

Plas Bach

Machynlleth



Bat Conservation Plan

Version 1



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Introduction

Following consultation with Natural Resource Wales (NRW) with regards to planning application 21/1114/FUL, for the ‘Conversion and extension of the former council storage building to form a dwelling and all associated works’, a Bat Conservation Plan has been requested to be submitted to Powys Local Planning Authority to fulfil Condition 3.

Background to activity/development

Planning application 21/1114/FUL is to completely renovate the former council storage building, which is in a state of disrepair.

A total of eight separate roosting locations were identified, supporting a maximum of four common pipistrelles *Pipistrellus pipistrellus*, one soprano pipistrelle *Pipistrellus pygmaeus*, one brown long-eared bat *Plecotus auritus* and one lesser horseshoe bat *Rhinolophus hipposideros*.

The mitigation measures put forward in this Bat Conservation Plan will be beneficial, in the long-term, for the bat species encountered on site. Applying these measures for retaining the bat interest at the site therefore assists in ensuring that “the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable status in their natural range” (Regulation 44(10)(b), The Conservation of Habitats and Species Regulations 2017 (as amended)).

Full details of proposed works

The proposal is to remove the existing roof, raise the pitch of the roof whilst extending but retaining the original wall heights, and construct a new roof. To complete these tasks the following steps will be taken:

- A European Protected Species licence is to be in place before the start of works.
- An experienced Ecological Clerk of Works (ECoW) is to be appointed to provide guidance and ecological input into the works.
- Erection of two bat boxes, sourced from The Nestbox Company, to act as temporary roost provision.
- Toolbox talk by ECoW to all site contractors before commencement of works.
- Hand-strip of roof coverings, and internal timbers where necessary under supervision of ECoW, who will capture and relocate any bat encountered to the bat boxes.
- Bat house / storage facility to be constructed and completed before May 1st, comprising modified roosts for brown long-eared and lesser horseshoe.
- Five raised ridge tiles installed on finished roof of Plas Bach, with three access points facing south and two facing north, comprising modified roosts for common and soprano pipistrelle.
- Four bat boxes affixed on both east and west elevations of finished structure, to provide new bat roosting opportunities (within the bat report produced by Environment Systems, it states that soffit boxes will be created, however there are no soffits proposed for the renovation).
- A sensitive lighting and landscaping plan have been produced, and submitted to the LPA.

Delivery Information – Mitigation, compensation and monitoring

Works to be undertaken

Capture and Exclusion

An experienced Ecological Clerk of Works (ECoW) will need to be appointed to advise the best location for the bat boxes and to direct the creation of features of mitigation. They will also provide a toolbox talk to the building contractor on the day works commence, with information on the specific requirements relating to bats. They will remain on site during specific sensitive works such as the strip of the roof coverings where required, creation of new roosting features and to inspect the placement and suitability of the new roost features.

Prior to the start of works, two bat boxes are to be installed on walls or mature trees within the curtilage of the site, facing south or south-west, to act as temporary roost provision. Artificial light must not illuminate the boxes at any time. One of the boxes must be suitable for crevice-roosting bats such as either the Eco Kent Bat Box from the Nestbox Company (Figure 7), and the other suitable for cavity-roosting bats such as the Cavity Bat Box Figure 7. The bat boxes must remain in-situ for the duration of works, and will ideally be retained following the completion of works to act as additional roosting features.

Due to the location of the roosts within dense ivy, as well as those within the interior of the structure as their specific locations are unknown, an exclusion approach is not considered appropriate. Reasoning behind this conclusion is that the number of potential access points are many, with the possibility of bats utilising another unknown access point. Works will commence with the strip of bat roosting features under supervision from the ECoW. This includes the dense ivy growth, all roof coverings and all interior panelling and timbers where necessary. In the course of works, any bats encountered during the strip of roost features will be captured by the ECoW, who will be wearing gloves and a facemask (Nuñez et al. 2020) and will be relocated to one of the bat boxes. This process will continue until all roost access points and potential access points have been removed and the building is clear. Due to a number of interior crevices, it is recommended that the structure is left without a roof for at least two consecutive nights, to allow bats to disperse of their own accord. If a bat is discovered when the ECoW is not on site, all works must cease and the ECoW contacted for advice before proceeding. No attempt must be made to move the bat; the ECoW will be trained and will hold a licence for the handling of bats

Bat roosts and habitat

In-situ retention of roost(s)

Retention of the roosts is not possible as the building is to be completely renovated.

Modification of existing roosts

The common pipistrelle and soprano pipistrelle roosts will be modified by relocating to features on the converted and renovated structure. In total, five separate roosts will be modified to be located underneath five separate ridge tiles. These modified roosts will be facilitated by either leaving a gap in the mortar (Figure 1) or by placing a single ridge tile atop two others (Figure 1).



Figure 1: Gap in mortar (left); raised ridge tile (right)

The gaps must measure between 15-18mm x 150mm, which will prevent ingress by birds, with three gaps facing south and two facing north. Bitumen Type F1 felt will be used throughout the whole of the roof space. Below three of the ridge access, a ridge box for bats to roost within will be created (Figure 2), which will be covered by the bitumastic felt and slates. Breathable Roofing Membrane (BRM) such as Tyvek, TLX products or similar will not be used.

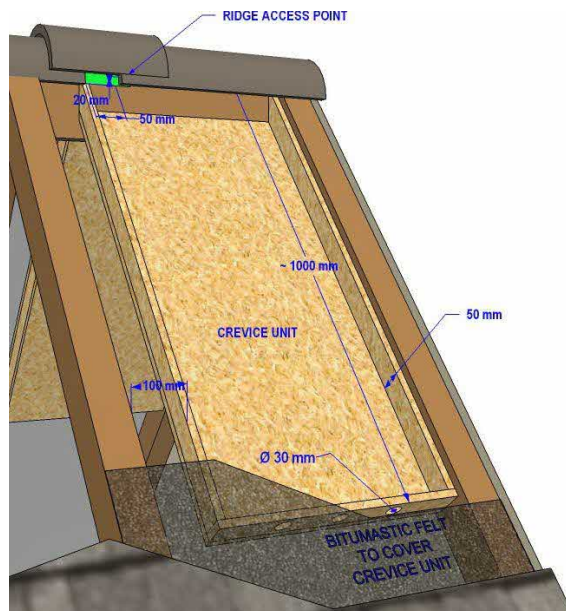
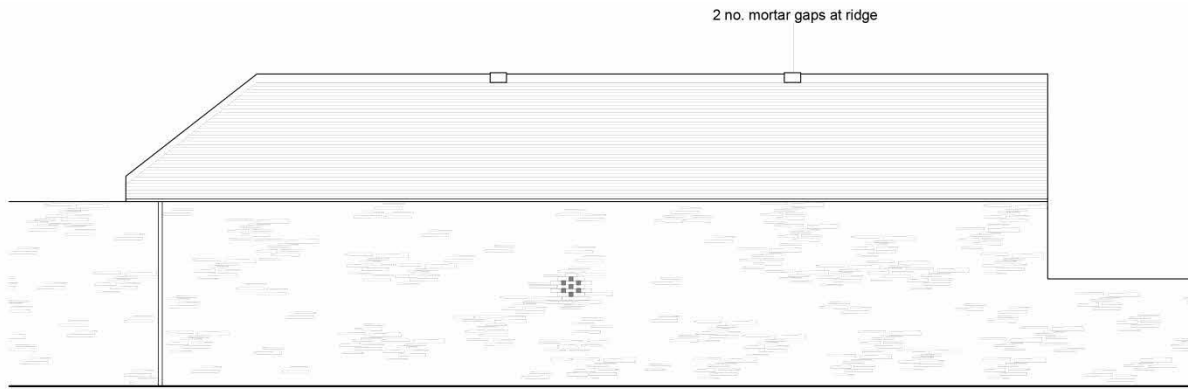
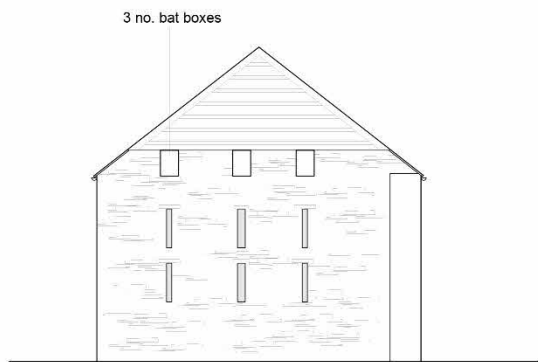


Figure 2: Ridge box

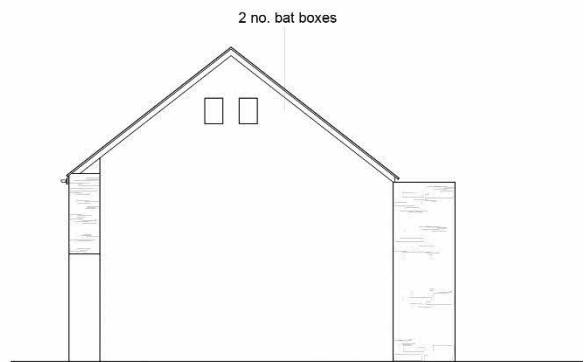
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PROPOSED NORTH ELEVATION



PROPOSED EAST ELEVATION



PROPOSED WEST ELEVATION



PROPOSED SOUTH ELEVATION

Figure 3: Compensation measures on the renovated building.

Figure 3 shows the proposed locations of the ridge tiles and the bat boxes on the renovated building.

New roost creation (including bat houses and bat boxes)

The lesser horseshoe and brown long-eared bat roosts will be modified where they will be relocated to a purpose-built bat house at the south-eastern extent of the yard, as close as possible to the adjacent mature trees and vegetation.

This bat house will be built from timber and will consist of a roof void above a storage area, which may be used by the resident(s) of the converted Depot; an example of style is shown to the left in Figure 4. The roof will be pitched and laid with slates, with either no roofing membrane or Type 1F bitumastic lining. Proposed measurements are L 4m x W 4m x H 4m. It must be appreciated that due to disturbance to bats, use of the ground floor is restricted to storage; workshops or other noisy/frequently used areas will not be permitted.



Figure 4: Example of proposed bat house / storage unit and baffle and indicative area for additional baffle to create hot box in roof structure.

The ground floor may be left without a damp-proof course to retain moisture and encourage humidity. An access hatch in the ceiling is to be created, measuring 500mm x 500mm, to allow for inspection of the bat roost on the first floor by an ecologist. The hatch must be lockable to prevent casual access by the public. A 'hot box' structure will be built into the roof on the first floor, using two untreated triangular plywood panels fixed to the A-frame, which will trap warmer air in between (Figure 4). A gap of approximately 1000mm will be created between the bottom of the baffles and the floor, to allow bats to fly underneath. The floor in question will be constructed from plywood boarding or similar across the joists. In addition to the hot box, two 'squeeze boxes' will also be created in the roof, one either side of the hot box. Squeeze box construction is largely similar to the hot box, although the space in between must measure between 15-18mm to create a deep and narrow crevice (Figure 5). Access for bats is to be made through a hatch on the east elevation, through an opening in the wall measuring 200mm x 400mm. This opening will be covered with a cowl to prevent ingress of predators (Figure 5), and another on west measuring 300mm X400mm.



Figure 5: Squeeze box, showing where bat would roost and cowl on exterior of access hole (Chris Hall Ltd Mammal Consultancy, 2012)

Figure 6 depicts the elevations of the proposed bat house.

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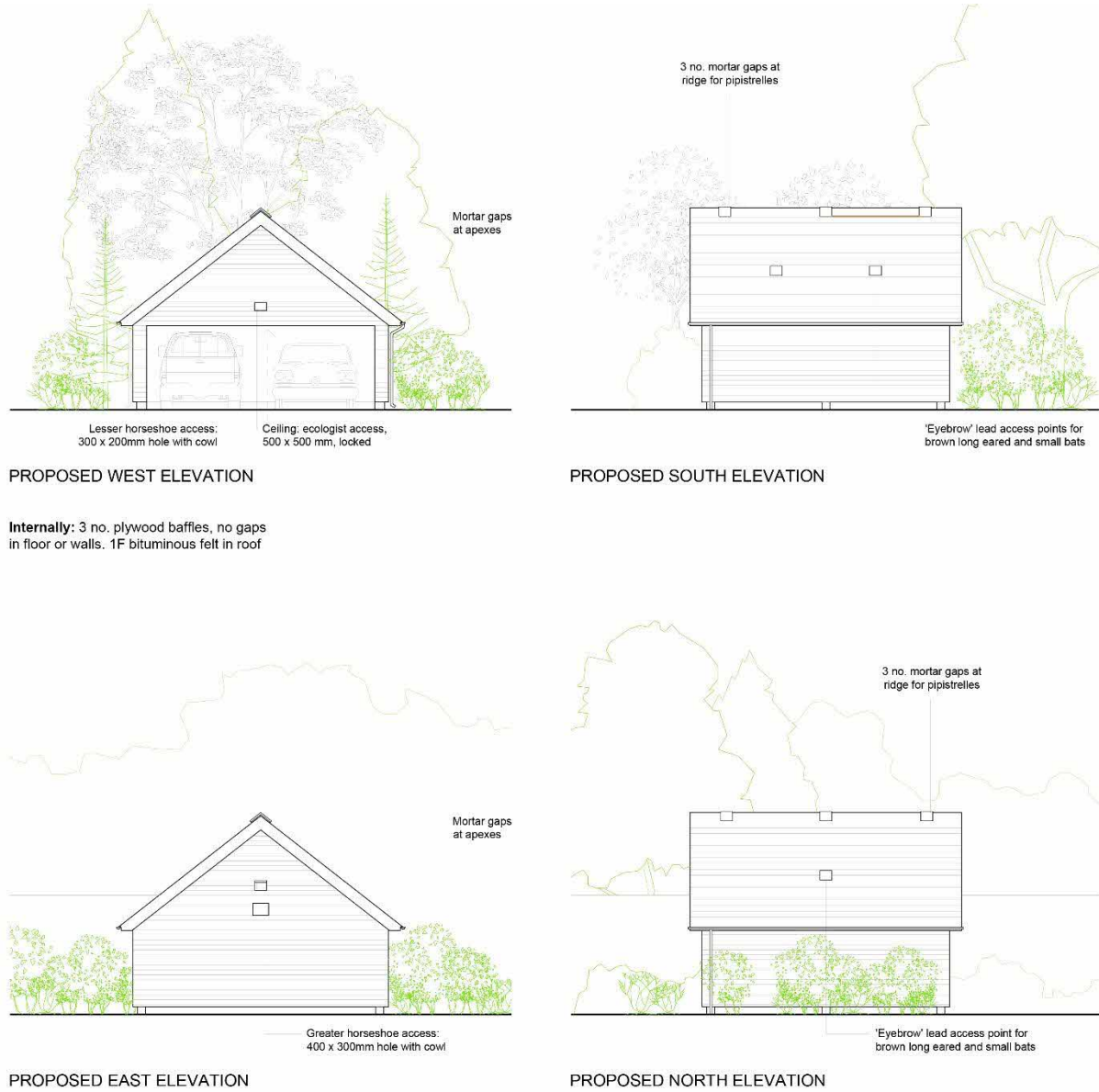


Figure 6: Bat house design and elevations

Two bat boxes are to be installed on both the east and west elevations of the converted and renovated structure. Two will be [Eco Kent Bat Box | The Nestbox Company](#) as shown to the left in Figure 7, and two will be crevice bat boxes [Cavity Bat Box | The Nestbox Company](#) as shown to the right in Figure 7.



Figure 7: Bat boxes to be placed on gable ends of the converted and renovated structure.

Maintenance and/or modification of new and existing habitat

The area around the building currently is relatively dark, with no external lighting. All bat species are known to be sensitive to artificial light to some degree, however, pipistrelle species are known to be relatively tolerant of some lighting. To aid bat conservation for the local area, any additional external lighting installed as part of the proposed renovation is to be kept to a minimum. This will allow the continuation of the use of the area by bats. The following were considered when designing the lighting plan (ILP, 2018):

- Light fixtures, fittings, light spill and any artificial light will be directed away from bat roost entrances, such as those to be created as part of the enhancement package;
- No light fixtures will be fitted on the east and west gable ends, nor the 'bat house' to avoid illuminating roost entrances;
- Luminaires are to be LED only, due to their sharp cut-off, lower intensity, good colour rendition and dimming capability;
- Luminaires will have a warm white spectrum (ideally <2700 Kelvins) which will reduce blue light component;
- Luminaires should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats;
- Heights of fixtures have been carefully considered to minimise light spill;
- Only luminaires with an upward light ratio of 0% and with good optical control should be used;
- Luminaires will be mounted on the horizontal, i.e. no upward tilt;
- Any external security lighting should be set on motion-sensors and short (1 min) timers;
- Lighting fixtures will be directed away from any natural features, particularly the surrounding trees and other vegetation in the landscape.

A sensitive lighting plan has been developed and submitted to the LPA and is provided below.

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Figure 8: Lighting plan

Mechanisms for ensuring delivery of mitigation and compensation measures

A qualified and appropriately-licenced ecologist as ECoW will be appointed to supervise the renovation works. As the renovation works progress, the ECoW will provide guidance to the builders on installing the agreed mitigation measures in-situ, rather than retrospectively. The ECoW will remain on-call for the duration of the construction works, to provide advice and guidance when required and to attend site in certain situations.

The ECoW will give a toolbox talk to all site workers prior to the commencement of works. A copy of this Bat Conservation Plan will be issued to the architect and building contractor, with another copy remaining available on site at all times. An on-site induction and summary sheet of guidance for working on a site where bats are present will be given to builders and contractors working on the site before commencement of works.

Mitigation contingencies

Where last minute discoveries of bats are encountered and need to be moved, the ECoW will be on call to attend site. The bats will be captured by hand, or with the aid of a hand-net, by a licenced bat ecologist following best practice advice from The Bat Conservation Trust. Every bat caught will be placed individually in a cloth bat bag in a safe, secure location for release at an appropriate time (preferably that same evening). No hibernating bats will be handled or removed. Should bats be found in a state of torpor then works will stop. NRW will be contacted to inform of the progress in this scenario.

Biosecurity risk assessment

Non-native species were not encountered on site during surveys. With respect to bats all equipment to be used by the roofing contractor will be cleaned down prior to the start of works in order to ensure transfer of disease into the site is avoided.

Post-development site safeguard

Habitat/site management and maintenance

The landowner, Jenny Hall, is funding all the proposed works and mitigation measures. Once works are complete the property will be retained in ownership and management by Jenny Hall. Future management and maintenance of the land will remain as they were prior to works.

A landscape management plan has been produced and is provided in Figure 9.

Population monitoring, roost usage etc.

The site will be inspected during and immediately after works by the ECoW, in order to ensure that the mitigation measures have been undertaken properly.

In addition, one year of monitoring of the effectiveness of the mitigation strategy is proposed. An automated detector will be placed within the bat house and left to record for two weeks in the summer months.

Post-development mitigation contingencies

Where monitoring shows that the population has reduced beyond its current known number additional mitigation will be added to the building by taking options such as adding building mounted bat boxes, which have shown the highest occupation rates (Collins et al. 2020).

In addition, further monitoring survey would be undertaken to confirm the use of the buildings by bats until satisfactory numbers of bats are observed as roosting.

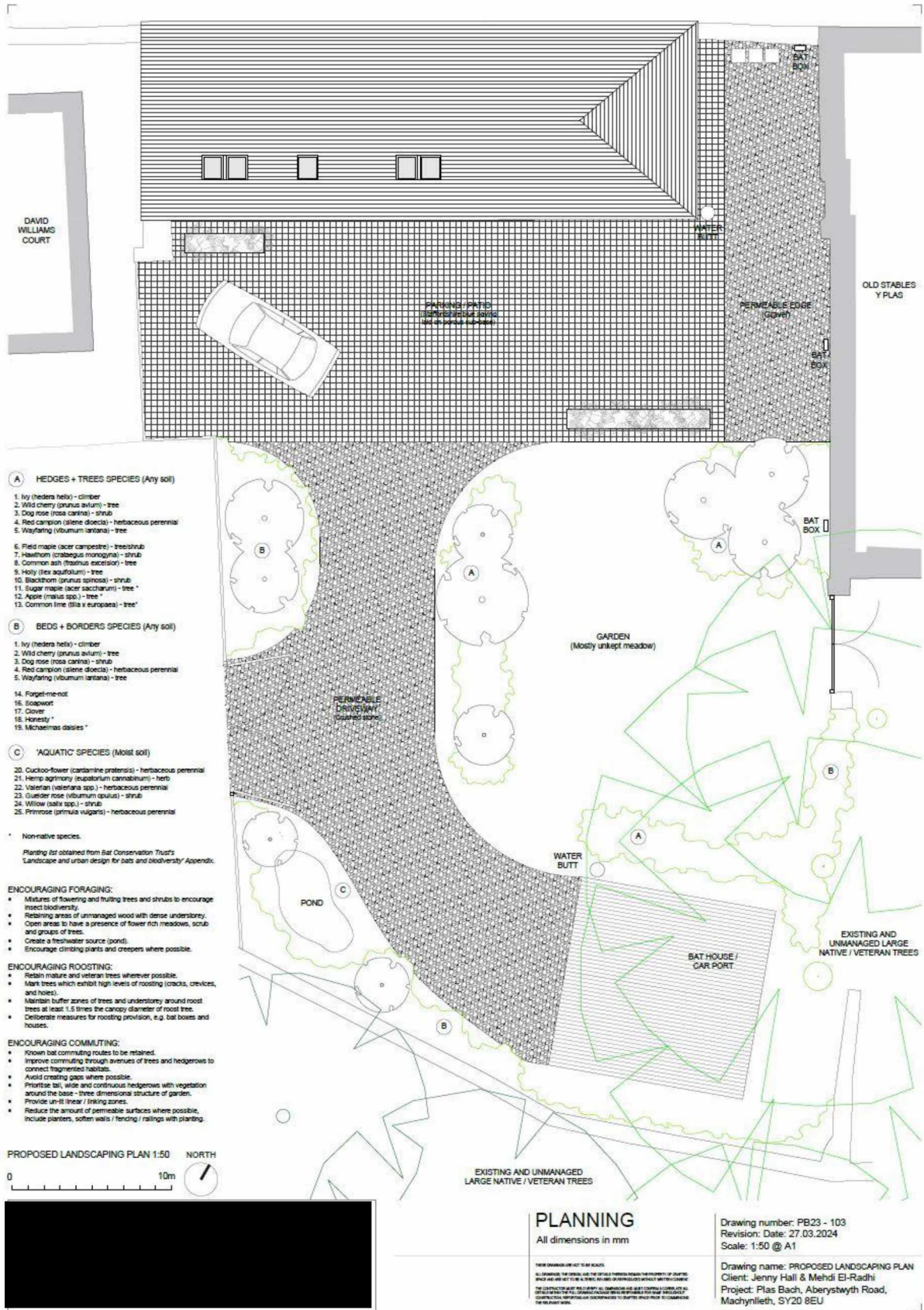


Figure 9: Landscape plan

Mechanism for ensuring delivery of post-development works

The landowner and resident of the building will be the same, Jenny Hall. Jenny Hall intends to remain the owner of the dwelling. Reporting of the population and roost monitoring will be reported using the Natural Resources Wales ‘Report by the license holder of action taken under license European Protected Species’.

Timetable of works.

Including timings of exclusion operations and construction works, creation of mitigation measures, timing of other post development works and monitoring.

Activity	Timing	Notes
Construct bat mitigation (bat house with storage)	May 2024	ECoW to direct the erection of the temporary bat boxes (to be retained post construction) and construction of the bat house with storage. Completion of bat house to allow for works to take place during the summer months
Building strip	August 2024	Provide toolbox talk to the contractors on site before removal of the roof. Scaffolding to be erected All cavities to be checked for presence using torches, mirrors and endoscope. Procedure to continue until building is clear.
Renovation works	August 2024 – October 2025	Entirety of works, inclusive of repair of masonry, repair/replacement of roof structural timbers, new flooring and walls, laying of new roof coverings and installation of doors, windows, electrics, plumbing etc. Building contractor to advise ECoW of dates for installation of bat mitigation installation features. ECoW to supervise installation
Completion of works check	October 2025	ECoW to attend site to inspect completed mitigation features and to advise any changes that are required
Monitoring	Late Summer 2026 (August)	ECoW to attend site to inspect the bat house for signs of use by target species. Automated detector to be placed in bat house for period of two weeks. Completion of licence report form by ECoW and sent to NRW.

Land Ownership – Mitigation Site

Mitigation Site/Compensation Ownership post construction

The area and building due for works are entirely owned by the applicant, Jenny Hall. There is no intended change of ownership post-construction.

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