



PLAS GRONO, ERDDIG:

BAT MITIGATION AND CONSERVATION PLAN

DATE	ECOLOGIST	APPROVED	VERSION	COMMENTS
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Contents

1.0 Introduction3

2.0 Mitigation and Enhancement5

1.0 Introduction

- 1.1 Enfys Ecology Limited were commissioned by _____ to produce a bat conservation plan with regards to proposed works at Plas Grono Farm, Erddig, LL13 0YR; Grid ref SJ 31541 48048.
- 1.2 This document builds upon the results and recommendations following previous bat surveys of the barn for conversion, carried out by Enfys Ecology (Enfys Ecology, 2020); as well as considering bat mitigation with regards to the proposed new swimming pool building adjacent to the barn.
- 1.3 The proposed works comprise converting an existing barn into living accommodation, which has had planning approval (Ref: P/2020/0742) with the condition of the production of a bat conservation plan (Condition 14); as well as a more recent proposal of constructing a new build to host a swimming pool on an adjacent area of grassland, to adjoin the existing barn (Figure 1.1 for locations and Figure 2.1 for elevations of the swimming pool building). Planning permission has not yet been granted for the swimming pool building.

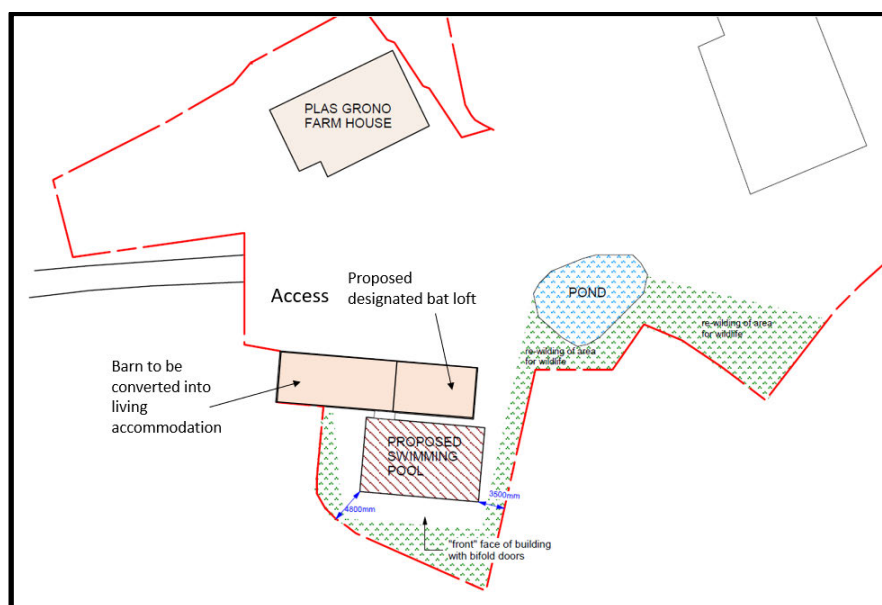


FIGURE 1.1: PROPOSED SITE PLAN SHOWING THE BARN TO BE CONVERTED AND THE LOCATION OF THE SWIMMING POOL BUILDING

- 1.4 The previous surveys showed the barn proposed for conversion was a known roost for brown long eared bats (BLE), soprano pipistrelle, common pipistrelle, *Myotis* sp. and lesser horseshoe (LHS). Mitigation for these works will be provided via a designated bat loft within an adjoining stable building, as detailed in the previous ecology report (Kingsley, 2020) but will be expanded on in this document to factor in the addition of the swimming pool building in close proximity to the bat mitigation area (See Section 2).



FIGURE 1.2: PROPOSED ELEVATIONS AND FLOOR PLANS OF SWIMMING POOL BUILDING. BASE IMAGE ©JNL DESIGN

2.0 Bats – Mitigation and Enhancements

- 2.1 **As the barn is a known bat roost, no works to this building, OR the adjoining stable block, must commence until a licence has been obtained from NRW. A licence can only be applied for following the granting of planning permission and the discharge of any ecology related conditions. Once submitted the licence application takes up 40 working days to be processed (or more if any there are any queries).**
- 2.2 The construction of the new swimming pool building will not directly affect the previously recommended bat mitigation, but it could result in the disturbance to bats using the site by removing suitable foraging areas and increased lighting within the site.
- 2.2 Mitigation, compensation and enhancement measures will be included in the licence application and are also included below.
- 2.3 *Mitigation - Destructive Works*
- Any destructive works such as removal of slates/ridge tiles/fascia's/soffits/barge boards, works to the roof or re-pointing of stonework, can take place at any time of the year, however, it is preferable that they are undertaken between mid-September and 30th April, when it is least likely for bats to be present. Within this timeframe, it is preferable for the works to be undertaken mid-September – October so if any bats are found they will not be in hibernation but they will have finished breeding or April, prior to breeding.
 - A new stud wall is to be installed into the adjoining stable block to section off the designated bat area from the remainder of the building. Any works to the roof or within the roof void of this building will need to be carried out under the same developmental licence, following the same mitigation, and can be carried out at any time of year. Works to this building are intended to start as soon as possible.
 - Prior to the start of works, a toolbox talk will be given to everyone involved in the project and a log of this will be kept.
 - There may be bats active and present in small numbers during the works. To reduce the impact of disturbance on the bats (if present), the removal of all roof structures (including the slates, ridge tiles and felt, along with any lead flashing, fascias, barge boards and soffits) will be carried out by hand and supervised by a suitably qualified and licenced ecologist. The ecologist will carry out an inspection of the roof void of the barn, and (where possible) of any PRF's on the roof for bats, prior to the start of any works. The ecologist will also inspect the interior of the stable block prior to any works starting within this building; supervision of works within the stable block may be necessary depending on how thoroughly the area can be inspected, this will be at the ecologists discretion.

- A bat box (such as a woodstone/ woodcrete multi-chamber bat box that is suitable for both summer and winter roosting bats) will be made available on site prior to the start of works (exact location of installation to be agreed with the licenced ecologist), so if a crevice dwelling bat is found during works, it can be placed within it. If a bat is found (that is not a LHS) and accessible it should be captured and placed in the bat box, no LHS bats will be captured and moved as part of the works unless they are in immediate danger – bats will only be moved by a licenced ecologist.
- If an active bat is found and is not accessible, or a LHS is found, works will start from the furthest point from the bat and continue in a directional manner to encourage the bat to leave of its own accord. If this is not possible without the possibility of causing harm, work will stop until the bat has left the building and the roost will be blocked. If this is the case a visit in the evening may be needed and the roost blocked once the bat has emerged and once the ecologist is confident no other bats remain in the roost. A check will be carried out the following day and if the bat is gone, the works can then proceed under supervision.
- If, in the unlikely event, a hibernating bat is found then all works must stop and be postponed until the temperatures increase, or individual bats can be moved into the bat box suitable for hibernating bats if it is safe to do so and there is minimal risk of waking the bat up. If a hibernating LHS is found then works will stop until the temperatures rise and the bat is active and able to move away.
- If, when carrying out the pre-works checks and supervision works, it becomes apparent that more bats or different species of bats are to be affected by the works than first thought, works will be stopped until the working method and type/scale of compensation measures can be reviewed and agreed with NRW. If a **large** hibernation roost is discovered, or any hibernating LHS are found, then the works will be postponed until after the hibernation season and the hibernation roost will be retained where possible.
- Sufficient compensatory roosting opportunities and enhancements will be provided for bats within the site to contribute to biodiversity net gain (see Section 2.4). These will include a designated roost area for crevice dwelling bats and LHS within the loft space of the adjoining stable building, as well as access slates, raised ridge tiles and bat boxes.
- No mitigation or access points will be installed onto the southern elevation of the barn or stable, in order to avoid any disturbance from noise and light of the swimming pool building.

2.4 *Compensation & Enhancement – Roost Replacement*

2.4.1 The bat mitigation guidelines state that the roost status for a small number of common and rarer species of bats (not a maternity site), is considered to be of low conservation significance (Mitchell-Jones. A.J, 2004). Provision of new roost facilities must be provided where possible. Although these need not be exactly like-for-like, they should be suitable, based on species requirements (Mitchell-Jones. A.J, 2004).

2.4.2 To compensate for the loss of the day and night roost and feeding perches, a new bat roost area will be created within the roof space of the adjoining stable (Figure 1.1). **The new bat roost must be completed before works can begin to the barn.**

The specifications of the new roost within the adjoining stable are detailed below:

- The new roost will comprise a boarded area within the roof space, towards the eastern end of the stable block (See Figure 2.1). The bat loft area will measure at least 3m x 6.2m, with a floor to roof apex height of 2.8m (1.8m minimum, as not a maternity roost); a timber stud wall will separate the designated bat area from the remainder of the roof space.
- The roof will be of appropriate design to provide an as open and unimpeded loft void space as possible, to allow free movement and flight by bats inside the space.
- Only timber treatments listed on Natural England Technical Information Note TIN092 will be used on the timbers within the loft space and as part of the stud wall.
- The roof within the bat roost will be retained as it is currently; if the roof is to be re-lined, only bitumen 1F felt will be used.
- An access point for LHS will be created within the eastern gable wall of the stable building (Figure 2.1). The entrance point will be 200mm x 300mm and provide direct access into the designated bat loft area; baffles will be used where necessary to prevent an increase of light and airflow into the bat loft.
- Two bat access points will be created at the eaves of the northern elevation of the stable block (away from the proposed swimming pool building), provided by 100mm x 20mm slots cut through the eaves boards. Internally, baffles will be created where necessary, to prevent light and draughts into the main roosting area.
- Further access points will be provided by two bat vent/access slates; again, on the northern pitch of the stable block to avoid illumination from the proposed balcony area of the swimming pool building.
- Internally, the roost will include two Kent style wooden bat ladders, to be situated on the ridge beam/purlins/rafters.

- A double ridge board will be created, both consisting of rough-sawn and untreated timber, set 20mm, which will offer bats enhanced roosting opportunities.
- Two panel boxes will be created and mounted on two sides of the roost, providing additional roosting space. These will comprise a piece of plywood board fitted to 1 inch x 1 inch timbers with a gap on the underside only so bats can access the space from underneath.
- Sound insulation will be installed to prevent disturbance from the ancillary accommodation and the swimming pool building.
- There will be a small loft access hatch installed in the floor of the bat loft approximately 0.45m x 0.45m, allowing access for the bat ecologist to inspect if required, but preventing access to store items. The loft hatch will be closed and locked with a combination padlock to prevent unauthorised access; access will only be for **monitoring purposes by licenced persons only**. This will be offset slightly so it isn't directly under the roof apex.

2.5 *Enhancements*

2.5.1 To provide further roosting opportunities and enhancements for bats, access slates, raised ridge tiles and bat boxes will also be integrated into the site (Figure 2.2 for locations).

- The roof of the converted barn building will be lined with a non-breathable membrane and three access slates (Figure 2.3) and two raised ridge tiles (Figure 2.4) will be installed to provide roosting opportunities for crevice dwelling bats between the tiles and the felt.
- Two woodstone bat boxes; one Beaumaris bat box and one multi-cavity bat box; will be erected onto the western gable end of the converted barn, as close to the apex as possible, approx. 1m apart.

2.5.2 The removal of vegetation to accommodate the new swimming pool building will result in the loss of suitable foraging habitat for bats. This will be compensated for with additional planting around the swimming pool building and the pond within the site (Figure 2.5), which will increase connectivity and foraging opportunities for bats, as well as increase biodiversity and benefit other wildlife within the site.

- Species included in the planting scheme are hawthorn (already present on site and will be retained), blackthorn, guelder/dog rose and holly.

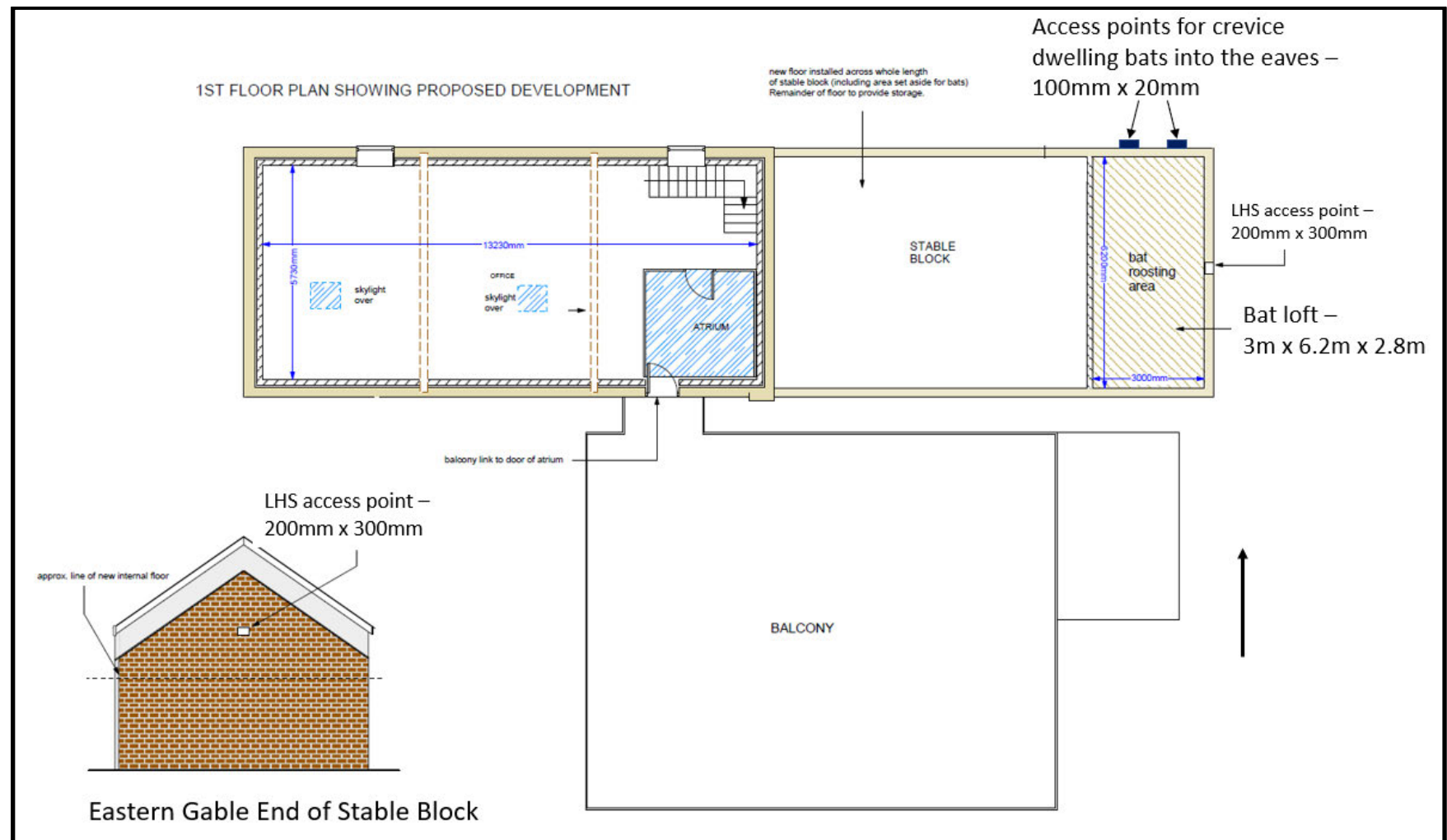


FIGURE 2.1: PLANS SHOWING BARN CONVERSION, PROPOSED DESIGNATED BAT AREA IN STABLE BUILDING AND PROPOSED SWIMMING POOL BUILDING ©JNL DESIGN

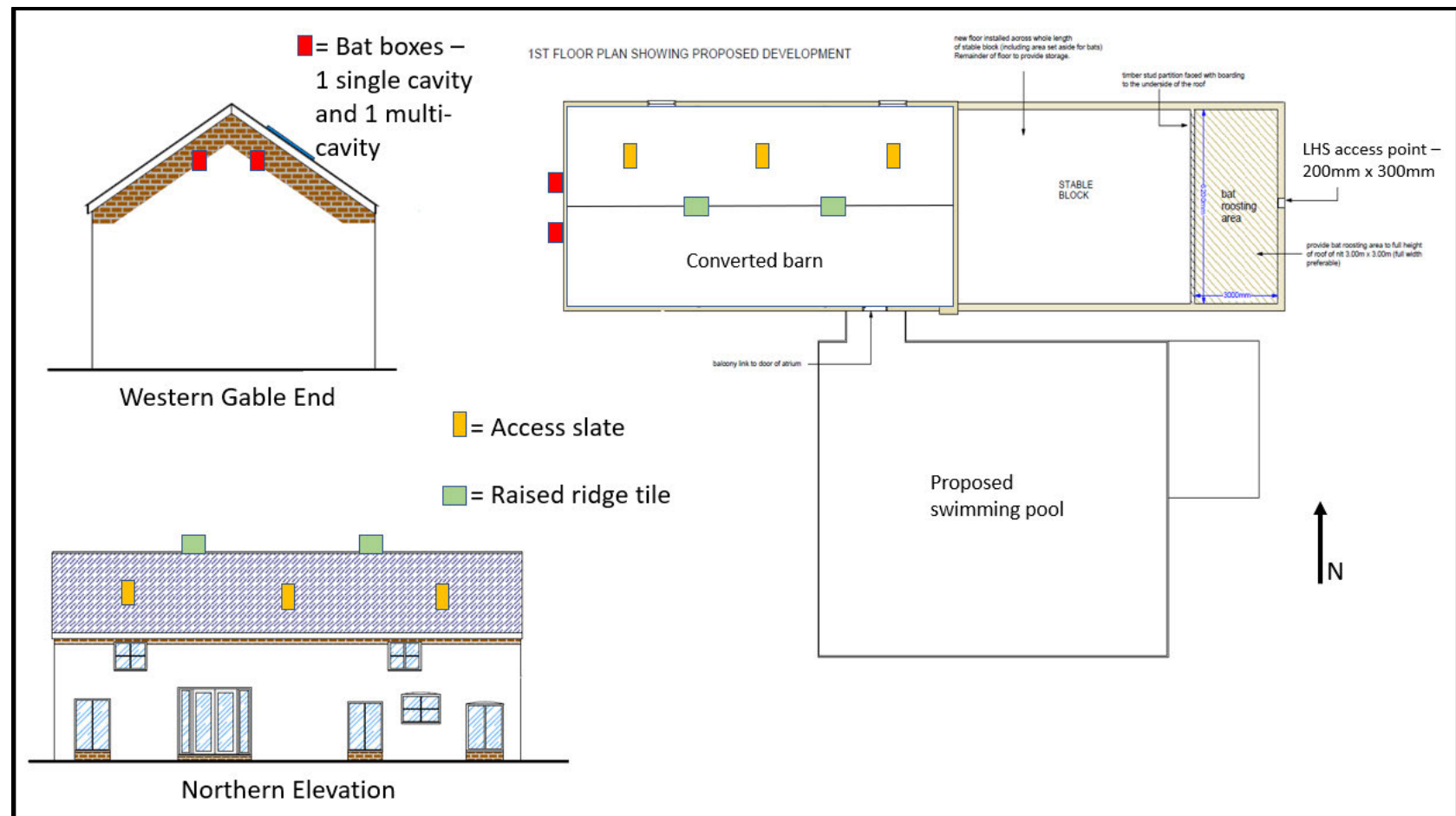


FIGURE 2.2: PLAN AND ELEVATIONS SHOWING LOCATIONS OF BAT MITIGATION. BASE IMAGE ©JNL DESIGN

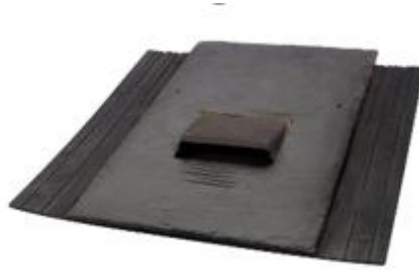


FIGURE 2.3: EXAMPLE OF ACCESS SLATE



FIGURE 2.4: EXAMPLE OF RAISED RIDGE TILE ACCESS

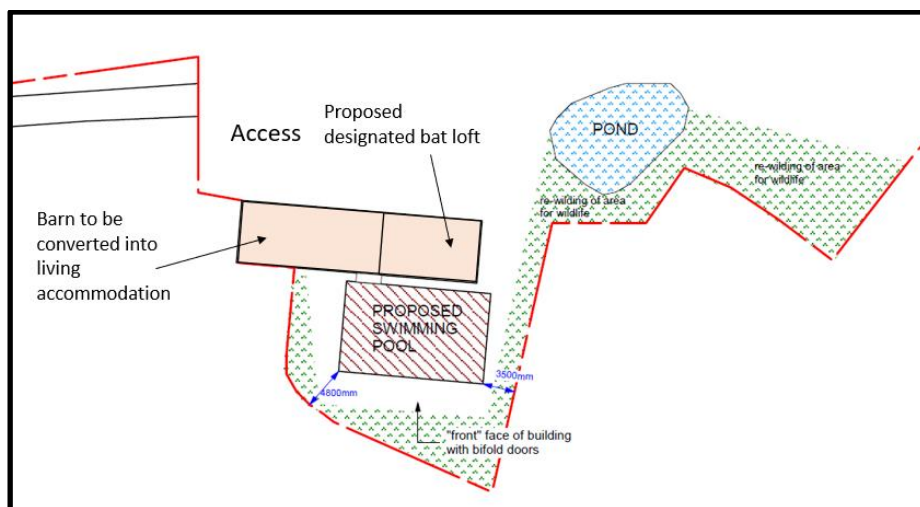


FIGURE 2.5: PROPOSED SITE PLAN SHOWING THE ADDITIONAL PLANTING IN GREEN MARK-UP. BASE IMAGE ©JNL DESIGN

2.6 *Lighting*

The immediate surrounding habitats of the site are suitable for bats and the emergence survey showed bats using these areas to commute and forage. Therefore, any lighting associated with the building during and after the works has the potential to impact bats and nocturnal birds. To reduce the potential impact of any light spillage on commuting bats during the construction and post construction phases of the development, lighting design for the site (both during the works and of the completed building) should seek to minimise the levels of light along any areas used by bats. The following recommendations should be used when forming the lighting plan for the proposed development (Bat Conservation Trust (20018) and Stone, E.L. (2013)):

General Lighting Guidance

- There must be no lights focused on the pond or any of the surrounding hedgerows (including the proposed planting) and mature trees within the site, during or after the works. There will be a dark 'buffer zone' from the western and eastern gable ends of converted barn and stable block respectively, following the boundary vegetation, that will not be subject to light spillage (Figure 2.6). There will be no illumination of the recommended bat mitigation, bat access points and bat boxes once the works are complete.
- As the conversion of the barn loft space proposes roof lights on the southern roof pitch, and the swimming pool building proposes large windows and glass panelling, internal luminaires should be recessed in these rooms to minimise light spill and glare via the windows.
- All lighting associated with the balcony on the swimming pool building will be low level and directional (pointing at a downwards angle, in towards the balcony centre from the edge) to reduce illumination of the surrounding area.
- Construction should start at least one hour after dawn and finish at least hour before dusk during the summer months (May – August) to prevent light and noise levels disturbing the bats using the site.
- Any external or security lighting should be limited to provide some dark periods during the night. The lighting should be motion activated, and not stay on longer than one minute, in order to provide maximum darkness when not needed as well as providing safe lighting conditions of residents when required.

The following luminaire specifications are provided by Bat Conservation Trust and Institute of Lighting Professionals (2018) and must be incorporated into the lighting plan for the proposed development.

- All luminaires should lack UV elements when manufactured. Metal halide, fluorescent sources should not be used.
- LED luminaires should be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability.
- A warm white spectrum (ideally <2700Kelvin) should be adopted to reduce blue light component.
- Luminaires should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats
- Column heights should be carefully considered to minimise light spill.
- Only luminaires with an upward light ratio of 0% and with good optical control should be used.
- Luminaires should always be mounted on the horizontal, ie no upward tilt.
- Any external security lighting should be set on motion-sensors and short (1min) timers.
- As a last resort, accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it only to where it is needed.



FIGURE 2.6 – PROPOSED SITE PLAN SHOWING DARK BUFFER ZONE (BLUE) FROM THE MITIGATION ACCESS POINTS (WHITE ARROWS) AND THE SURROUNDING FORAGING HABITAT (NOT TO SCALE)

2.7 Monitoring

- 2.7.1 Ongoing monitoring of bat activity and their usage of the site will be required for three years following the works. Monitoring should take place the summer after the works have been completed (2023 - year one), and should then be repeated in year three. This will be through an internal check of the bat roost and an emergence survey so all roosting features can be observed. The surveys showed that bats were not present within the existing roost consistently suggesting there are other roosting areas available close by. If no bats are observed during the internal check or emergence surveys then a static detector will be left within the bat loft and around the site to record any bats using the loft or bats present within the area.
- 2.7.2 Mitigation will be considered a success if monitoring finds bats using the designated bat loft. If monitoring results are unfavourable then a data logger will be used within the bat loft to monitor the conditions and assess whether they are agreeable for the species of bat they are intended for; liaisons will be carried out with NRW, Paul Gray and the Wrexham County Ecologist to determine how/ if the bat loft can be modified.
- 2.7.3 All records will be submitted to Cofnod, the Local Environmental Records Centre and reported to NRW as a condition of the bat licence.

2.8 Timetable of works

- 2.8.1 Table 2.1 details the timing, phasing and duration of the construction activities and monitoring of the bat mitigation.

TABLE 2.1 TIMETABLE OF WORKS AND MONITORING SCHEDULE

	Spring – Summer 2022	Spring 2022 – Spring 2023	May - August 2023	May – August 2025
Construction of the bat loft before conversion works				
Conversion of barn				
Monitoring – internal checks and emergence survey				

2.9 Mitigation contingencies

- 2.9.1 If, when carrying out the pre-works checks and supervision works, it becomes apparent that more bats or different species of bats are to be affected by the works than first thought, works will be stopped until the working method and type/scale of compensation measures can be reviewed and agreed with NRW and Wrexham County Council. If a **large** hibernation roost is discovered, or any hibernating LHS are found, then the works will be postponed until after the hibernation season and the hibernation roost will be retained where possible.

2.10 *Persons responsible for implementing the works*

- 2.10.1 During the construction phase, Paul and Belle Gray will be responsible for implementing the works as detailed in the bat licence with Enfys Ecology as the named ecologist and other Enfys ecology staff as accredited agents.

2.11 *Mitigation Site/Compensation Ownership post construction*

- 2.11.1 The building will remain in the ownership of Paul and Belle Gray for the foreseeable future, who will be responsible for the upkeep of the buildings and maintenance of any bat mitigation and habitat creation on site. As the building will contain designated areas for bats, these areas will then be protected by the current bat legislation and will be retained and remain un-disturbed. Any potential works to the site in the future that may directly or indirectly impact the designated bat areas, including any future proposed lighting schemes, may be subject to further licencing requirements and all proposals for the site will need to be discussed with an ecologist and NRW. The legal responsibilities which accompany these works will be written into the deeds of the property and will be the responsibility of the new owners to ensure they are adhered to if the site ever changes ownership.

2.12 *Auditing*

- 2.12.1 Work will be supervised where appropriate throughout the project by a licenced worker. All mitigation measures will be inspected by an ecologist to ensure compliance with measures detailed in the licence method statement.
- 2.12.2 The licensed ecologist will be available throughout the project to provide advice on more detailed points as the project progresses.
- 2.12.3 A record of visits will be kept and a toolbox talk will be given to all those who will be involved in the project.
- 2.12.4 All documentation relating to the presence of bats and the compensation measures will be given to the site owner so they are aware of his legal obligations.
- 2.12.5 The works will be audited through the formal bat licencing process to include the submission of the development licence report form, with evidence of the implementation of the detailed mitigation and compensation measures, within four weeks of the licence expiry and subsequent licence monitoring report forms will also be submitted. The NRW ecological compliance audit form will also be completed and submitted with the bat licence return form.