



Pendine Park,
Summerhill, Wrexham

Updated Ecological Assessment

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1 Introduction

1.1 Background

Kingdom Ecology have carried out an ecological assessment of an open area of grassland and woodland located at Pendine Park Care Home, Summerhill Road, Wrexham.

The ecological assessment has been carried out to identify any ecological constraints which should be considered during any future development of the site.

An initial field survey was undertaken on the 26th May 2015 with an update site visit completed on the 29th August 2018. Surveys were carried out by Richard Roe (BSc, MSc, MCIEEM, CEnv). Richard has extensive experience of undertaking habitat and protected species surveys as a professional ecological consultant with over seventeen years' experience. Richard is also a licensed great crested newt and bat worker.

1.2 Purpose of Report

This report provides and outlines the findings of a Desk Study (completed in 2015) and ecological walkover surveys undertaken in May 2015 and updated in August 2018.

The field surveys aimed to identify habitats and species which are either of importance in terms of their conservation value or are afforded statutory legal protection. The presence of such habitats or species would form a material consideration during the planning process and could pose a constraint to the redevelopment of the site.

Species considered during the assessment included breeding birds, badger, reptiles, great crested newt and bats.

The report evaluates the conservation importance of the habitats and species recorded and goes on to make recommendations for further works, mitigation and ecological enhancement measures where relevant.

1.3 Study Area

The study area comprises of an area of grassland and tall herb vegetation with scattered hawthorn trees and broadleaved woodland around the study site's edges. The study area lies immediately to the south of the existing Pendine Park Care Home and is located immediately to the west of Summerhill Road, Gwersyllt, near Wrexham, LL11 4YE (Ordnance Survey Grid SJ 318518).

The site measures approximately 3ha in size. The study site is bounded to the east by a stone wall and Summerhill Road, to the south and west by arable land and to the north by the existing Pendine Park care facility.

Wider surrounding habitats largely comprise of pasture land and arable land with some small areas of woodland.

The site location is shown on Figure 1 in the Appendix.

1.4 Relevant Protected Species Legislation

1.4.1 Environment (Wales) Act 2016

Section 6 of the Environment (Wales) Act 2016 places a legal obligation on public bodies in Wales to 'maintain and enhance biodiversity' whilst carrying out their functions.

Section 7 of that Act requires Welsh Ministers to publish and maintain lists of species and types of habitats in Wales that are regarded as of 'principal importance' for the purpose of maintaining and enhancing that biodiversity.

This section of the Act replaces the biodiversity duty originally outlined in Section 42 of the NERC Act 2006.

The presence at any proposed development site, of any priority habitat or priority species identified on these lists is of importance within the local authority planning process.

1.4.2 Birds

All wild birds in England and Wales are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended), which makes it an offence to intentionally kill, injure or take any wild bird, or take, damage or destroy the nest (whilst being built or in use) or its eggs.

1.4.3 Bats

All British bat species are fully protected under the Wildlife and Countryside Act 1981 (as amended) and through their inclusion in Schedule II of the Habitats Regulations 2010 which transpose Annex II of the Council Directive 92/43/EEC 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora ("EC Habitats Directive") which defines European protected species of animals.

British bats species are afforded further protection by the Countryside and Rights of Way Act 2000; and the Natural Environment and Rural Communities Act 2006.

Taken together, this legislation makes it an offence to:

- Intentionally or deliberately kill, injure or capture bats.
- Deliberately disturb bats, whether at roost or not.
- Damage, destroy or obstruct access to bat roosts.
- Possess or transport bats, unless acquired legally.
- Sell, barter or exchange bats.

A bat roost is interpreted as “any structure or place, which any wild bat uses for shelter or protection.” (Bat Conservation Trust 2012¹). A bat roost is protected whether or not bats are present at the time.

All species of British bat are considered a European Protected Species (EPS). The Conservation of Habitat and Species Regulations (2010) provide derogation against certain offences which could potentially affect an EPS through the EPS Licensing system.

1.4.4 Badger

Badgers are afforded protection under the Protection of Badgers Act (PBA) 1992; this act was introduced on welfare grounds. The Act is based primarily on the need to protect badgers from baiting and deliberate harm or injury. Badgers are not considered to be a species of any conservation concern. However the Act contains restrictions that apply more widely and can have implications where badgers and development come into conflict. All the following are considered criminal offences:

- to willfully kill, injure, take, possess or cruelly ill-treat a badger;
- to attempt to do so; or
- to intentionally or recklessly interfere with a sett.

Sett interference includes damaging or destroying a sett, obstructing access to a sett, and disturbing a badger whilst it is occupying a sett. It is not illegal, and therefore a licence is not required, to carry out disturbing activities in the vicinity of a sett if no badger is disturbed and the sett is not damaged or obstructed.

¹ Bat Conservation Trust (2012) ‘Bat Surveys: Good Practice Guidelines 2nd Edition’

2 Desktop Study

2.1 Sources of Information

As part of the initial site investigation completed in 2015, ecological information on habitats, species and designated nature conservation sites was sought from COFNOD who are the local biological record centre for the North Wales Region.

2.1.1 Species

COFNOD holds several records of several protected species within 1km of the site including the following:

- Barn owl
- Badger
- Common pipistrelle
- Great crested newt

COFNOD hold no records of protected species at the site itself. The nearest species record is of great crested newt located approximately 360m to the northeast and 500m to the northwest of the site. COFNOD holds no records of reptile within 1km of the study site.

2.1.2 Designated Sites

No statutory or non-statutory designated sites are located within the study area itself.

The only designated sites located within 1km of the study site are:

- Gatewen Marsh Site of Special Scientific Interest located approximately 250m southwest of the site;
- Moss Valley Local Wildlife Site located approximately 250m northwest of the site; and
- New Broughton Meadow Local Wildlife Site located approximately 1km southwest of the site.

None of these designated sites will be affected by the proposed development.

3 Field Survey Methods

3.1 Survey Aims and Objectives

The survey aim was to assess the site as to its ecological importance by assessing the value of habitats and their suitability to support any protected or notable species. The purpose of this was to highlight any ecological constraints associated with future development proposals.

Field survey comprised of an Extended Phase 1 Habitat survey and an assessment of habitats at the site in terms of their suitability to support protected species including a search for evidence of badger activity and an assessment of the suitability of trees to support either roosting bats or nesting birds during the breeding bird season.

Species that are considered highly unlikely to be affected by the proposed development, even if known to be present in the general vicinity, were 'scoped out' of the assessment.

3.2 Extended Phase 1 Habitat Survey

3.2.1 Methods

An Extended Phase 1 Habitat Survey of the study site was first undertaken on the 26th May 2015 and then updated on the 29th August 2018. Survey was carried out following standard methodologies as described in the '*Handbook for Phase 1 Habitat Survey - a technique for environmental audit*' (JNCC, 2004²).

The aims of the Extended Phase 1 Habitat Survey were to:

- identify and map all areas of semi-natural habitat within the study area;
- provide a botanical description of the semi-natural habitats surveyed;
- provide additional information regarding incidental observations of protected species and the potential of habitats to support such species. Specifically the suitability of the site to badgers and an assessment of the suitability of surrounding trees to support either roosting bats or nesting birds during the breeding bird season;

² JNCC (2004) '*Handbook for Phase 1 Habitat Survey - a technique for environmental audit*'

- identify areas or habitats that are of particular ecological interest for nature conservation and which require more detailed investigation.

A habitat map was produced and lists of dominant or notable vascular plant species were recorded in each of the major habitat types where relevant.

3.3 Badger

3.3.1 Methods

An updated badger survey was undertaken on 29th August 2018. Survey adopted the standard approach used in the National Badger Survey (Cresswell *et al.*, 1990)³ and recommended by the Mammal Society (described in the booklet '*Surveying Badgers*' (Harris, Cresswell and Jefferies, 1989⁴)). It involved searching for badger signs, including setts, latrines, foraging marks, badger hairs, trails and footprints. Setts and other signs were marked on maps.

3.4 Bats

The survey objectives were to identify and evaluate bat roosting habitat on site through a daytime inspections of trees at the site.

Surveys followed methodologies prescribed in English Nature's *Bat Mitigation Guidelines* (Mitchell-Jones 2004)⁵ and the Bat Conservation Trust's *Bat Surveys: Good Practice Guidelines* 3rd edition (BCT 2016)⁶.

³ Cresswell, P., Harris, S., and Jeffries, D.J., 1990. The history, distribution, status and habitat requirements of the badger in Britain. Nature Conservancy Council.

⁴ Harris, S., Cresswell, P. and Jefferies, D., 1989. *Surveying Badgers*. Occasional Publication of the Mammal Society, No.9. Mammal Society, London.

⁵ Mitchell-Jones, A.J. 2004. *Bat Mitigation Guidelines*. English Nature, Peterborough.

⁶ Bat Conservation Trust (2016) *Bat surveys – Good Practice Guidelines* 3rd Edition. Bat Conservation Trust, London.

3.4.1 Tree Surveys

A visual inspection of mature trees within the site was made to assess their bat roosting potential. The inspection was made from ground level during daylight conditions using binoculars and a high powered torch to assess the potential of any cracks and holes to support bat roosts, and to search for evidence of bat use such as droppings, scratch marks, staining etc.

In addition to identifying actual bat roosts the surveys also aimed to assess the suitability of the trees to support bats and consequently the likelihood of a bat roost being present that did not exhibit obvious field signs. Roost suitability was assessed by examining structural features and surrounding habitat. Structural features that could influence the suitability of a tree to support roosting bats include:

- frost cracks
- trunk and branch splits
- woodpecker holes
- rot holes where branches have been removed
- hollow sections of trunk, branches and roots
- loose bark
- cavities beneath old root buttresses and coppice stools
- dense ivy
- bat or bird boxes

Important habitat features surrounding individual trees, which could influence roost potential include; whether the trees are in a semi-rural or parkland location, proximity to a significant linear feature (e.g. watercourse, mature hedgerow, wooded lane) or proximity to known bat roosts etc.

Taking account of these structural and habitat features, trees were assigned a level of roost suitability based upon professional judgement.

4 Field Survey Results

4.1 Habitats and Flora

4.1.1 Overview

The study site comprises of approximately 3ha of land located within the southern half of the Pendine Park Care Home. A tarmacked road (Target Note 1 on Figure 2) runs from Summerhill Road at the east of the site to the western part of the site. The track roughly divides the wider care home site in two with habitats located north of the track being largely managed and developed whilst south of the track, habitats are less intensively managed and largely undeveloped.

The northern part of the wider care home site comprises of buildings, managed gardens, tarmacked roads and pavements. The southern part of the site supports less intensively managed, semi-natural habitats with an extensive area of species-poor, semi-improved grassland with areas of tall herb and scattered hawthorn scrub and trees. This southern section was the focus of field survey (study site boundary shown on Figure 2 in the Appendix).

The tarmacked road at Target Note 1 forms the northern boundary of the study site. The western boundary of the site is marked by a band of broadleaved woodland beyond which lie arable fields; the southern boundary of the site is marked by a species-poor hedge with trees beyond which lies another arable field; the eastern boundary is marked by a wall which divides the site from Summerhill Road.

A habitat map of the site is shown on Figure 2 in the Appendix. Photographs showing typical habitat at the site are also given in the Appendix. Habitats are described below.

4.1.2 Target Note 1- Hardstanding Track

The hardstanding track forms the northern boundary of the site. It has recently been planted up with an avenue of ornamental hornbeam trees. The trees are relatively young and less than 3m in height.

The track splits near the northeast corner of the site with one branch leading to the site entrance on Summerhill Road and the other continuing south along the eastern boundary of the site.

Habitats to the north and east of the track comprise of closely mown amenity grassland with scattered ornamental shrubbery and trees.

4.1.3 Target Note 2- Grassland/tall herb mosaic

The majority of the site south of the access track comprises of a mosaic of species-poor, semi-improved grassland, patches of tall herb community plus scattered hawthorn trees and scrub and occasional young oak and sycamore trees. A mature oak tree is located at the northwest corner of the grassland at Target Note 3. The oak tree offers some low suitability potential bat roosting features with occasional snag ends and minor areas of dead wood.

The other trees in the grassland area are relatively young with a maximum height of approximately 8m. None of the other trees are considered to offer suitable bat roosting habitat.

The ground in this area is uneven slopes from the access track at Target Note 1 down towards the southern boundary of the site with various mounds and ridges. There are occasional rubble piles of stone, slates and logs located within the western half of this area (Target Note 4). Habitats around the rubble piles comprise of tall herb and bramble scrub. There are further small areas of tall herb vegetation located around groups of scattered scrub and at the edges of the woodland and hedgerow habitats.

Areas of tall herb vegetation comprise of frequent broad-leaved dock and bramble with occasional comfrey, nettle, red campion, white campion, garlic mustard, butterbur, hogweed, cleavers, rosebay willow-herb and occasional grasses including Yorkshire fog, perennial rye, cock's-foot, false oat-grass, meadow foxtail, red fescue and rough meadow-grass.

The species-poor, semi-improved grassland species comprise of frequent Yorkshire fog, perennial rye-grass and common bent with white clover and creeping buttercup plus occasional cock's-foot, sweet vernal grass, meadow foxtail, red fescue, rough meadow-grass, ribwort plantain, creeping thistle, germander speedwell, common mouse-ear, bloody crane's-bill, silverweed, black medick, common ragwort, red clover and creeping cinquefoil. The grassland habitats are mown at least annually by a local farmer.

There is a further patch of more intensively mown amenity grassland located near the hardstanding track at Target Note 5. The grassland has been planted up with young cherry and copper beech.

An inactive badger outlier sett and rabbit warren was identified within an area of hawthorn scrub near the southern end of the site at Target Note 6 (see Section 4.2.1).

The grassland mosaic is of some minor conservation interest owing to the broad range of grass and herb species present some of which are indicative of less intensively managed grassland habitats however the frequent occurrence of perennial rye-grass, white clover and creeping buttercup within the sward indicates that the site is likely to have

undergone some nutrient enrichment in the past and may have been farmed as pasture land.

4.1.4 Target Note 7- Broadleaved Woodland

There is a belt of semi-natural broad-leaved woodland running along the western edge of the site. Mature trees are largely restricted to the boundary of the site and comprise of sycamore with occasional English oak and common lime, the remainder of the trees comprise of young hawthorn, elder and further sycamore. These younger trees extend into the site itself and along the site's boundary.

None of the trees identified in this area supported any obvious suitable bat roosting features.

4.1.5 Target Note 8- Hedge with trees

An outgrown hedgerow runs along the southern boundary of the site. Species present include hawthorn, silver birch, holly and elder with standard trees including further silver birch and oak.

None of the trees identified in this area support any suitable bat roosting features.

4.1.6 Target Note 9- Broadleaved woodland

At the southeast corner of the hedge line at Target Note 6 is a small copse of mature woodland comprising of sycamore, ash and horse chestnut with an understorey of nettle and cleavers.

None of the trees identified in this area supported any suitable bat roosting features.

4.1.7 Target Note 10- Plantation Woodland

As described previously, the main hardstanding track runs along the eastern boundary of the site, parallel with Summerhill Road. In addition to the recently planted avenue of young hornbeam, more mature trees have been planted in this area to provide an additional small area of plantation woodland. Trees in this area include robinha, hornbeam, sycamore, horse chestnut, holly and cherry. Either side of the track is a strip of mown amenity grassland plus managed flowerbeds.

None of the trees identified in this area supported any suitable bat roosting features.

4.1.8 Habitat Summary and Evaluation

The habitat surveys have found much of the site to comprise of a species-poor, semi-improved grassland with areas of tall herb vegetation plus scattered hawthorn scrub and young trees.

There are also small pockets of broadleaved woodland located at Target Notes 7, 9 and 10. These comprise of areas of semi-natural woodland and woodland of plantation origin.

The grassland habitats have undergone relatively limited management over recent years comprising of infrequent mowing.

The scrub and grassland habitats are considered to be of low botanical interest and are commonly occurring throughout the UK within similar neglected former agricultural sites. Nevertheless, they provide an area of relatively undisturbed, semi-natural habitat. The grassland, scrub and woodland habitats are likely to offer foraging and refuge habitat for various common wildlife including birds, small mammals and invertebrates.

The blocks of woodland at Target Notes 7 and 9 and the boundary features at Target Notes 8 and 10 are also likely to offer suitable refuge and foraging habitat for birds and other wildlife. Where they form boundary features, they are also likely to act as linear wildlife corridors through the landscape.

Mixed broadleaved woodland is listed under Section 7 of the Environment (Wales) Act 2016 as a habitat of 'principal importance' in Wales.

Development proposals are to develop the area of grassland and hawthorn scrub. The areas of broadleaved woodland lie outside of the proposed development area.

4.2 Protected Species

4.2.1 Badgers

An inactive badger outlier sett and rabbit warren were identified within an area of hawthorn scrub near the southern end of the site (Target Note 6 on Figure 2 and National Grid Reference SJ31865177). Three badger sett entrances were identified amongst the smaller rabbit burrows.

A badger guard hair was recovered from with one of the spoil heaps. No evidence of recent badger activity was found around the sett with cobwebs over the larger sett entrances. The Pendine Park gardener reported finding a dead badger at the site in 2017. The gardener had not recently seen any badgers in the area. The gardener reported having occasional problems with trespassers coming to the site to hunt for rabbits.

It is considered likely that badgers frequently visit the proposed development site and that the badger sett is still used sporadically.

No other badger field signs were identified at the site.

4.2.2 Breeding Birds

Tree, scrub and hedgerow habitats at the site are likely to be used by nesting birds during the breeding bird season.

4.2.3 Bats

Trees at the site were assessed as to their suitability to support bat roosts.

No trees with obvious significant potential bat roosting features (e.g. large splits, obvious cavities, significant wounds, significant ivy growth, woodpecker/squirrel holes etc) were identified.

A mature oak tree is located at the northern end of the grassland at Target Note 3. The oak tree offers some low suitability potential bat roosting features with occasional snag ends and minor areas of dead wood.

It is considered unlikely that the site supports a significant or regularly used bat roost.

The site is considered to support good quality bat foraging habitat with the grassland, treelines and scattered scrub and trees likely to support a reasonably diverse assemblage of aerial insects.

4.2.4 Reptiles

The study site supports some suitable habitats for common reptiles within the grassland habitats and on the south facing slopes at the site. There are also log piles and rubble piles at the site which could offer suitable hibernation habitat. However, the site is considered to be relatively isolated and small in size. The Summerhill Road and boundary wall to the east would act as a barrier to reptile colonisation from the east, whilst the site is bounded by intensively managed arable fields to the north, south and west which would offer sub-optimal reptile habitats. The COFNOD data search did not hold any records of reptiles within 1km of the site.

It is considered to be unlikely that reptiles are present at the study site in spite of the suitable habitats that are present.

4.2.5 Great Crested Newt

There are two ponds located within 250m of the study site (ponds shown on Figure 1). Pond 1 is located approximately 220m to the north of the site on the opposite side of Highfield Road. This pond is considered to be isolated from the proposed development site by the presence of the existing Pendine Park buildings and infrastructure and by Highfield Road itself.

Pond 2 is located 250m to the south west of the study site. It is located within Gatewen Marsh SSSI. It is considered unlikely that any hypothetical great crested newt population using Pond 2 would travel across the intervening 250m of arable land to reach the study site when extensive, more suitable terrestrial habitats are present within Gatewen Marsh itself.

COFNOD holds no records of great crested newt using either Pond 1 or Pond 2.

The nearest known great crested newt breeding pond is located at Stansty Park which is located approximately 360m to the northeast of the site (Pond 3 on Figure 1). Summerhill Road and the study site's eastern boundary wall along with the boundary wall along the western side of the Stansty Park Estate would prevent terrestrial habitats at the study site from being used by newts associated with Pond 3.

It is therefore considered unlikely that great crested newt are present at the study site.

4.2.6 Protected Species Summary and Evaluation

The study site is considered unlikely to support reptiles or great crested newt.

The site is also considered unlikely to support any significant or regularly used bat roosts but is likely to offer a locally valuable foraging resource for bats.

It is considered likely that the site supports nesting birds during the breeding bird season. The site is likely to support farmland and garden bird species that are common in rural parts of Wrexham County Borough. Given the small size of the site and the habitats present, it is considered unlikely that the site supports a particularly varied or important assemblage of bird species.

An inactive badger outlier sett was identified at the site. Although the sett is currently disused it is likely that the site is occasionally visited by badgers and that the sett may be infrequently used as a resting site.

Given the absence of evidence of recent use of the sett or the site by badgers, it is considered to be unlikely that the sett is of any significant importance to the local badger social group.

5 Recommendations

5.1 Potential Constraints and Recommendations

5.1.1 Ecological Receptors

The proposed development will result in the loss of some species-poor, semi-improved grassland and hawthorn scrub. These habitats are considered to be of limited botanical interest, however they are likely to offer foraging and refuge habitat for various common wildlife. Furthermore, if appropriately managed grassland habitats at the site could develop into a feature of greater conservation value.

Areas of woodland around the periphery of the site are also considered to be of minor conservation value.

Mixed broadleaved woodland is listed under Section 7 of the Environment (Wales) Act 2016 as a habitat of 'principal importance' in Wales.

Development of the site should therefore be sensitive to these habitats and aim to retain or enhance them where possible

The site is considered likely to support nesting birds and foraging bats. The development should therefore also aim to preserve/enhance the site in terms of its value to both bats and birds. This should can be achieved by protecting grassland and woodland habitats where possible and also through provision of additional nesting and roosting features at the site.

An inactive badger outlier sett was identified. It is considered to be unlikely that the badger sett is of any significant importance to the local badger social group. Nevertheless, the badger sett is legally protected from damage under the Protection of Badgers Act (PBA) 1992.

No other protected species are considered likely to be present at the site.

5.1.2 Habitats

The proposed development will result in the loss of some species-poor, semi-improved grassland. This habitat is considered to be of limited botanical and conservation interest, however if appropriately managed it could develop into a feature of greater conservation. It is therefore recommended that a Habitat Management Plan is produced for the site.

The development proposals will retain extensive areas of open space between the proposed living apartments. It is recommended that these areas of open space are managed as species-rich grassland. This can be achieved through the implementation of the Habitat Management Plan with grasslands managed for their nature conservation value.

The Management Plan should include prescriptions for grassland mowing regimes at the site with no mowing taking place in the late spring/early summer; a hay crop should be taken in the late summer, the grassland can then be periodically mown from late summer through to early spring. This will allow plants to flower and set seed in spring and summer, but will also prevent vegetation from becoming so tall and dense that its botanical diversity is reduced.

In order to maintain the species-rich grassland it is recommended that further ornamental tree planting is limited immediately adjacent to areas of this habitat. This is because the shade and leaf litter cast by trees can lead to losses of grassland plants and a reduction in botanical diversity. Furthermore, no fertiliser should be applied to the soils and arisings from each cut should be removed from the site.

As well as being of benefit in terms of its conservation value, the management of a species-rich meadow habitat is likely to be of amenity value to the residents of Pendine Park by providing a colourful and floristically interesting green space throughout late spring and summer.

The proposed development should also aim to avoid impacts to mature trees at the site particularly the trees located around the site's boundaries at Target Notes 7, 8, 9 and 10.

Mature trees as well as being culturally and ecologically valuable in their own right are also of importance to invertebrates, birds, mammals and other associated ecological groups through the provision of foraging resources and a variety of ecological niches including standing dead wood plus fungi and other organisms associated with decay. Dead wood can support nationally rare, highly specialised invertebrates which often have limited abilities to disperse.

The retention of these grassland habitats and areas of mature trees should ensure that foraging habitats at the site for birds and bats are retained.

The site management plan should be designed in conjunction with a suitably qualified ecologist.

5.1.3 Bats and Birds

The trees, scrub and hedgerows at the site could support nesting birds during the breeding bird season.

It is therefore recommended that works to remove any tall vegetation avoid taking place during the breeding bird season (March-August inclusive). Where this is not possible, a check for nesting birds should be completed immediately prior to removal by an appropriately qualified ecologist.

It is considered to be unlikely that the trees at the site support roosting bats. A single mature oak tree at Target Note 3 was found to offer 'low' suitability potential bat roosting features within occasional snag ends and minor areas of dead wood. Ideally, this tree should be retained as part of the development.

However, if this tree must be felled, it is recommended that felling is carried out in a careful and conscientious manner. The felled tree should be left on site for at least 24 hours before being chipped to allow any unidentified roosting bats the opportunity to escape.

In the unlikely event that any roosting bats are encountered, works should immediately stop and a licensed bat worker should be contacted for further advice.

It is also recommended that bird nest boxes and bat boxes are installed at the site. The bird box scheme should aim to provide suitable nesting sites for a variety of different bird species.

It is recommended that 16 bird boxes of type Schwegler 1B (10 boxes with 32mm entrances and 6 boxes with 26mm entrances) should be erected on retained trees at the site.

The bird boxes should be positioned in a shaded area, at a height of 2-4m and positioned so that flight lines in and out of the boxes are not hindered by any vegetation

These bird boxes will provide suitable nesting habitat for a variety of garden and woodland bird species including tits, wren, nuthatch and sparrows.

It is also recommended that 12 bird boxes of type Schwegler 9a are erected onto several of the proposed new accommodation buildings. This model of bird box will provide suitable nesting habitat for swallows and house martins. These bird boxes should be located immediately below the eaves of the building.

It is also recommended that 6 bird boxes of type Schwegler 1SP are erected on new buildings at the site. This model of bird box provides suitable nesting habitat for house sparrow colonies. These bird boxes should be located immediately below the eaves of the building, they can be built into the walls or fitted to the building exterior.

It is recommended that bat roosting habitat is built into six of the new buildings at the site. This can be achieved by building dedicated bat roosting modules into the external masonry walls of the new buildings. The Habibat 001 or the Habibat 003 are suitable types of bat roosting module. These bat boxes provide suitable roosting habitat for large aggregations of crevice dwelling bats including maternity sites.

The Habibat bat roosts should be built into the south facing gable walls of the new buildings. The roosts should be located as close to the gable apex as possible and should be positioned at a minimum height of 4m.

It is also recommended that a further 10 Schwegler bat boxes (5 boxes of type 1FF and 5 boxes of type 2FN) are erected on retained trees at the site. These should be positioned at a minimum height of 4m; should be positioned with a more or less southerly aspect and sited so that flight lines in and out of the bat boxes are not hindered by vegetation.

The precise location of bat and bird boxes should be determined by a suitably qualified ecologist.

5.1.4 Badger

An inactive, three entrance badger outlier sett was identified at Target Note 6. It is likely that development will require this badger sett to be closed and destroyed. Badger setts are protected under the Protection of Badgers Act 1992. Therefore, any works that would damage this sett must be carried out under a Natural Resources Wales Badger Disturbance License.

Further badger surveys would be required in advance of the license application to confirm the status of the badger sett.

The sett would need to be closed by an appropriately qualified badger ecologist. To avoid trapping dependent badger cubs underground, badger setts can only be closed between 1st July and 1st December.

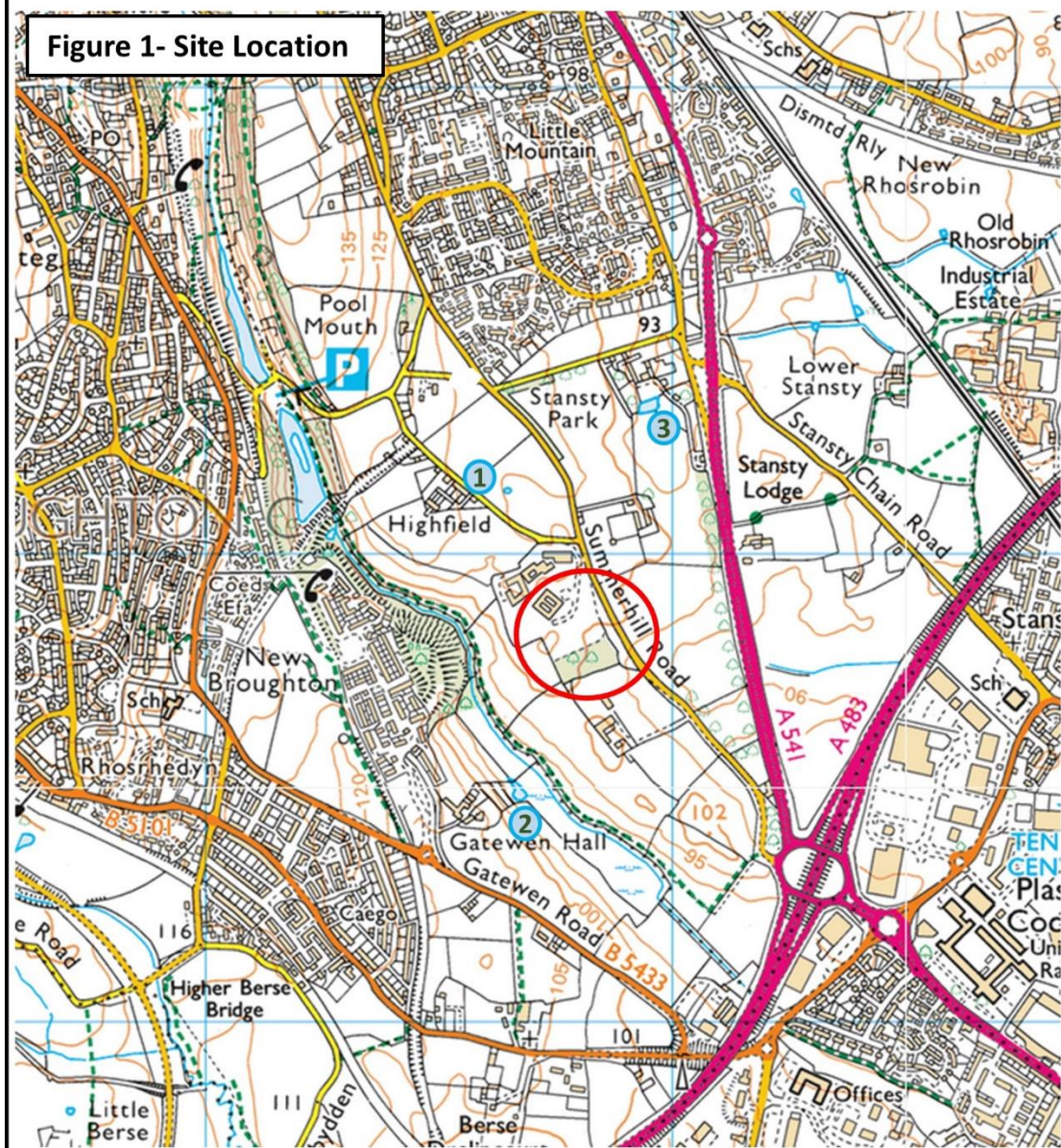
The sett closure process generally involves the use of one-way badger gates to exclude badgers from the sett. The sett will need to be regularly checked during the closure period and must demonstrate no signs of badger occupation for at least 21 days before the closure can be considered successful. Following the completion of the closure period, the sett must be carefully excavated under the supervision of the licensed badger ecologist.

Other recommended measures to limit disturbance or harm to badgers during construction are as follows:

- An update badger surveys should be conducted immediately in advance of site clearance to confirm that no new badger setts are present at the site
- No works should be carried out at the site between sunset and sunrise.
- No overnight lighting to be used.
- Where any trenches or other excavations are to be left open overnight, these should be fitted with mammal ramps or should have the sides battered to form a slope to allow badgers to escape.
- A tidy works area should be maintained during construction and any hazardous substances would be fenced off to remove any badger hazards from the site.

6 Appendix

Figure 1- Site Location



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Ordnance Survey 100054686

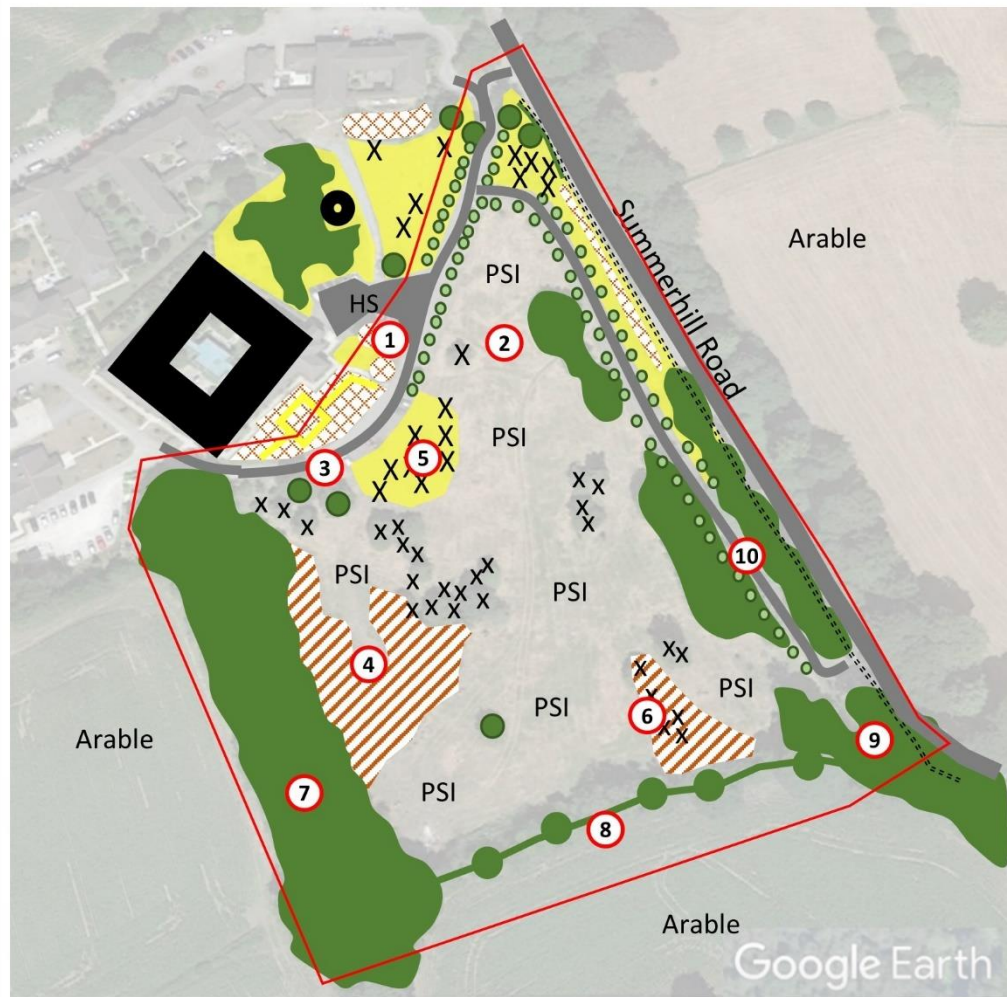


 Study Site Location

 Pond reference



Figure 2- Habitat Plan



- | | | | |
|--|----------------------|--|-----------------|
| | Building | | Ornamental tree |
| | Poor SI grassland | | Scattered scrub |
| | Hardstanding | | Hedge |
| | Broadleaved woodland | | Wall |
| | Tall herb | | Target Note |
| | Introduced shrubbery | | Study area |



PHOTOGRAPHS

Photograph 1- Grassland at Target Note 2 (northern part of site)



Photograph 2- Grassland habitat at Target Note 2 (southern part of site)



Photograph 3- Tall herb habitats at Target Note 4



Photograph 4- Oak tree at Target Note 3



Photograph 5- Badger sett location at Target Note 6



Photograph 6- Woodland at Target Note 7



Photograph 7- Hardstanding track at Target Note 1



Photograph 8- Track and woodland at Target Note 10

