

St John's Lodge
The Grove
Merthyr Tydfil
CF48 8YR

A Preliminary Roost
Assessment

For
Mr Udam Singh

November 2023

Morgan Ecology

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1 Summary

St John's Lodge is a substantial semi-detached town house in the Park community of Merthyr Tydfil. The owner is in the process of refurbishing the property, and as part of the proposals, wishes to divide the house into three separate dwellings/apartments. The proposals require consent from the local planning authority, Merthyr Tydfil County Borough Council.

To inform this process a Preliminary Roost Assessment was commissioned, to establish if there were particular impacts for bats and nesting birds. Guidance provided by the Council ecologist indicated that a concern was that bats might be using the window frames in which to roost. Other concerns expressed were with respect to green infrastructure.

The assessment was carried out by an experienced, independent ecologist in early November 2023. Much of the refurbishment work was completed by the time of the assessment, and most windows were in place at first floor level, and several at ground floor level too. Thorough survey was carried out of the whole building, where constraints allowed, and no evidence was found for the presence of bats or nesting birds. Overall the property was judged to offer moderate potential to be used by bats, with gaps at the ridges of the roof, and, obviously at the missing windows. However, as the windows will in due course be replaced, and no work is proposed for the roof, the impact on bats is considered to be negligible.

Given the refurbishment work, there are opportunities to enhance the property to benefit a number of species present in the area, and of conservation concern, and provide measures to contribute to green infrastructure. This document details the survey undertaken, the findings, and measures which can be put in place to minimise risk. It also, as indicated above, allows the possibility to provide measures for bats, swifts, hedgehogs, and various insects which can be attracted to the site.

2 Background

The owner of St John's Lodge, a semi-detached house close to the centre of Merthyr Tydfil, wishes to convert the property to provide three separate apartment/dwellings, and is seeking consent for this from the local planning authority, Merthyr Tydfil County Borough Council. The property is situated at National Grid Reference (NGR) SO 0502 0711, at an altitude of some 226m Above Ordnance Datum (AOD). It stands on the north side of The Grove, close to the junctions with St Mary's Close, and Gwaelodygarth Lane, within the Park community.

Proposed changes relate to the interior of the house only, in the former dwelling area, and are limited to the ground and first floors. There is no intention to convert the loft areas, or to undertake re-roofing work. The exterior barge boards are being replaced with uPVC equivalents, in what would normally be considered permitted development, with the owner seeking to maintain the property in good order. Insulation is also being fitted to the exterior walls, to bring the building up to modern requirements, which will impact on the area around the soffits.

As the proposals require planning consent, the owner commissioned a Preliminary Roost Assessment (PRA) of the property from Morgan Ecology, in order to inform the planning application process. The property stands in its own grounds, surrounded by other residential properties, and is likely to date from the early part of the 20th Century. The Lodge is a substantial town house, but it is not a Listed Building, or designated in any respect.

The PRA, undertaken in early November 2023, did not find any evidence of bat presence inside, or on the exterior of the house. However, the building has been subject to considerable refurbishment, and in many respects is open to the elements (with some windows removed), although the roof is intact, and in good order.

Principal objectives of the survey effort were to:

- determine if bats, nesting birds, or other protected species were present in, or had the potential to roost in the existing structure;
- consider if there will be impacts on bats and birds from the proposed works;
- to gather sufficient information to be able to make appropriate recommendations;
- to make recommendations with respect to Net Benefits for Biodiversity; and,
- make comments to contribute to a green infrastructure statement.

An internal memorandum from the planning ecologist for the Council was also considered whilst undertaking the assessment.

3 Surveyor experience

The surveyor, and author of this report is Phil Morgan, who has 40 years' experience of undertaking building, tree, and cave surveys for all bat species. In addition, he has undertaken foraging and flight line surveys using heterodyne and other echo-location equipment, and in 1991 made a significant contribution to a Bristol University run project, which established the methodology used in the National Bat Monitoring Programme. Phil has also undertaken numerous radio tracking exercises on both lesser horseshoe and Daubenton's bats. He holds a Natural Resources Wales (NRW) licence for bats (S091084/1), as well as other species including dormice, and great crested newts. Phil was previously the Ecologist with Dŵr Cymru Welsh Water, and responsible for over 37,000ha of land, before becoming Principal Ecologist with the Just Mammals Consultancy LLP, a business which he established in 2001. He is now the Principal with Morgan Ecology. He is a Chartered Environmentalist, with the Society for the Environment (CEnv), and a full Member of the Chartered Institute for Ecology and Environmental Management (MCIEEM). Phil has for the past 27 years been the County Mammal Recorder for Vice County 42: Sir Frycheiniog/Brecknockshire, and is responsible for verifying bat and terrestrial mammal records in that area.

4 Assessment methodology

A Preliminary Roost Assessment (PRA), was undertaken of the house, with the aim of detecting any signs of bat or bird presence. It was possible to undertake a thorough assessment of the interior, although inspection of the two remaining lofts was not possible for health and safety reasons. Nonetheless, assessment was possible to a high degree, through viewing the interior from the loft hatches (where present), and/or, through openings created by the removal of ceilings on the first floor.

All other areas inside the house were inspected, including windows/window openings (as specified by the Council planning ecologist), any openings in internal walls, open fireplaces/chimneys, vents, and other openings in external walls were examined in detail. Internally the surveyor was seeking signs which might indicate the presence of bats, or nesting birds. In the case of bats, evidence was considered to include actual bats, or signs of bats, in the form of bat droppings (faeces), discarded feeding remains (e.g. butterfly wings, crane-fly legs), and fur oil staining (on roof timbers).

Following the internal assessment, the surveyor turned his attention to the exterior of the house. To assist in the external assessment, binoculars, were used to examine Potential Roosting Features (PRFs). Any gaps or crevices in the structures were inspected as closely as possible. The context of the property within the surrounding landscape was also assessed at this time. Potential for hibernation by bats was also considered, so any entrances low down on the walls, particularly on the north or west sides of the buildings, were also assessed.

Additionally, the presence of nesting birds was considered. The surveyor recorded any signs of historic and current bird activity including nest-building, feeding at nest sites, and any indirect evidence such as nest remains, bird droppings, and feathers.

Table 1 below details the equipment used by the surveyor when carrying out the PRA.

Table 1: Equipment used in the assessment

Equipment items	Purpose used
Bushnell binoculars (1)	Inspecting ridge area, roof slates, barge boards
Canon IXUS 100IS digital camera (1)	Taking photographs
Cluson RE1T red eye torch (1)	Illuminating internal roof areas and inspecting chimneys
Greencat 8x30 8.5° close focussing monocular (1)	Inspecting roof timbers of bat presence
Ledlenser MH8 head lamp (1)	Inspecting cavities
Ridgid SeeSnake Inspection Camera Micro CA-150 (1)	Inspecting cavities
Satmap Active10 geo positioning system (1)	Confirming location co-ordinates

5 Site description

St John's Lodge does not appear on the Ordnance Survey 25 inch maps for the period 1892 – 1914, suggesting that the property dates from the period after World War I. Prior to its construction the area is shown as an open field, part of the Gwaelod y Garth House grounds. Whilst there were dwellings nearby, along Gwaelodygarth Lane, to the east, the area seems to have been quite open and exposed. The building is not listed, and does not appear to hold any particular historic significance. Table 2 below provides brief details of the structure.

Table 2: St John's Lodge description

Building type	Construction materials	Remarkable features	Condition at time of PRA
A semi-detached two storey dwelling house, built on a south-west/north-east alignment, with conventional pitched roof, standing within small mature garden, probably dating from the period 1910 – 1920, with more modern extension likely dating from 1980 – 1990's	Conventional brick built, with timber framed roof, fitted with a breathable roofing membrane below artificial slates exterior roof, recently fitted external insulation, and uPVC soffits/barge boards; chimneys/fireplaces capped	Timber sarking in one small loft area on western side of house; Cavity walls present; Capped chimneys; Exterior insulation cladding; Dry ridge system present; Solid cement floor at ground level	Roof in good condition, and most windows in place on first floor, but largely missing from ground floor, upper floor ceilings removed in places, building work in progress (although not actually taking place at time of PRA)

Presently the local environment consists of a mixture of housing terraces and substantial town houses, in a relatively prosperous part of the town. Links to open countryside are limited, and there is little natural habitat close-by. Mature gardens are present in the area, although with the exception of a mature beech tree (*Fagus sylvatica*), to the front of the house, tree cover is sparse. There is considerable street lighting in the area, and most neighbouring properties have security/exterior lighting of some variety. Further afield, over 100m distant, there are small areas of mature broadleaf woodland to the north-west and west, at Cyfarthfa Park.

6 Constraints or limitations

The owner provided complete freedom of access to the property for the survey, and there were no restrictions on when the PRA was undertaken. A general constraint arose from the building currently being refurbished, and numerous potential health and safety risks, such as discarded tools, ladders, building materials etc. The surveyor therefore had to be careful, and thoroughly checked areas to be assessed prior to crossing floor spaces.

Other limitations arose, which could not be overcome or addressed by exercising due care. Whilst undertaking the survey, it was apparent that the house has some form of below ground floor space. The exact nature of this space was evidenced by an internal inspection hatch. This hatch was secured, and would have required specialised tools to open. It is understood that the space below ground is limited to an inspection chamber for the internal services. This area provides a

cool space, which may or may not offer potential to be used by bats. It is not known if the external vents provide access to this chamber, or simply to the lower walls/cavities of the house.

Partial removal of the first floor ceilings has been conducted, and the original loft spaces were no longer available for inspection, being open to the pitch of the roof. Two smaller lofts still exist, one with intact ceiling/floor in place, and one with ceiling/floor removed, and with the fibre glass loft insulation still draped across the joists. Whilst the loft with the intact ceiling/floor was theoretically available for inspection, a dedicated loft ladder is jammed in the entrance hatch, preventing inspection of the area above. With respect to the other loft area, it was judged that this could not be safely inspected due to an inability to be able to establish where the floor joists/rafters might be located. Despite these limitations, it was possible for the ecologist to make a rudimentary assessment of these lofts, albeit from a distance.

Another limitation was that the ecologist was not able to make a close inspection the areas around the soffit boxes/barge boards and wall plates. However, this is often the case when inspecting buildings, so is not particularly unique. The surveyor was still able to make a valid assessment of these external features using binoculars. This level of assessment would not have detected individual bats in cavities, or the presence of bat droppings.

The property was largely surrounded by scaffolding at the time of the PRA, which limited the views from certain angles, but this was overcome by standing further away and making use of the binoculars. The survey was undertaken in daylight hours, so it is not possible to fully assess how the local environment might be under artificial light during night time conditions.

7 Record search

Following normal practice, a record search was commissioned from the South East Wales Biodiversity Record Centre (SEWBRc), and this search (unique reference 0234-578), revealed the presence of 371 historic records of bats within 2km. The records straddle the boundary between Vice County 41 (Glamorganshire), and Vice County 42 (Brecknockshire). The Vice County 42 records have largely been verified/validated. Sadly however, very few of the Vice County 41 records have been assessed, and many of them will never be verified, because they have been supplied by large ecological consultancies, which did not retain the data (i.e. sonograms), for the County Recorder to be able to verify them. In many cases, the validity of these records is therefore questionable.

Importantly, none of the bat records relate to the survey site of St John's Lodge. The nearest identified bat roost is some 180m to the south-west, where a bat was found inside a residential property in August 2004. Species in the dataset include lesser horseshoe bat (*Rhinolophus hipposideros*), brown long-eared bat (*Plecotus auritus*); common pipistrelle bat (*Pipistrellus pipistrellus*); soprano pipistrelle bat; unidentified pipistrelle species (*Pipistrellus sp.*); Natterer's bat (*Myotis nattereri*), as well as unidentified myotis bats (*Myotis sp.*), noctule bat (*Nyctalus noctula*), and serotine bat (*Eptesicus serotinus*). Most of these records relate to foraging or commuting activity, but day roosts, and maternity sites have also been recorded for most of these species within 2km of the property.

Also listed, but not verified, are Daubenton's bat (*Myotis daubentonii*), and greater horseshoe bat (*Rhinolophus ferrumequinum*), both of which are likely to be present. Species which are not listed, but are likely to be present, are whiskered bat (*Myotis mystacinus*), and Brandt's bat (*Myotis brandtii*).

With respect to birds, the search revealed just 43 records with none at the survey site. Species noted included great tit (*Parus major*), blue tit (*Cyanistes caeruleus*), European barn swallow (*Hirundo rustica*), house martin (*Delichon urbicum*), swift (*Apus apus*) pied wagtail (*Motacilla alba*), starling (*Sturnus vulgaris*), kestrel (*Falco tinnunculus*), peregrine (*Falco peregrinus*), lesser

black-backed gull (*Larus fuscus*) herring gull (*Larus argentatus*), and house sparrow (*Passer domesticus*). There were no records of barn owl (*Tyto alba*) in the dataset.

Herring gull, house martin, house sparrow, starling, and swift are all red list species; birds which are considered to have the greatest conservation concern, and whose numbers and ranges are declining. Kestrel, and lesser black backed gull, are both amber list species; birds which are considered to have an unfavourable conservation status. Whilst the bird records are not extensive, and clearly missing species which might be expected to be found in domestic gardens, those that are listed include five red list species, and two amber list species.

The property is not designated for nature conservation reasons. By consulting the Magic Map Application, it was determined that there were a number of protected sites within the 2km search radius, including Cwm Taf Fechan woodlands Site of Special Scientific Interest (SSSI), some 1.4km to the north-west, at its nearest point, and Cwm Glo a Glyndyrys SSSI, approximately 1.5km to the south-west. It is not considered that these important sites will be directly affected by the development proposals. There are no Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites, or National Nature Reserves (NNR) within the search area.

Information provided by the Council ecologist advises that the property is within a B-line route. These are routes originally proposed by Buglife, as locations where efforts must be made to provide food plants for bees and other insect species. The presence of the property within such a route was therefore taken into account when considering the recommendations made in this report.

Only one Site of Interest for Nature Conservation (SINC), lies within 500m of the site, being the Historic Park and Garden at Cyfarthfa Castle/Park, some 302m to the west. It is considered that none of the sites of value for nature conservation will be impacted by the development proposals.

8 Survey findings

The PRA was conducted on Wednesday the 1st of November 2023, in wet weather. Details of the conditions under which the PRA/dusk observations were conducted are given in Table 3 below. Wind speeds employ the Beaufort scale.

Table 3: Survey and conditions

Date	Survey type	Timing	Weather conditions
01/11/2023	Preliminary Roost Appraisal (PM)	10.00 – 11.00 hours Greenwich Mean Time (GMT)	Air temperature: 12°C Cloud cover: 8/8 oktas Conditions: Raining, occasionally heavy Wind speed: F3, gentle breeze, but gusting
Surveyor	Phil Morgan (PM)		

To enable access, it was necessary to arrive at site at a certain time, in order to gain entry to the property. Inspection commenced with the inside of the house, with an initial walk over with the architect, to allow the surveyor to understand the proposals for the building, and to ask relevant questions. Following this a more detailed assessment was carried out, commencing on the first floor, to examine the roof areas.

The surveyor noted that the ceiling beneath the main loft had been stripped out/removed. The remnants of these ceiling had been taken away, and most of the glass-fibre insulation too. Some of the insulation remained in place, but most of this was hanging down into the upper rooms. It was possible to view the inside of the roof, and note the presence of a white breathable membrane, lining all of the areas which could be seen. Close inspection was possible from floor level of the ridge areas, and edges of the wall plates. No bats were visible and there was no evidence in the form of bat droppings, or evident fur staining.

A smaller loft at the south-western end of the house was not inspected because of a fixed access ladder, which was not secured, meaning that it moved about when touched, and did not reach the floor. It was not possible to bring it into a down position to secure it, and it blocked access for any other ladder. It was however possible to view the presence of timber sarking in this section of the building, which appeared to be tight fitting. This was the only location with timber sarking.

Similarly, a small loft at the rear (north side of the house), had insulation in place, draped across the ceiling joists. Whilst it was possible to view above this insulation, it was not possible to climb up, and cross the joists as, there was an evident risk of falling through into the room below. For health and safety reasons this loft was also assessed from floor level.

Several open fireplaces on this floor were subject to detailed inspection. All of the original chimneys had been capped, but the chimneys, and open fireplaces were still present. Lesser horseshoe bats were known to be in the wider vicinity, and this species will often use chimneys if they can gain access to the interior of a building. Chimneys were searched (some having flues fitted), and the cap at the top could be seen. No bat or evidence of bats was found.

As the upper floor windows were in place, inspection of these focussed on gaps around the edges of the window frames, although most had been filled with expanding foam, where frames were in place. Where gaps were noted, these were closely inspected. No evidence of bat presence was noted. Small gaps were noted (< 12mm), between bricks in internal walls, and these checked for bat presence, again without finding evidence for presence. In the few cases where larger openings (> 18mm) were evident, an endoscope was used to search the interior. No bat presence was detected by this means.

Survey continued with the ground floor area. Whilst some windows and doors had clearly recently been put in place, some of the ground floor openings were still open to the elements. Again the surveyor examined any open chimney/fireplace, door and window openings, particularly lintels, and any internal gaps in brickwork. The window openings, where no frames were in-situ, were subject to a particularly close inspection. All were found to be bricked up (see Plate 10), effectively sealing the cavity. Window frames therefore seat into the walls, against the outer brick course, thus affording bats or other creatures, no means to enter the cavities. No evidence of bat presence was found.

Whilst examining the openings for doors and windows, the surveyor sought signs of potential access points to the wall cavities; none were found. An access hatch to an underground chamber was noted, but access was not possible without appropriate tools. Inspection may not have been possible, as a potential confined space, even if access had been possible.

Externally it was possible to obtain good views of all of the roof ridge areas. Apart from the obvious relative newness of the roof coverings (evidenced internally by the breathable membrane), there were several gaps at the ridges, which would permit bats to access the area beneath the ridges, and on top of the membranes/sarking. At the wall tops, junctions with the soffit boxes were sealed off by the fitting of the external wall insulation, leaving no obvious entry points at eaves level.

Only at the south-western (semi-hip) gable end, where the work to replace the barge boards and soffit boxes remained incomplete, was there the possibility of bat or bird access. The purlins on that part of the roof, and wall plate were exposed, allowing possible access. Elsewhere on the exterior, openings were evident where the remaining windows/doors and frames had not yet been fitted, and some of the lintels were still also uncovered, or not boxed in. These were examined as closely as possible for signs of bats and birds. No evidence for presence was noted.

Hibernation potential around the house was considered, with air vents being noted in several places around the exterior, at ground level. Most of these vents were tight fitting, and narrow.

Whilst possible access by bats could not be discounted, they would require effort on the part of a bat to pass through them. It was also not possible to establish if there was any connection between these vents and the internal inspection chamber. Also unknown is whether the internal cavities have been filled with cavity wall insulation – a possibility given the efforts to improve the house with external insulation – which would deny bats access to the cavities.

Externally there was no sign of former bird nests, but if such nests had existed at eaves level, evidence would have been removed by the work to fit uPVC soffits etc.

Overall the house was judged to offer a moderate level of potential to be used for roosting by bats, due to the gaps at the ridges, and, in the absence of ground floors windows/doors, access by flying directly into the living area.

The surveyor considered the features of the garden around the house, which is very narrow to the rear. A semi-mature beech at the entrance to the property was examined, and appeared to be in good health with no obvious openings or damage to the trunk and limbs which might permit bat access. No bird nests were identified.

A box (*Buxus sempervirens*) hedge was noted at the front of the property, which together with the boundary wall, provides a degree of privacy between the house and The Grove. Otherwise any garden plants were generally buried below a multitude of bricks, blocks, and other building materials strewn across the front garden, which examination of satellite images, has previously been a car parking area.

Finally, the surveyor considered the general vicinity of the property, and the locations of any street lights, as well as bird or bat boxes in the front gardens of neighbouring properties.

9 Discussion

The owner wishes to convert St John's Lodge to create three dwellings. This work will require internal refurbishment/remodelling. At the time of survey, much of the work had already been completed. The exact time line for some of this work is not known, such as when the chimneys were capped, and when the building was re-roofed. Other work is clearly in the process of being completed, and most (if not all of this) would be considered to be permitted development. There is no intention to undertake any further roofing works, beyond completing the fitment of the uPVC barge boards at the south-western gable end. The property is not listed, nor, as far as is known, within a conservation area, and in many respects is unremarkable, being one of many relatively substantial dwellings in this part of Merthyr Tydfil.

It is possible that the building offers some hibernation potential for bats. However, it would appear that any work in the below ground inspection chamber is complete, and it is not known if there is any possible access for bats to this area. Similarly, it may be possible for bats to access the outer cavity walls, if these have not been filled with insulation, but as there is no additional work to be done on the walls, there are no perceived impact for bats, given that bats do not appear to be able to access any cavities at the window/door frames.

There are no historic data available indicating that bats, or nesting birds, have previously been identified at the property, and likewise, the property is not designated for any nature conservation or environmental reasons. The structure is however currently open to the elements in places, and birds and bats can fly inside without particular impediment, gaining entry to the chimneys and roof areas. Other features which bats in particular could exploit, are the areas beneath the ridges of the roof, and there are several obvious gaps beneath the ridges, which would allow bats to access this area. However, in doing so, they are at risk, because of the presence of a breathable membrane. Research has revealed that all modern breathable roof membranes have been associated with bat fatalities. On this basis the building is assessed to have moderate potential to be used by bats.

Bats are protected under the provisions of Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), whilst their roosting places are also protected under the provisions of the Conservation of Habitats and Species Regulations (Amendment) (EU Exit) 2019. All bats, and their places of rest, are fully protected under British legislation, and as such, where there is evidence for the presence of bats, or where there is potential for them to be present, detailed assessment is appropriate. However, this only applies if there is some risk to them. At St John's Lodge the potential for bat roosting is at the ridges, and possibly up the chimneys, or into the roof space, whilst the ground floor window/door openings allow free access. Once the window/door openings, are closed off, the potential for internal roosting is negligible. In such circumstances, no further survey is recommended, although due care must be exercised when fitting window/door frames.

All breeding birds are protected under the provisions of the Wildlife and Countryside Act 1981 (as amended), and active bird nests cannot legally be disturbed or destroyed. It is appropriate to offer guidance with respect to nesting birds, in the event that they are found during any work.

At this point there is opportunity to provide enhancements to benefit nature conservation. Section 6 of the Environment (Wales) Act 2016 requires the local planning authority to seek to maintain and enhance biodiversity. The Welsh Government has clarified this to mean that developments must include biodiversity enhancement measures prior to the determination of the application. There are opportunities to accommodate biodiversity enhancement measures within this development, and accordingly recommendations are made below to create Net Benefits for Biodiversity (NBB).

10 Recommendations

It is recommended that the work to complete fitting the windows and doors in the building are completed as soon as possible, and must be completed before the end of February 2024. This ensures the work to enclose the building is done at a time of year when bats are largely inactive – depending on weather conditions. Prior to fitting each unit the builder/carpenter must carefully inspect each opening to check that no bat is located against the inside of the outer brick course. Care also needs to be applied with respect to external lintels, as these are places where bats can roost between the lintels, and small birds, such as wren (*Troglodytes troglodytes*), can roost. If a bat is noted, then the guidance offered below must be followed.

Similarly, although presence of nesting birds is not anticipated at this time of year, but the risk will increase once the winter months are over, and as stated above, windows and doors need to be fitted by the end of February 2024, at the very latest. Again, guidance if given below with respect to presence of birds.

With respect to the refurbished dwelling, measures can be taken at this point to reduce the impacts of artificial lighting. A Bat Conservation Trust study of the impacts of lighting on bats has considered the increased risk of the bats being preyed on in well illuminated areas. Lighting was also found to be harmful when present near woodland edges and hedgerows, as well as causing isolation of colonies and altering insect prey behaviour. If external security/access lights are to be fitted as part of the proposals, these must be installed no higher than 2.3m above ground level, and use low wattage bulbs. There must be no upward light spill and shrouds or deflector fittings are a simple way of avoiding this. Lights must be on timers, to ensure that they are extinguished within 30 seconds of movement ceasing. It is also desirable that internal lighting is sunk into ceilings, rather than pendant lights, as this appears to reduce external lighting impacts if curtains or blinds are not used by the residents.

Bats can be encountered unexpectedly during any development, and if this occurs, it is important to stop activity in the vicinity of the bat(s). It is possible that a bat will be in a torpid state and unable to fly off for several minutes or even up to 20 minutes. Advice must be sought from

Natural Resources Wales, or if this is not possible, then from an ecologist who holds a licence to disturb bats. To proceed without taking advice would be an offence under the provisions of the Wildlife and Countryside Act 1981 (as amended).

Breeding birds are protected under the provisions of the Wildlife and Countryside Act 1981 (as amended). An active bird nest cannot legally be disturbed or destroyed. Once a nest is established, the birds must be able to have access at all times until the young have fledged, and the nest is no longer active. The bird breeding season commences as early as March and continues into August for species which rear a second or third brood. If an active nest is found elsewhere, it must also be retained and protected. A cordon must be established for a safe working zone a suitable distance from the nest, and not until the chicks have fledged can the nest be destroyed.

The front garden has two notable, natural, features which must be retained. The semi-mature beech is a good specimen and will have value for local wildlife, particularly any beech mast, which birds can take advantage of. Similarly, the box hedge at the front must be retained for the cover it provides, allowing birds to roost, and potentially nest.

A new development provides the opportunity to enhance the biodiversity of the site, and to comply with Planning Policy Wales 11 (PPW11), which has recently been revised to encourage further boosts for wildlife, and a number of enhancements are recommended as suitable for a site of this size.

There are several helpful nest box/roost box designs, which can be installed whilst the external insulation is being put in place, and whilst scaffolding enables access to the upper walls. Fitment of a Schwegler 1FR bat tube, as shown in Plate 17 (see Appendix III) (or similar agreed), at the rear of the house might encourage use by pipistrelle bat species. This is a relatively dark location with good flight lines. A suitable position for such a box is shown in yellow (see Plate 3).

To benefit swifts, a red list species, it is recommended that a Vivara Pro built-in swift nest box is provided, as shown in Plate 19 (see Appendix III). A suitable location is shown in green (see Plate 2), at the rear of the house, where it is away from direct sunlight and prevailing weather. Additionally a hedgehog box is proposed for the south-western part of the property, to be sited against the boundary, with appropriate screening for it to blend with its surroundings to avoid interference.

There is the opportunity to enhance this western boundary, and indeed other areas of the garden for insects, and planting of lavender (*Lavandula spp.*) in various locations will benefit bee species in particular. Other plants which can be planted, and which will benefit insects at different time of year are listed in Table 4 below.

Table 4: Plants for insects

Plant	Planting locations	Benefitting insects
Borage	Garden edges, walled borders, pots	Flying insects including bees
Honeysuckle	Garden edges	Bees, moths, other flying insects
Lavender	Garden edges, walled borders, pots	Bees, moths, other flying insects
Michaelmas daisy	Pots, walled borders	Butterflies
Sweet William	Garden edges, walled borders	Flying insects including bees
Wallflowers	Garden edges, walled borders	Butterflies

It will be necessary to submit a Green Infrastructure statement to the planning authority for compliance with PPW11. As well as stating the provision of enhancements for biodiversity, as described above, there is scope for installing a porous ground surface in the zone to the front of the property, which will provide car parking. This area was previously cultivated garden (in whole or part), and a porous surface will substantially reduce surface water run off and will ensure a good water supply for the existing trees, and boundary hedge.

11 Conclusions

The work undertaken, and being carried out at St John's Lodge, are largely bracketed as property enhancements. However, the change of use means engagement with the planning system, and this requires certain processes to be followed. The PRA was undertaken whilst work was still in progress, and found the structure to have moderate potential to be used by bats, but, in the main, the area's most likely to be used, will not be impacted in any further work.

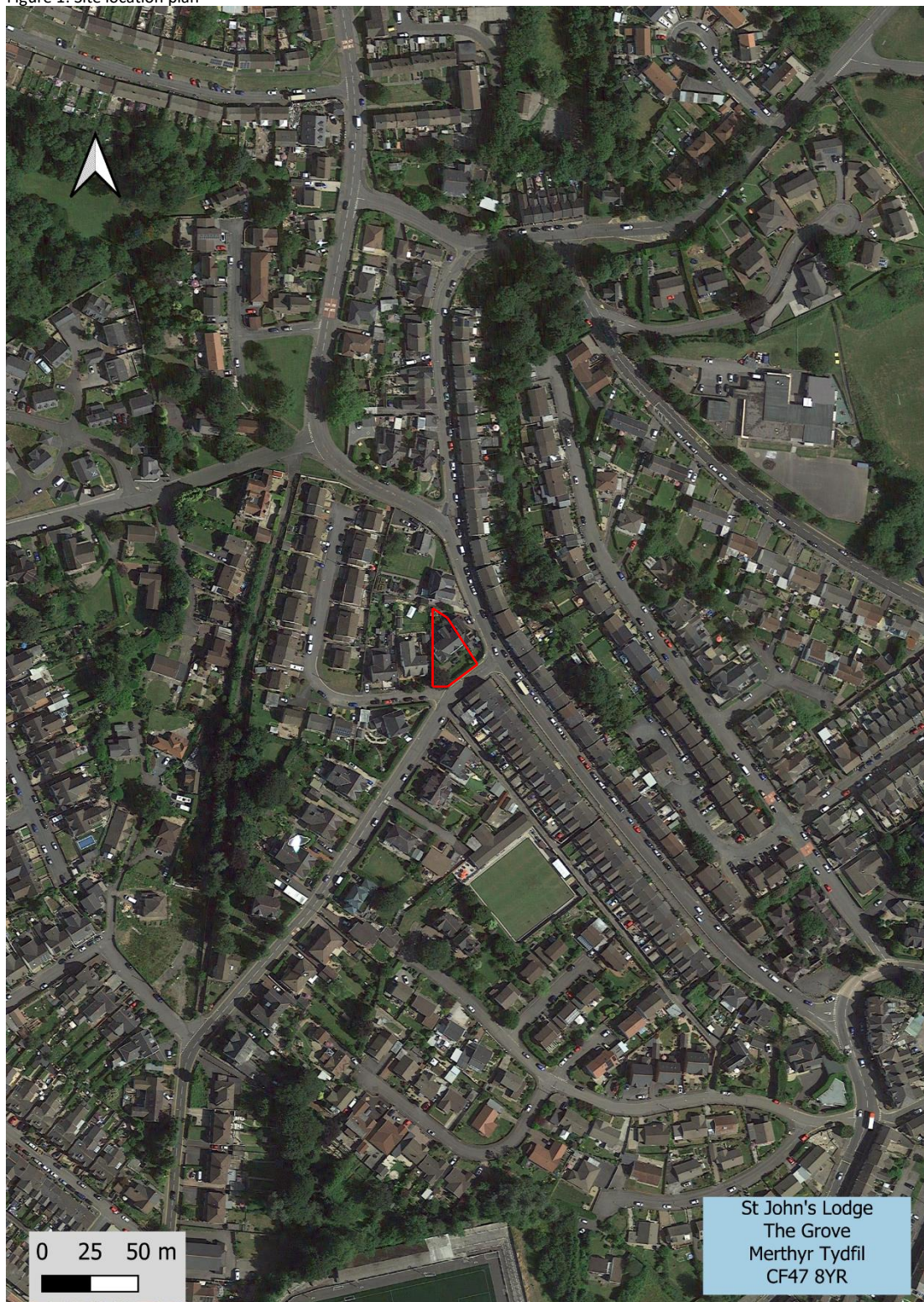
Continuing with the maintenance work will secure the property, and much of what is being done will reduce the carbon footprint of the house. Opportunities arise the work currently in progress, and if the recommendations set out above are fully implemented, there will be benefits for biodiversity and the environment in general in this part of Merthyr Tydfil.

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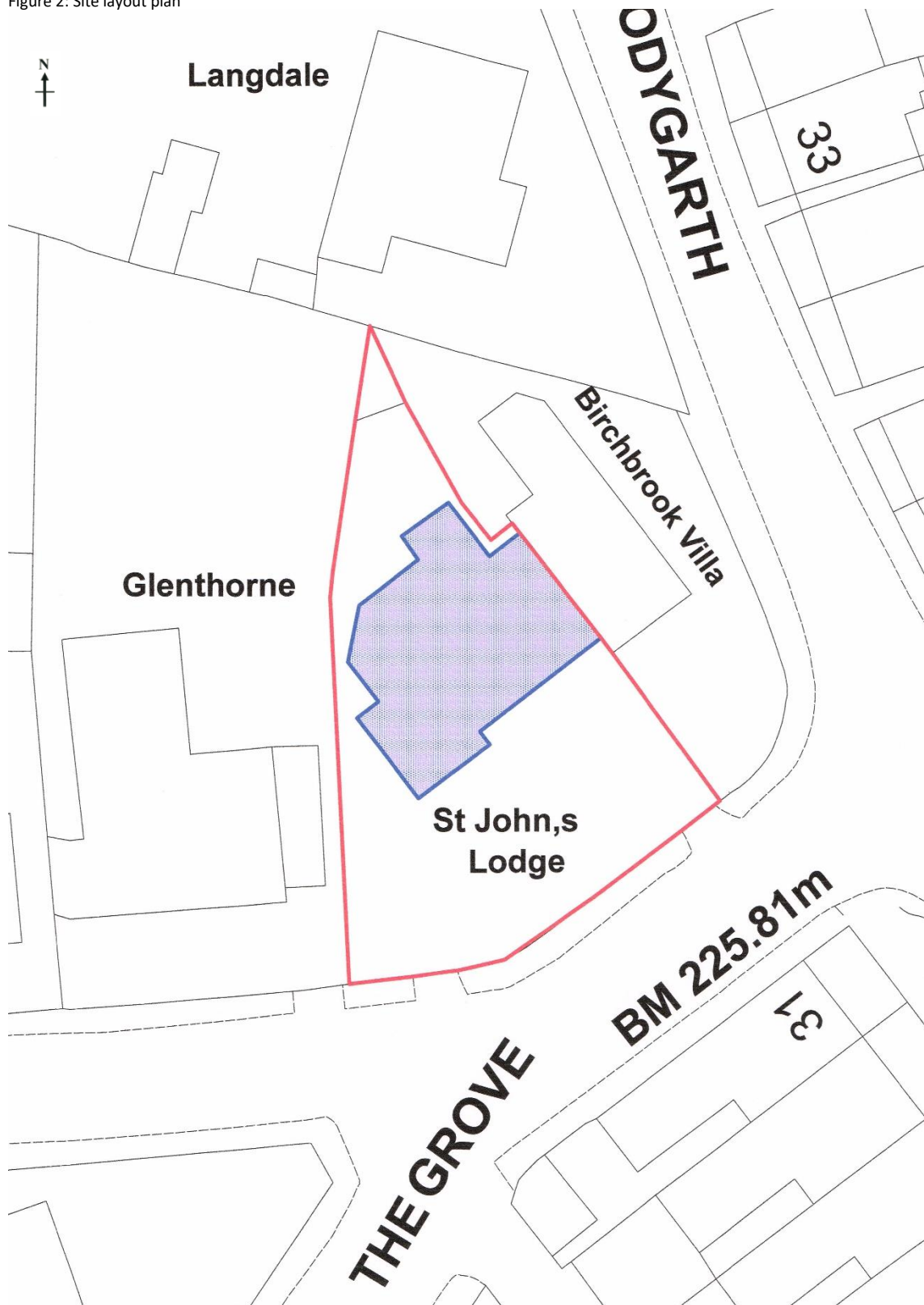
Appendix I: Site location plan

Figure 1: Site location plan



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Figure 2: Site layout plan



Appendix II: Site photographs

Plate 1: Front, south-eastern aspect of the Lodge (area which has scaffolding in place)



Plate 2: Rear, north western aspect of house, viewed from the back garden to the north, with swift box location marked green



Plate 3: South-western end of house (first floor), which features loft with timber sarking, with possible location for bat box



Plate 4: Frontage of St John's Lodge, with semi-mature beech tree at entrance, and box hedge



Plate 5: One of several internal fireplaces, the chimneys for which have been capped



Plate 6: Some fireplaces feature flues, suggesting previous fitment of gas fires



Plate 7: Main loft area, illustrating absence of ceilings and fitment of breathable membrane



Plate 8: Western loft with timber sarking, entrance obstructed by partly fixed ladder



Plate 9: Insulation in rear loft, where ceiling has been removed



Plate 10: Some ground floor windows are still to be replaced, but no access to the cavities is evident



Plate 11: Fitment of external insulation



Plate 12: External air vents (circled red)



Plate 13: Internal access hatch to underground chamber



Plate 14: Last barge boards still to be replaced, and south-western gable



Plate 15: Road side box hedge in front garden, affords nesting opportunities for birds



Plate 16: Gaps at exposed lintels, where care must be taken when sealing them off



Appendix III: Biodiversity enhancements for bats and birds

Plate 17: Schwegler 1FR bat tube



Plate 18: Example of integrated box being put in place



Plate 19: Vivara-pro built-in swift nest box



Appendix IV: Ecology of bats

During the evolution of life on Earth, as far as is known, only four groups of animals have achieved the ability to fly by their own means/physical powers. These groups include the long extinct Pterosaurs – flying dinosaurs; insects (e.g. bees, butterflies, flies); birds; and bats. This makes bats particularly special, and due to this ability to fly, they are widespread, with roughly 1400 different species found across the globe.

This diversity means that they have evolved to exploit many habitats and opportunities, from deserts to forests, and lakes, and cities. Only the open seas and oceans, and ice caps are devoid of bats, although crossings of seas by bats have been recorded on numerous occasions. Bats fall into two groups, the mega-chiroptera – the old world fruit bats – and the micro-chiroptera – mostly smaller, mainly insect eating bats. Both groups evolved separately: the fruit bats from a lemur like ancestor, whilst the micro-chiroptera evolved from a shrew like ancestor, probably just before the dinosaurs became extinct – they are therefore a very ancient group of animals.

In Britain, there are some 18 species currently present and most of these are considered to be breeding in the country. They are all micro-chiroptera and eat only insects. Whilst there are many 'old wives tales' about bats, many of them are false, and bats are highly social animals with excellent eyesight, particularly in poor light. They are mammals, being warm blooded and giving birth to live young – usually only one baby at most – although twins are sometimes found in Scotland, where insect populations allow female bats to occasionally support more than one pup. They can also be long living, although typically smaller bats live for around five years. However, some species, such as Daubenton's bat, have been recaptured over 21 years since they were originally encountered!

Whilst not unique, bats have evolved to see with sound – known as echo-location – something whales and dolphins can also do, as well as some birds, insects, and terrestrial mammals like shrews. In bats it is particularly refined, allowing them to detect moving objects and determine if an insect, such as a moth or gnat is good to eat.

British bats live in a variety of places, and following the last ice age, most lived in caves or rot holes on trees since bats have no means to gnaw or chew at wood, or make modifications to a structure. Today, with very little woodland left in Britain, bats have had to learn to exploit modern structures, and although some still rely on caves in order to hibernate, bats are good at finding access points around the roof features of buildings. Some like to roost within loft spaces, these loft dwelling species include the lesser horseshoe, and greater horseshoe bats, as well as the brown long-eared bats, although all bats are capable of exploiting roof spaces if necessary.

However, most bats exploit the verges or edges of the roof space and sometimes the walls of a building, and these animals are known as crevice roosters – including our most common species – the pipistrelle bats.

In the past 70 years agricultural practices, resulting in habitat fragmentation, and the use of pesticides have resulted in a massive reduction in bat numbers, driving some to the edge of extinction, and for this reason all bats in Britain are legally protected.

Appendix V: Legislation

All British bats, and their roosts (whether occupied or not) are legally protected. The main legislation is the Wildlife and Countryside Act 1981 (as amended by the Countryside and Rights of Way Act 2000). Protection is also afforded under the Conservation of Habitats and Species Regulations (Amendment) (EU Exit) 2019. Under the provisions of these legal protections, anyone found guilty of harming bats or damaging, destroying or denying access to a bat roost, can be subject to fines or custodial sentences.

In an effort to start to address the decline in bat populations, the Natural Environment and Rural Communities Act 2006, and the Environment (Wales) Act 2016 require all public authorities/bodies to have regard for the conservation of biodiversity – e.g. when considering planning applications. With regard to Wales, species and habitats of principal importance are listed in Section 7 of the Environment (Wales) Act 2016 which includes 8 bat species: common and soprano pipistrelles, noctule, brown long-eared, greater and lesser horseshoes, barbastelle, and Bechstein's bats.

A legal ruling (Woolley v. Cheshire East Borough Council) has set a precedent stating that it is necessary for a planning authority to be appropriately informed or aware of the presence (or absence) of legally protected species prior to considering the issues of a planning proposal. Good practice is to assess as soon as possible if bats are present at potential sites for development and possibly even before land is purchased. In some cases the period required for adequate survey work may span more than one calendar year. If a development, including demolition or change of use, is likely to impact on bats and their roosts then a derogation licence will usually be required. Adequate survey results are a necessary input to any licence application. If bats are not found until late in the development stage this may result in expensive delays while a derogation licence is sought and even in offences being committed.

The law with respect to dwellings and other structures is applied equally. Where disturbance is deemed likely to have a significant effect on bats to survive, breed and rear their young or will affect the local distribution and abundance of the species, a European Protected Species licence issued by Natural Resources Wales. A licence application must demonstrate that the development will not be detrimental to the maintenance and favourable conservation status of the species concerned.

All wild birds, their eggs and nests are protected by The Wildlife and Countryside Act 1981 (as amended). It is an offence, with certain exceptions, to:

- intentionally kill, injure or take any wild bird;
- intentionally take, damage or destroy the nest of any wild bird while it is in use or being built;
- intentionally take or destroy the egg of any wild bird;
- sell wild birds or put them on display for sale;
- use traps or similar items to kill, injure or take wild birds; and
- intentionally or recklessly disturb any wild bird listed on Schedule 1 while it is nest building, or at a nest containing eggs or young, or disturb the dependent young of such a bird.

Penalties that can be imposed for criminal offences in respect of a single bird, nest or egg contrary to the Wildlife and Countryside Act 1981 (as amended) is an unlimited fine, up to six months imprisonment or both. In exceptional cases NRW can issue a licence for a specific purpose, so that legitimate work may be undertaken without breaking the law. However, this is exceptional, and not something that is normally expected or done.

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