residential property to the south and east, with agricultural pastureland existing to the west and north of the site.
- 3.3 The site itself (~0.6 acres) comprises of semi-mature and mature trees (along the western boundary), post and wire fencing, a moribund hedgerow and dominating species-poor grassland (**Figure 3.2**). A spring runs along the western site boundary.
- 3.4 Existing access leads directly off an unnamed road to the northeast of the site.



Figure 3.2 Aerial photograph of the site (indicated in red). Reproduced using freely available online mapping resources (2017)

Broad habitats

Site access and boundaries

- 3.5 Access to the site leads directly via an unnamed road to the northeast of the site (**Image 3.3**). The western site boundary is delineated by a spring which runs along the length of the boundary (**Image 3.4**). Semi-mature and mature trees are scattered along the bank of spring. The northern boundary consists of a post and wire fence, (**Image 3.5**) which continues along the eastern boundary, beyond which lies a species-poor moribund hedgerow (**Image 3.6**). A great diversity of plant life exists here between the hedgerow and fence. A part post and wire fence and timber fencing establish the southern boundary towards the residential properties (**Image 3.7**).

Grassland

- 3.6 The site is dominated by a large area of species-poor grassland, semi-improved and previously grazed (**Image 3.8**). As a whole the grassland offers low ecological value.

Trees and hedgerow

- 3.7 A number of semi-mature and mature trees are located near the western boundary. Beyond the post and wire fence along the eastern boundary is a moribund hedgerow containing low diversity. Tree and hedgerow species include;

- Hawthorn (*Crataegus monogyna*) (Hedgerow)
- Ash (*Fraxinus excelsior*) (trees and hedgerow)
- Elder (*Sambucus nigra*)
- Hazel (*Corylus avellana*)
- Holly (*Illex aquifolium*)
- Blackthorn (*Prunus spinosa*)
- Bramble (*Rubus fruticosus*) (hedgerow)
- Dog rose (*Rosa canina*) (hedgerow).



Image 3.3 Unnamed road, leading onto the site from the east



Image 3.4 An unnamed spring running alongside the western boundary of the site



Image 3.5 Post and wire fence along the northern boundary, with pasture beyond



Image 3.6 Moribund hedgerow beyond a post and wire fence along the eastern boundary



Image 3.7 Post and wire fence and timber fence along the southern site boundary



Image 3.8 Species-poor grassland dominating the site, of low ecological value

Desk Study - Designated Sites/Habitats of Importance

Statutory Designations

3.8 A desk based study was undertaken to identify the presence of statutory designations which include,

International recognised statutory designations

- Special Protection Areas (SPAs)
- Special Areas of Conservation (SACs)
- Ramsar Sites

National recognised statutory designations

- Sites of Special Scientific Interest (SSSIs)
- National Nature Reserves (NNRs)

Local level statutory designations

- Local Nature Reserves (LNRs)

3.9 A review of information available from freely available online resources identified one (1) statutory designation of conservation concern within 1km of the site, the River Ceiriog, as illustrated in **Figure 3.9**. Areas of Ancient Semi Natural Woodland are located within several localities near to the site.

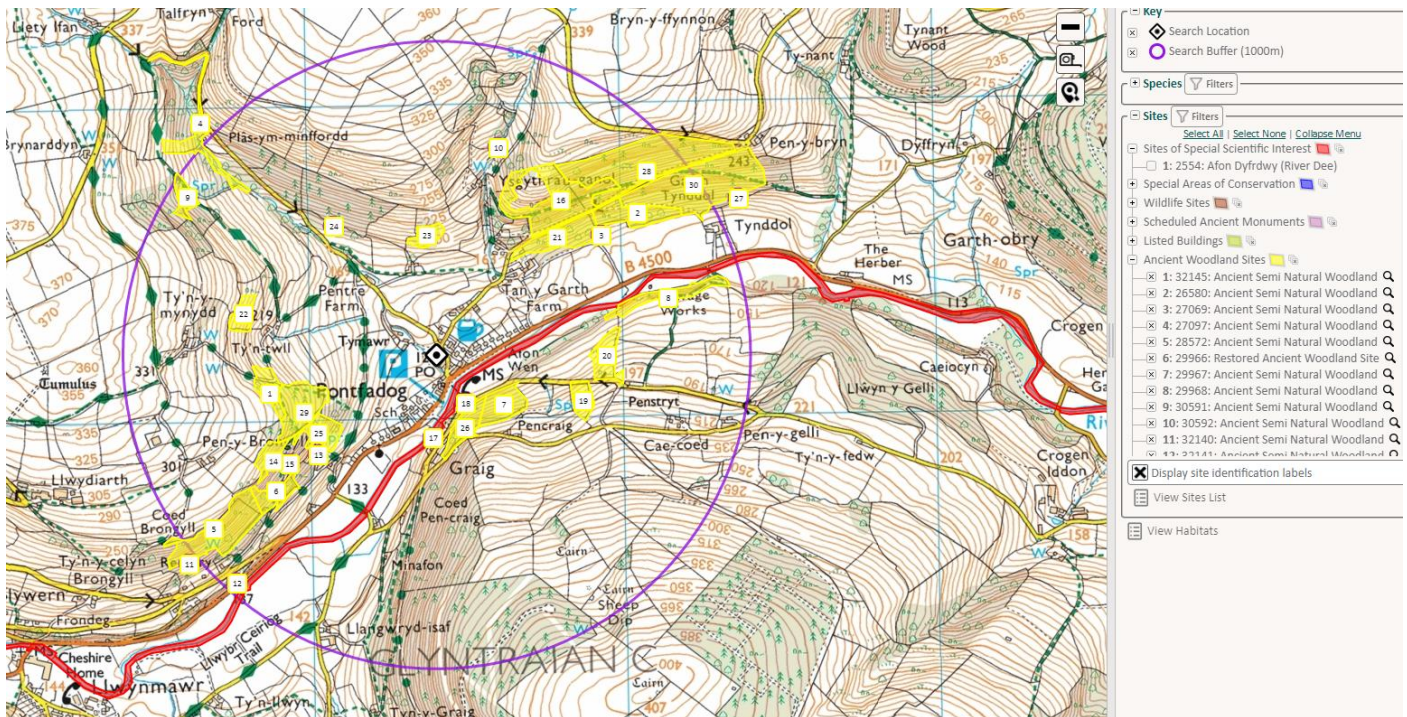


Figure 3.9 The River Ceiriog, a SSSI, and areas of Ancient Semi Natural Woodland are located within 1km of the site (COFNOD, 2017)

Non-Statutory Designations

- 3.10 A number of woodlands exist near to the site which qualify as ‘wildlife areas’.

Habitats of Importance

- 3.11 A desktop search identified no habitats of importance with a 1 km area.
- 3.12 An assessment of the surrounding habitats using OS maps and online mapping resources, in addition to the site visit, identified no significant standing bodies of water within a 250m zone of influence of the site (**Figure 3.10**).
- 3.13 No other habitats of conservation concern were identified during the desk study.

Species Records

- 3.14 A search for mammals recorded within a 1 km radius from the site resulted in six (6) species including; otter (*Lutra lutra*), American mink (*Neovison vison*), common pipistrelle (*Pipistrellus pipistrellus*), brown long-eared bat (*Plecotus auritus*), hedgehog (*Erinaceus europaeus*), and hare (*Lepus europaeus*).
- 3.15 A moderate number of bird records (50) were obtained within the area. Notable species include; common swift (*Apus apus*), curlew (*Numenius arquata*), yellowhammer (*Emberiza citrinella*), and among others dipper (*Cinclus cinclus*).
- 3.16 Birds listed as Schedule 1, and recorded within 1km of the site include;
- Fieldfare (*Turdus pilaris*)
 - Goshawk (*Accipiter gentilis*).

- 3.17 A single reptile record of slow-worm (*Anguis fragilis*) was retrieved.
- 3.18 A low number (13) of plant records were retrieved within a 1km radius. Plants listed as Schedule 9 (invasive species) include;
- Japanese knotweed (*Fallopia japonica*)
 - Himalayan balsam (*Impatiens glandulifera*) (1147m from the site).
- 3.19 Atlantic salmon (*Salmo salar*) and brown trout (*Salmo trutta*) have been recorded within the River Ceiriog to the south of the site.

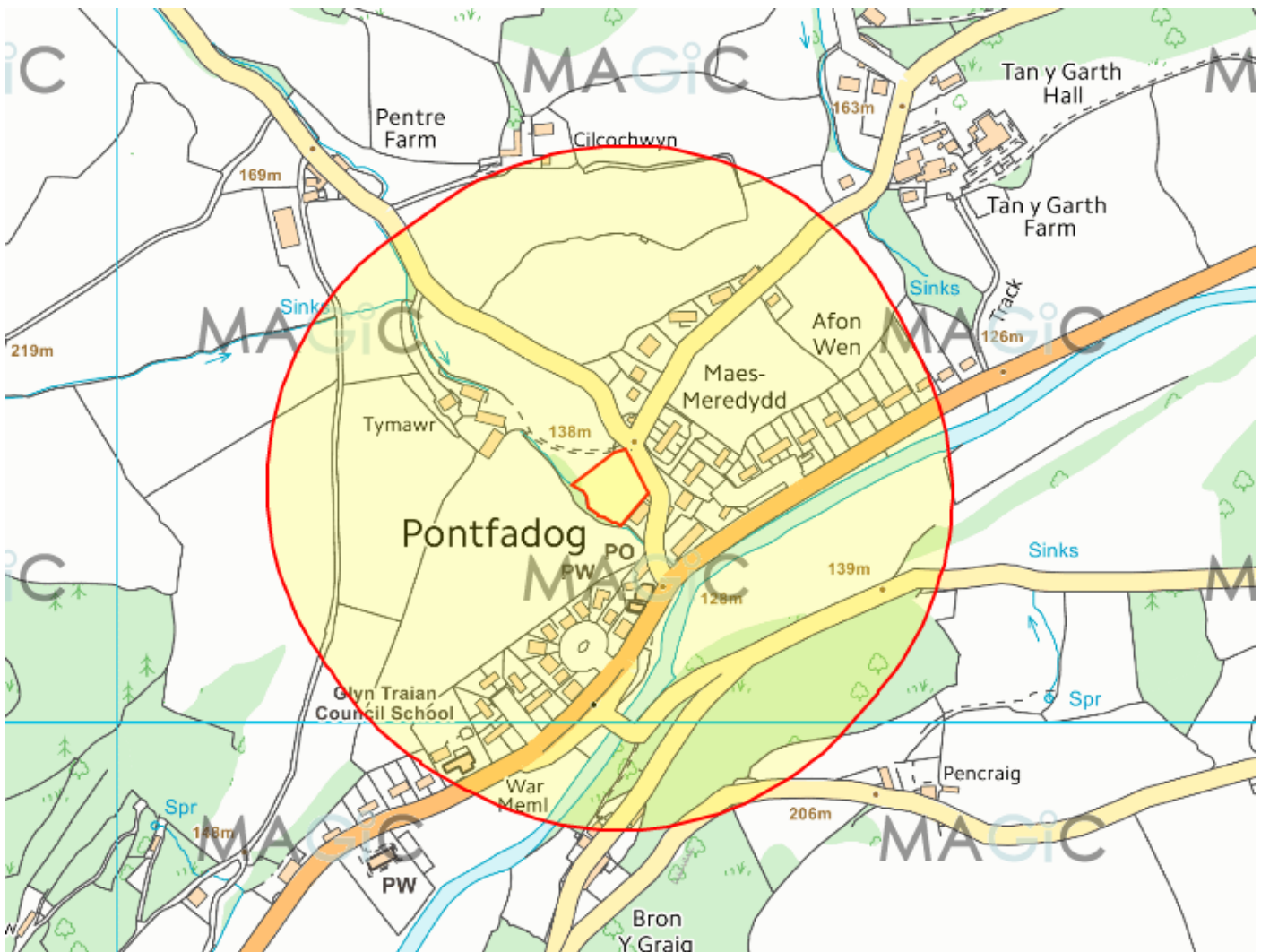


Figure 3.10 No standing bodies of water were identified within 250m of the proposed application site. Information gained from online sources, 2017

Preliminary Roost Assessment (PRA)

- 3.20 No buildings on site are included within the developments. The mature trees on site were examined but none were considered to offer any bat roosting opportunity owing to a lack of suitable features, such as hollows, cracks, loose bark or a dense covering of ivy (*Hedera helix*).

Nesting birds

- 3.21 No bird nests were observed within the trees or hedgerow on site.
- 3.22 The mature trees on site offer moderate to high nesting bird potential.

Species Constraints

- 3.23 Potential species constraints are detailed below, informed by the findings of the desk study combined with observed field signs or actual presence of protected species identified during the Preliminary Ecological Appraisal (PEA) and Preliminary Roost Assessment (PRA).

Bats

- 3.24 No buildings are included in the developments.
- 3.25 No potential bat roosting features were observed within the trees located on site.
- 3.26 The site as a whole offers moderate bat foraging and commuting potential, particularly along the western boundary among the mature trees and spring.

Legislation

- 3.27 All species of British bat are listed as a European Protected Species (EPS) on Schedule 2 of the Conservation Regulations (Annex IV(a) to the Habitats Directive). This affords them strict protection under the Conservation of Habitats and Species (Amendment) Regulations 2010, making it an offence to:
- i. Deliberately capture, injure or kill a bat;
 - ii. Deliberately disturb in a way that would significantly affect their local distribution or abundance, or affect their ability to survive, breed or rear young;
 - iii. Deliberately damage or destroy a roost;
 - iv. Possess, control, transport, sell, exchange or offer for sale/exchange any live or dead bat or part thereof;
- 3.28 Additional protection for bats is also afforded under the Wildlife and Countryside Act 1981 (as amended), making it an offence to intentionally or recklessly disturb bats whilst they are occupying a structure or place which is used for shelter or protection, or to obstruct access to this structure or place.

Recommendations (bats)

- 3.29 As required by new developments and to enhance the ecological value of the site, it is recommended that a minimum of five (5) bat boxes, such as the Schwegler 2F (**Image 3.11**), are to be installed upon newly built dwellings or existing mature trees. The bat boxes should be installed on southern/ south-western aspects and at a height of no less than 4m.
- 3.30 All future, external, artificial lighting is to be directed away from the site boundaries/hedgerows/trees and be of the Passive Infra-Red type, set on a short timer and orientated towards the ground.



Image 3.11 An example of a Schwegler 2F bat box, suitable for a range of bat species

Nesting birds

- 3.31 The site offers moderate-high nesting bird potential within the trees and scrub (bramble). A single wood pigeon nest was observed in a mature sycamore tree.
- 3.32 A moderate number of bird records were obtained within 1km of the site.

Legislation

- 3.33 All wild birds, their nests and eggs are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended), this makes it an offence to:
- i. Intentionally kill, injure or take any wild bird;
 - ii. Take, damage or destroy the nest of any wild bird while it is in use or being built;
 - iii. Take, damage or destroy the egg of any wild bird; or
 - iv. To have in one's possession, or control, any wild bird (dead or alive) or egg or any part of a wild bird or egg.
- 3.34 In addition, further protection is afforded to those wild bird species listed on Schedule 1, prohibiting any intentional or reckless disturbance to these species while it is nest building, or at a nest containing eggs or young, or to recklessly disturb the dependent young of such a bird.

Recommendations (nesting birds)

- 3.35 It is recommended that mature trees along the western boundary remain *in situ*.
- 3.36 Any works on trees or scrub that may be required should be timed to occur outside the bird breeding season (this is February – August). In the event that works are required within this time period then inspections for nests **must** be undertaken by a suitably qualified ecologist immediately prior to the start of any works.
- 3.37 Should any active nest be found a buffer zone of 5m should be created around the nest and maintained until all chicks have fledged before works can commence/continue. Pearce Environment should be notified immediately.
- 3.38 A minimum of five (5) Schwegler Woodcrete (1B) Nest Boxes (**Image 3.12**), suitable for common passerine bird species, are to be installed on site as ecological enhancement. Additionally, two (2) Schwegler 2H nest boxes should be installed on site, suitable for nesting wrens (*Troglodytes troglodytes*) and robins (**Image 3.12**).
- Schwegler 1B 26mm hole size (**x 3**): suitable for smaller birds such as tits.
 - Schwegler 1B 32mm hole size (**x 2**): suitable for tits, nuthatches, flycatchers and sparrows (among others).
 - Schwegler 2H open-fronted nest boxes (**x 2**): suitable for wrens and robins
- 3.39 Schwegler 1B nest boxes should be installed with a northern or eastern aspect, so long as spots are not over-shaded, and at a height of ~4m.
- 3.40 Schwegler 2H nest boxes should be well hidden in vegetation and preferably fixed at a height lower than 2m. It is suggested that 2H nest boxes are installed upon walls abutting hedgerow, bushes or trees within the new development.



Image 3.12 An example of a Schwegler 1B Woodcrete box (left) and a Schwegler 2H open-front nest box (right)

Great Crested Newt (GCN)

- 3.41 A desk based assessment using OS maps and online mapping resources, in addition to the site visit, identified no significant bodies of standing water within 250m of the site.

3.42 No records of GCN within a 1km radius from the site were retrieved.

3.43 GCN are not considered a constraint to the proposed development.

Badger

3.44 During the detailed PEA, no field signs were observed suggesting use of the site by badger(s).

3.45 Badgers are not considered to be a constraint to the proposed development.

Reptiles

3.46 The site offers poor habitat for common reptile species.

3.47 Slow-worm records were retrieved during the desk study, to the northeast of the site.

3.48 Reptiles are not considered a constraint to the proposed developments.

3.49 No further species pertinent to this study were found and no field signs of other protected or notable species were observed during the PEA.

White-clawed crayfish

3.50 The watercourse along the western boundary offers moderate potential for white-clawed crayfish. Detailed below are the suitable habitat features found in the watercourse;

- Soft banks for burrowing – **yes**, although not overhanging watercourse
- Loose rock - **yes**
- Heterogenous flow patterns – **Partially** – some faster flowing riffles and pools observed

3.51 Invertebrate life noted in the pool was fairly poor. Caddisfly (*Trichoptera sp.*) larva were observed on the underside of rocks (**Image 3.13**).

3.52 No signs pertaining to white-clawed crayfish were observed.

3.53 White-clawed crayfish are not considered a constraint to the proposed development.



Image 3.13 Caddisfly larva found on the underside of a rock within the watercourse

Planting of native vegetation

- 3.54 It is recommended that new hedgerow planting will be undertaken where possible on site. It is suggested that existing boundaries and future internal boundaries are planted with native hedgerow. This may be done by installing bare rooted stock of local spaced approximately 30cm apart in two staggered rows to allow six whips per meter. Bare rooted stock will be installed using supportive canes and plastic spiral guards. An example of species composition may be seen in **Table 3.1**.

Table 3.1 Species composition of new hedgerow planting

Species	Composition
Hawthorn (<i>Crataegus monogyna</i>)	70%
Hazel (<i>Corylus avellana</i>)	10%
Guelder Rose (<i>Viburnum opulus</i>)	4%
Dog Rose (<i>Rosa canina</i>)	3%
Field Maple (<i>Acer campestre</i>)	3%
Blackthorn (<i>Prunus spinosa</i>)	2%
Crab Apple (<i>Malus sylvestris</i>)	2%
Dogwood (<i>Cornus sanguine</i>)	2%
Holly (<i>Ilex aquifolium</i>)	2%
Spindle Tree (<i>Euonymus europaeus</i>).	2%

Habitat Concerns

- 3.55 The unnamed spring running along the western boundary is a tributary to the River Ceiriog (SSSI), located ~46m to the south of the site. Otters, Atlantic salmon and brown trout have frequently been recorded within the river and 1km of the site.
- 3.56 Safeguarding of the watercourse is extremely important during the developments. Suitable precautions should be established, prior to work commencement, with the Environment Agency to reduce the risk of pollution, silting, or bank erosion of the watercourse.
- 3.57 Overall, the site is considered to be of low ecological value. With the proposed site enhancements, it is considered that the ecological significance shall be improved.

Section 4

Conclusions

Summary of the Site's Ecological Significance

- 4.1 The proposed works area, set within a small rural village, encompasses semi-mature and mature trees (**T1**) and post and wire fencing (**T2**) within a species-poor grassland (**T3**). An unnamed spring is located along the length of the western site boundary (**T4**). Species-poor moribund hedgerow is located beyond the post and wire fence on the eastern boundary (**T5**).
- 4.2 The site offers moderate foraging and commuting opportunity along the western boundary for bat species. However, a lack of bat roosting opportunity exists on the site.
- 4.3 Mature trees on site offer moderate bird nesting potential. It is recommended that mature trees remain *in situ*.
- 4.4 Where vegetation removal is required, this must take place outside the bird breeding season (this is February – August) or within the presence of a qualified ecologist.
- 4.5 Bat and bird box provision is recommended as to enhance the ecological value of the site.
- 4.6 All future, external, artificial lighting is to be directed away from the site boundaries/hedgerows/trees and be of the Passive Infra-Red type, set on a short timer and orientated towards the ground.
- 4.7 Safeguarding measures for the watercourse should be established with the Environmental Agency prior to the onset of works.
- 4.8 No evidence of other protected species was noted during the survey and no adverse impacts upon protected species or habitats of ecological merit are envisaged, provided the provisions detailed in **Sections 3 and 4** of this report are adhered to.

Table 4.1 Summary of the status of protected species within a 1km radius from the site.

Species/ Group	Local Records	Suitable Habitat on Site	Field Signs	Recommendations
Invasive species	Yes – Japanese knotweed (Himalayan balsam over 1km)	Yes	No	No further action required
Bats	Yes – a common pipistrelle and BLE records within 1km	No – foraging and commuting potential along western boundary	No	Bat box provision and sensitive lighting

Species/ Group	Local Records	Suitable Habitat on Site	Field Signs	Recommendations
Birds	Yes – Schedule 1 (goshawk and fieldfare)	Yes – moderate potential within mature trees	No	Sensitive vegetation works scheme is required + bird box provision as ecological enhancement
Barn Owl	No	No	No	No further action required
Badgers	No	Yes	No	No further action required
Amphibians	No	No	No	No further action required
Reptiles	Yes -slow- worm	No	No	No further action required
Otter	Yes	No	No	No further action required
Water Vole	No	No	No	No further action required
Dormice	No	No	No	No further action required
Crayfish	No	Yes -moderate habitat	No	No further action required
Other Notable Species	No	No	No	No further action required

- 4.9 The findings of this report are valid for up to one year from the date of this report, Pearce Environment Ltd retain the right to re-publish data obtained and submit those species records produced during all ecological studies to the local recording centre.
- 4.10 This report remains Pearce Environment Ltd property and cannot be relied upon until full payment has been made.
- 4.11 Should the development proposals be altered significantly, such that changes to the working area and/or duration of the works arise, then a re-assessment of the likely impacts arising by a suitably experienced ecologist will be required.

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

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

^a For example, in terms of temperature, humidity, height above ground level, light levels or levels of disturbance.

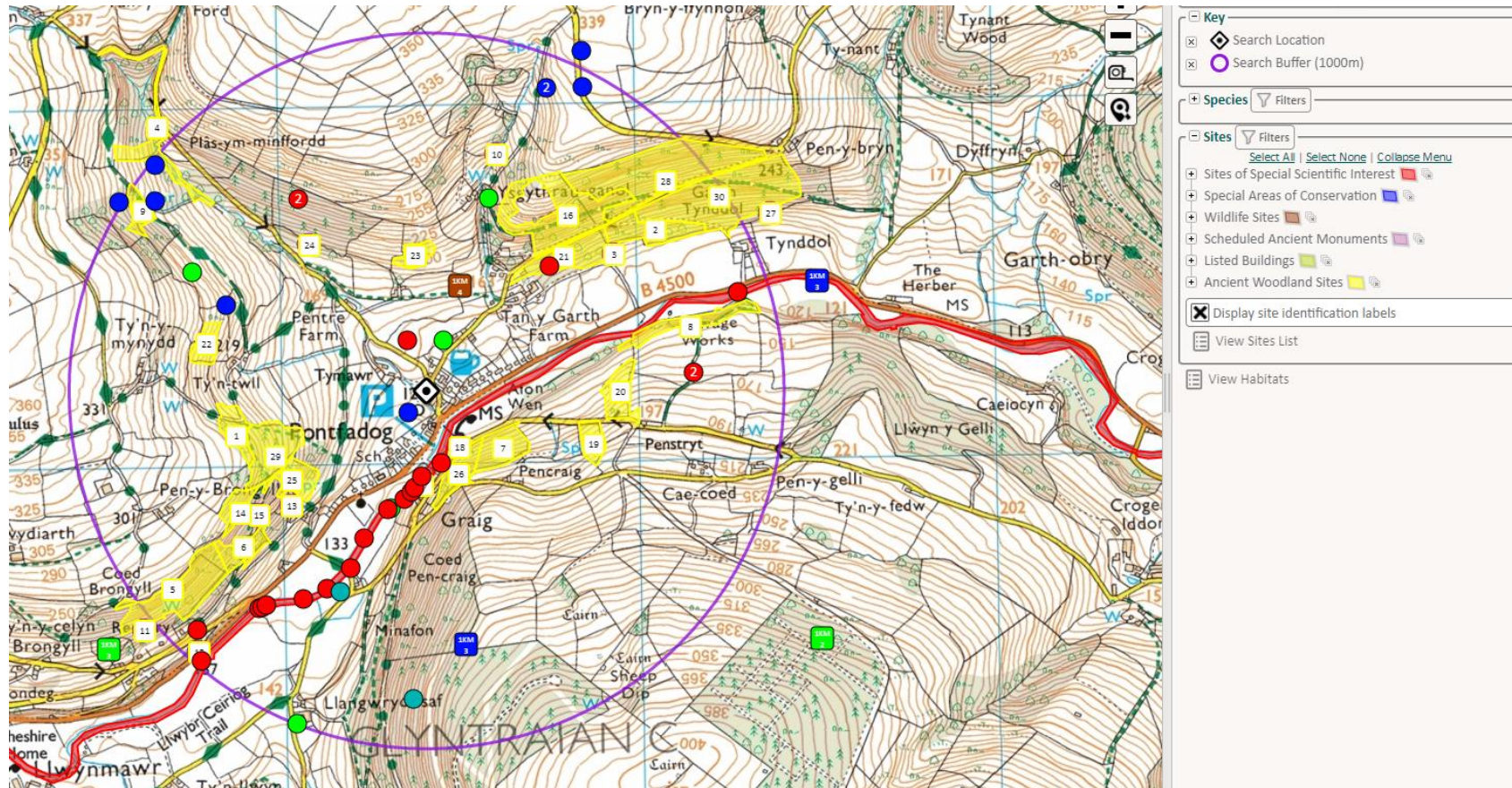
^b Evidence from the Netherlands shows mass swarming events of common pipistrelle bats in the autumn followed by mass hibernation in a diverse range of building types in urban environments (Korsten *et al.*, 2015). This phenomenon requires some research in the UK but ecologists should be aware of the potential for larger numbers of this species to be present during the autumn and winter in large buildings in highly urbanised environments.

^c This system of categorisation aligns with BS 8596:2015 Surveying for bats in trees and woodland (BSI, 2015).

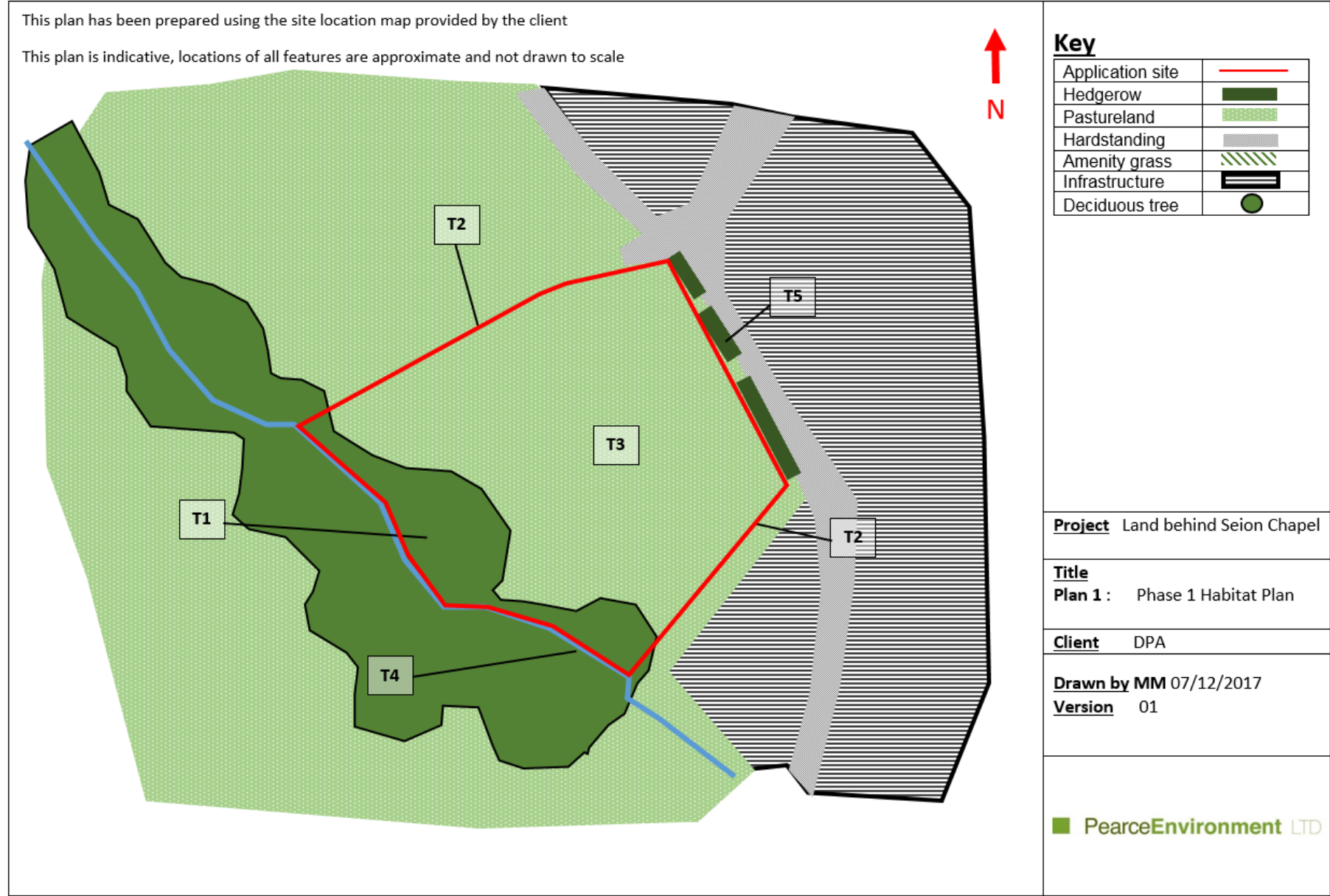
Table 7.3 Recommended minimum number of survey visits for presence/absence surveys to give confidence in a negative result for structures (also recommended for trees but unlikely to give confidence in a negative result).

Low roost suitability	Moderate roost suitability	High roost suitability
One survey visit. One dusk emergence or dawn re-entry survey ^a (structures).	Two separate survey visits. One dusk emergence and a separate dawn re-entry survey. ^b	Three separate survey visits. At least one dusk emergence and a separate dawn re-entry survey. The third visit could be either dusk or dawn. ^b
No further surveys required (trees).		

Appendix 2 Species and Sites Map obtained from COFNOD (December 2017)



Plan 1 Phase 1 Habitat Plan



Target Notes

T1 – Semi-mature and mature trees

T2 – Post and wire fencing

T3 – Species-poor grassland

T4 – Unnamed spring

T5 – Moribund hedgerow