

SALEM CHAPEL, PENTRE BROUGHTON

MITIGATION STRATEGY

DATE	ECOLOGIST	APPROVED	VERSION	COMMENTS
07/03/2023	Keymar Wake	Dr Katy Read CEcol MCIEEM CEnv DipSM	1	
03/09/2023	Keymar Wake	Lucy Boyett ACIEEM	2	Amended following changes to mitigation
04/03/2024	Keymar Wake	Tim Yardley ACIEEM	3	Amended following comments from NRW and further changes to mitigation

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1.0 Introduction

- 1.1 Enfys Ecology Limited were commissioned by Dafydd Edwards of Blue Print Architectural, on behalf of the building owner Aaron Edwards, to carry out an update Preliminary Roost Assessment (PRA) for bats and an emergence survey, as well as hibernation surveys, to inform a Mitigation Strategy, and to advise towards a lighting plan, to discharge planning conditions 17, 18 and 19 and to be implemented alongside the proposed development at Salem Chapel, Pysgah Hill, Pentre Broughton, LL11 6BD.
- 1.2 Planning permission was granted in May 2019 with the following conditions:
- 17 – No part of the development shall commence until a detailed scheme of bat avoidance, mitigation and compensation measures, including plans, has been submitted to and approved in writing by the Local Planning Authority. The scheme shall also include a monitoring plan which includes key completion dates for various demolition/ construction milestones, and should cover the period of time from 1 month prior to commencement of demolition to 5 years post development completion. The development shall be carried out in strict accordance with the scheme as may be approved and the monitoring compliance reports should be submitted to and approved in writing by the Local Planning Authority at each key milestone.
- 18 – Prior to first use of the development, an external bat friendly lighting scheme shall be submitted to and approved in writing by the Local Planning Authority. The scheme shall be fully implemented in accordance with the approved details prior to first use/ occupation of the development and the site shall not be illuminated by any additional lighting.
- 19 – A compliance audit shall be carried out by a qualified ecologist, independently of the appointed principle ecologist, in accordance with details which have been submitted to and approved in writing by the Local Planning Authority. A copy of the completed audit report should be submitted to and approved in writing by the Local Planning Authority prior to occupation of the development.
- 1.3 This Mitigation Strategy builds upon the mitigation detailed in an original survey report by Enfys Ecology in 2018; which showed the building was in use by a maternity roost of lesser horseshoe (LHS) bats. An update PRA and emergence survey was completed by Enfys Ecology in 2022, the results of which are detailed within this document. This survey showed similar results, suggesting the building continues to be used in the same way and by the same species of bats. In addition, this building is in use by an individual/ small number of pipistrelles. Hibernation surveys were also carried out to determine if the building is used by over-wintering bats to inform the mitigation and timing of works.
- 1.3 The proposed development works comprise the renovation of the former Chapel into residential accommodation; the southern gable of the building will be demolished and set back to reduce the building length by approximately one third and a car park will be

constructed in its place. The remaining roof and loft space will be retained/ replaced like-for-like and continue to be available for the bats; the remainder of the building will be converted and sealed off from the bats. This may cause disturbance to bats if roosting within the area of works and the works will modify the existing roost.

- 1.4 To reduce the scale of impact, mitigation, compensation and enhancement measures will need to be in place, as well as specific working methods, which are included within this Mitigation Strategy. These will also be provided in detail within the licence method statement.
- 1.5 A number of swallow nests were observed within the Chapel during the 2022 survey (completed by Enfys Ecology). Mitigation and compensation for the loss of these nesting areas is also detailed within this document.
- 1.6 In line with Planning Policy Wales, and following the Environment (Wales) Act 2016 and guidance provided in the recent letter from the Chief Planner in Wales, there is a requirement to ensure that a **net benefit for biodiversity** is also provided in all applications for planning in Wales.

2.0 Survey Results and Conclusions

2.1 Site Description

- 2.1.1 The Chapel is located on the eastern edge of Pentre Broughton, Wrexham. The immediate surroundings comprise residential buildings and blocks of woodland, providing connectivity to the wider landscape including Moss Valley Country Park to the south. The building descriptions are detailed within the previous survey report (Enfys Ecology Limited, 2018) and will therefore not be repeated in detail here as this document is intended to be read alongside the previous report.



FIGURE 2.1 – THE SITE (RED) AND SURROUNDING LANDSCAPE
BASE IMAGE ©GOOGLE EARTH 2023

2.2 Previous Survey Results

- 2.2.1 Enfys Ecology carried out emergence surveys on the Chapel in 2016 and 2017 and concluded the Chapel was used by a moderately sized maternity roost of lesser horseshoe (LHS) bats. The bats were emerging from both the northern and southern gables of the Chapel, primarily from the loft space through a ‘slit’ on the southern gable, then re-entering through broken windows and an open ‘clover’ feature underneath, to use the areas within the main chapel as light sampling and ‘warming up’ areas, before emerging at both gable ends, again primarily through broken windows. Soprano pipistrelle and *Myotis* sp. were also recorded within the Chapel during the August 2017 surveys. It was considered that LHS were primarily roosting within the loft space, though small numbers of LHS were observed day roosting in the small store building to the west of the southern gable (Area ‘a’ in Figure 2.2). The basement and adjoining corridor shown on Figure 2.2 are under different ownership and are not included in the proposed works. The total number of bats emerging are shown in Table 2.1 (taken directly from Enfys Ecology Limited, 2018 report).

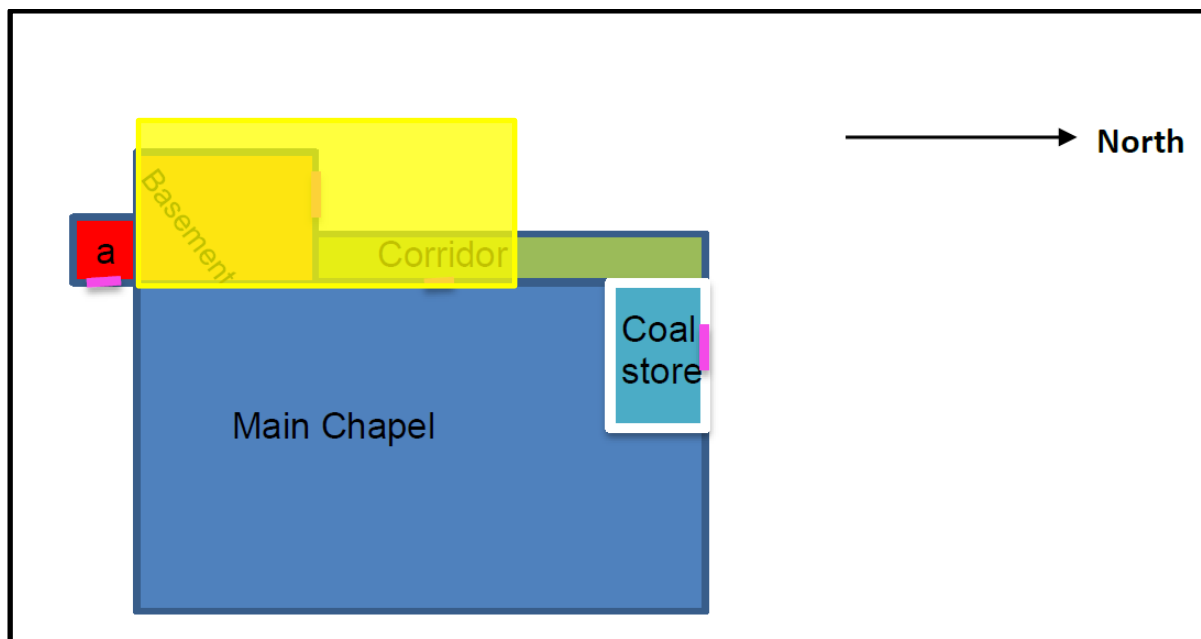


FIGURE 2.2 – LAYOUT OF THE CHAPEL (ENFYS ECOLOGY, 2018); AREA MARKED IN YELLOW IS UNDER SEPARATE OWNERSHIP AND NOT PART OF THE PROPOSED WORKS.

	July 2016	June 2017	July 2017	August 2017
Total number of bats emerged	21	49	51	46
Bat emerging from the south	21	21	38	22
Bats emerging from the north	0	28	13	24

TABLE 2.1 – PREVIOUS SURVEY RESULTS – ‘BAT’ REFERS TO LHS (ENFYS ECOLOGY, 2018)

2.3 Update Surveys 2022 - Methodology

- 2.3.1 The update PRA and an emergence survey were carried out on 23rd August 2022, by Keymar Wake (licenced agent on S091201/2). The buildings were assessed for any signs of bats and to determine if their condition or situation had changed since the previous surveys; all areas of the building were accessed and inspected.

- 2.3.2 The emergence survey was carried out by Keymar Wake and two assistants. The surveyors were positioned to be able to observe all sides of the buildings that showed potential for bats, using Anabat Express, Anabat scout and bat box duet bat detectors. Records were taken of any bats observed emerging from the building, and of any other bat activity taking place in the area during the survey.
- 2.3.3 The bat call data was analysed using Anabat Insight Software with the BatClassify plugin set at 70% confidence to auto analyse the bat calls; all of the calls were then reviewed and re-assessed as required. A thermal imaging camera was used for the second emergence survey, focusing on the eastern and southern elevations of the building. The surveys began approximately half an hour before sunset and continued for 90 minutes after sunset.
- 2.3.4 The hibernation surveys were carried out between 7th February and 1st March 2023 by Keymar Wake and an assistant. The hibernation surveys comprised inspections of the main chapel and the coal store area, using high powered torches and endoscopes where applicable; Anabat Express static detectors were left within both of these areas, recording continuously to pick up bat activity both during the night and day. Average dawn and dusk temperatures were recorded throughout the survey period (using an average of various weather forecast providers) and internal temperatures were taken on the inspections. The detectors of the first static detector survey were collected after two weeks (on the 22nd February 2023) but had only recorded for four nights due to the batteries running out of charge; the detectors were then replaced and left for a further 8 nights. Visual inspections for hibernating bats took place on the 7th, 22nd and 23rd Feb and 1st March 2023, when placing/collecting detectors.
- 2.3.5 *Limitations*
The Chapel could not be accessed internally during the update PRA and emergence survey as the keys provided were incorrect. The main area and coal store could be accessed for the hibernation surveys. Neither the loft space nor Area 'a' (see Figure 2.2) could be accessed during any of surveys; it was not safe to access the loft space due to the height and condition of the ceiling, and there were no keys available to enter Area 'a'.
- 2.4 *Update PRA and Emergence 2022 - Results*
- 2.4.1 The PRA survey, and the subsequent hibernation surveys (discussed in Section 2.5), showed the building to be in the same condition as that described in the previous surveys, with the same access points and PRF's still present as they were recorded in 2016 – 2017 (Enfys Ecology, 2018). However, some of the boards had been removed from the windows and almost all the windows were without glass in the 2022 survey (it cannot be confirmed if this was the case in 2016 and 2017 from the report) so the interior of the building was subject to exceptionally high light and air flow levels.
- 2.4.2 The building could not be accessed during the update PRA and emergence survey (completed in August 2022), though the upper half of the main congregation area could be

viewed from the windows with a high-powered torch; in the areas that could be viewed from the windows, there did not appear to be any LHS roosting within the main chapel congregation area. The internal PRA was then carried out as part of the hibernation surveys in February 2023. As in the previous surveys, there were scattered droppings characteristic of LHS within the main Chapel congregation area, and to a much lesser extent in the coal store under the pulpit. No large piles of droppings were found suggesting these areas are not used as regular roosting areas. As Area 'a' could not be accessed it could not be confirmed if small numbers of LHS were still roosting within this area, or if there was still available access into it for them.

- 2.4.3 The loft space could not be accessed due to health and safety concerns. There were areas where the lathe and plaster ceiling had come away, leaving direct access points into the loft space. This was noted on the previous surveys (Enfys Ecology, 2018) but it could not be confirmed if the extent of the damage had increased since the surveys in 2017. There were several gaps large enough for LHS to access the main chapel directly from the loft space, which would also allow draughts and light into the loft space from the main congregation area.
- 2.4.4 The interior of the main congregation area of the chapel was well illuminated with all the open windows, and was extremely draughty. The coal store underneath the pulpit was open from the stairway entrance, as well as being exposed to the main congregation area above it through large holes in the floor (see Figure 2.4C); therefore, this area was also subject to high air flow and felt cooler than the rest of the building.
- 2.4.3 Old bird's nests, characteristic of swallows, were present within the main congregation area of the chapel during the internal inspections.



FIGURE 2.3 – SOUTHERN GABLE OF CHAPEL – SHOWING AREA 'A' (YELLOW), 'SLIT' FOR EMERGENCE (WHITE ARROW) AND OPEN CLOVER FEATURE AND WINDOWS

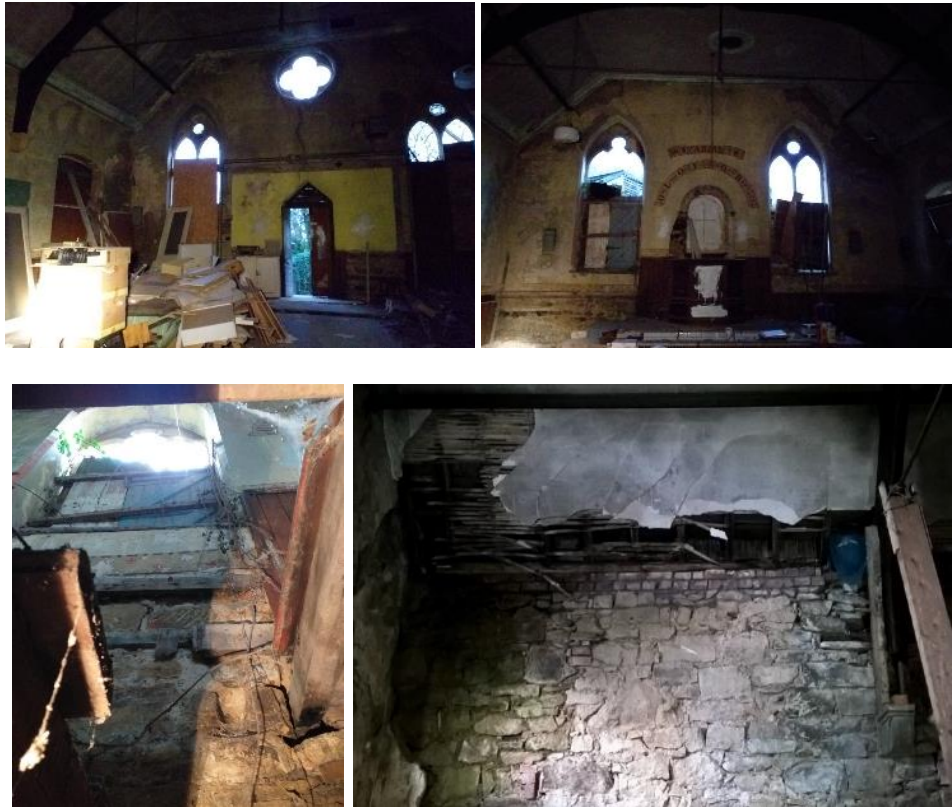


FIGURE 2.4: INTERNAL VIEWS OF A) SOUTHERN GABLE AND B) NORTHERN GABLE SHOWING NON-BOARDED AREAS OF WINDOWS; C) VIEW OF MAIN CONGREGATION AREA WINDOW FROM HOLE IN FLOOR ABOVE THE COAL STORE; D) LARGE HOLES INTO THE LOFT SPACE WHERE THE CEILING HAD COME AWAY.

2.4.4 Table 2.2 provides details of the dusk survey, including timing and weather conditions and Table 2.3 details of any emergencies and general bat activity during the survey.

TABLE 2.2 - SUMMARY OF SURVEY DETAILS – 23RD AUGUST 2022

Start time	Sunset time	End time	Temp. at start	Weather
19:55	20:21	22:00	20°C	Light rain at the start, then dry with no wind. 100% cloud cover.

TABLE 2.3 – SUMMARY OF DUSK SURVEY ACTIVITY

Time	Species	Emergence Location	Photo
20:09	Soprano pipistrelle	From the window on the southern gable, flew east and north.	
20:37	Lesser horseshoe (LHS)	From the 'slit' and re-entered through clover-window feature	

Time	Species	Emergence Location	Photo
20:43 – 21:07	LHS	From the slit, clover-window and broken windows, sometimes re-entering. All flew south straight into woodland. Total emergence count was 30 bats.	
20:57	Common pipistrelle	From clover window feature	
General Activity			
- The first bat to be detected was a soprano pipistrelle at 19:56, recorded to the north of the site, that was not seen or heard by surveyors. A soprano pipistrelle was then observed emerging from a window on the southern gable at 20:09. There were two further passes by this species to the north of the site at 21:13 and 21:49. - There was regular foraging activity from common pipistrelle between 20:16 and 20:39, recorded around the whole building. A common pipistrelle then emerged from the clover-window at 20:57 (likely after re-entering from elsewhere). - The first LHS recorded was at 20:37, it emerged from and re-entered into the building on the southern gable. Between 20:43 and 21:07, LHS were observed emerging and re-entering from various points on the southern gable of the building; primarily emerging from the clover-window and the other windows and flying directly into the woodland to the south. A total of 30 LHS bats emerged from the building (with the deductions of those that re-entered). No LHS were recorded emerging from the eastern elevation or northern gable, or recorded active around those areas of the building. - Noctule was recorded at 21:30, commuting high over the site. - No other bats were recorded during the survey.			

2.5 Hibernation Survey – Results

2.5.1 The static detector surveys were carried out between the 7th – 11th February 2023, and 23rd February - 1st March 2023 (due to failing batteries there was a period between the 11th – 22nd February 2023 that the detector was not switched on). Internal inspections were carried out on the dates that the statics were placed and collected, and internal temperatures were recorded. Sunset ranged from 17:06 on the 7th February 2023, to 17:48 on the 1st March 2023. The results of the hibernation surveys are summarised in Table 2.4.

TABLE 2.4 - SUMMARY OF HIBERNATION SURVEY RESULTS

Date	Average External Dawn and Dusk temperatures (°C)	Internal Temperature of Coal Store (CS) and Main Chapel (MC) at time of Survey (°C)	Survey – Internal Inspection / Static	Bats Found?	Bats Recorded on Statics?
07/02/2023	Dawn - 2 Dusk - 11	14:30: CS – 7 MC – 8	Internal Inspection and Static	None	21:57 – Brief/ faint LHS call in MC.
08/02/2023	Dawn - 2 Dusk - 6	N/A	Static	N/A	None
09/02/2023	Dawn - 4 Dusk - 4	N/A	Static	N/A	None
10/02/2023	Dawn - 3 Dusk - 9	N/A	Static	N/A	22:33 – Brief/ faint LHS call in MC
22/02/2023	Dawn - 6 Dusk - 6	18:30 CS – 3 MC – 4	Internal Inspection – collecting static	None	N/A
23/02/2023	Dawn - 6 Dusk - 4	18:00 CS – 3 MC – 3.5	Internal inspection and Static	None	None
24/02/2023	Dawn - 4 Dusk - 6	N/A	Static	N/A	None
25/02/2023	Dawn - 4 Dusk - 5	N/A	Static	N/A	None
26/02/2023	Dawn - 3 Dusk - 6	N/A	Static	N/A	None

Date	Average External Dawn and Dusk temperatures (°C)	Internal Temperature of Coal Store (CS) and Main Chapel (MC) at time of Survey (°C)	Survey – Internal Inspection / Static	Bats Found?	Bats Recorded on Statics?
27/02/2023	Dawn - 3 Dusk - 7	N/A	Static	N/A	19:45 – Brief/ faint LHS call recorded in MC
28/02/2023	Dawn - 6 Dusk - 7	N/A	Static	N/A	19:06 – Brief/ faint LHS call recorded in MC
01/03/2023	Dawn - 6 Dusk - 6	18:00 CS – 6 MC – 7	Internal Inspection	None	None

2.6 Conclusions - Bats

- 2.6.1 As with the results from the surveys in 2016 and 2017 (Enfys Ecology, 2018), the Chapel is still used by LHS as a maternity roost and by a small number of pipistrelle bats as a day roost. A total count of 30 LHS were observed emerging from the Chapel during the emergence survey, which is less than the previous surveys in 2017, where numbers ranged from 46 – 51 bats (Enfys Ecology, 2018), but the numbers are still high enough to be confirmed a maternity roost.
- 2.6.2 The original surveys (Enfys Ecology, 2018) observed LHS emerging from the ‘slit’ in the southern gable (which accesses the loft space directly) then re-entering the building on the southern gable through the clover window and other windows, before emerging from windows on both the southern and northern gables. It was concluded that the loft space was the main roosting area and the other areas of the Chapel were used for light sampling and night roosting. The survey in 2022 saw a small number of bats emerge directly from the loft space through the ‘slit’ before re-entering (less than 5 bats were observed doing this). The majority of emergences came from the windows and the clover-window on the southern gable, with some light sampling behaviour and re-entering, before emerging again and flying to the woodland adjacent to the south. While the whole interior of the Chapel could not be accessed prior to the emergence survey, the ceiling and upper areas could be viewed from the broken windows and no LHS were observed; the scattered droppings (as opposed to any large piles) within the main congregation area of the Chapel also suggest that the bats are still using the loft space as their main day roosting area. It is considered that they are primarily

accessing the main congregation area directly through holes in the ceiling and light sampling from the main congregation area before emerging from the windows and the clover.

- 2.6.3 The previous surveys (Enfys Ecology, 2018) found LHS emerging from both the northern and southern gables during all the surveys, at a roughly 50% split. During the surveys in 2022, no LHS were observed emerging from the northern gable, and no activity from bats of this species were recorded by surveyors covering the western, northern and eastern elevations. The road along the eastern elevation was well illuminated with street lighting and security lighting from neighbouring properties. The emergence points on the southern gable allow for direct access into the adjacent woodland to the south, which likely explains why the bats seem to be favouring this elevation to emerge from.
- 2.6.4 Both common and soprano pipistrelle were observed emerging from the building in 2022; the soprano pipistrelle emerged at the expected time for this species of bat suggesting its use as a day roost. The common pipistrelle was observed emerging much later, following common pipistrelle activity around the site, suggesting the bat was using the chapel as an internal flying area and potentially a night roost/ resting perch. There were ample potential roosting features for crevice dwelling bats available within and around the Chapel (see previous survey report, Enfys Ecology, 2018) so it is considered the Chapel is an occasional day and night roost for a small number of pipistrelles (both common and soprano).
- 2.6.5 The previous surveys (Enfys Ecology, 2018) found *Myotis* sp. active inside the Chapel and brown long eared (BLE) bats active within the site; neither of these species were recorded in 2022 but it should be assumed they are still present within the local area and have roosting features available to use within the Chapel.
- 2.6.6 The hibernation surveys showed no bats present within the main congregation area of the chapel, or within the coal store, on any of the four inspection visits during February 2023. The environment within the Chapel was extremely draughty with high light levels from the broken windows, and temperatures recorded within the main congregation area, and the coal store, ranged from 3°C to 8°C. Bats require steady temperatures to hibernate successfully and the varying temperatures within the Chapel to coincide with the external temperatures suggest there would be too much fluctuation in the areas surveyed for them to be used by hibernating bats. Bats tend to prefer temperatures between 5°C - 11°C, and moderate - high humidity levels for hibernation (LHS preferring higher humidity levels than many other bat species); the high levels of airflow throughout the surveyed areas would result in lower humidity levels, and the temperature went down to 3°C internally during the surveys, suggesting it would likely decrease further on especially cold nights, and become too cold for bats to successfully hibernate without freezing. There were brief individual calls from LHS recorded on the static detector in the main congregation area on four of the twelve survey days; all of these calls were recorded in the evenings, after the typical emergence time of this species (approximately one hour after sunset). The average dusk temperatures of the four nights with recordings were all over 7°C, and the warmest evenings out of the entire survey period. Therefore, it could be concluded that the calls were recorded by

individual bats that had woken from hibernation to replenish their food and water reserves on the warmer evenings, and were entering, or passing through, the chapel briefly. The loft space could not be surveyed and while it would also be considered too cold and draughty for optimum hibernation conditions with the damage to the ceiling, it cannot be discounted that individual/ small numbers of bats could be hibernating within it and mitigation will consider this.

- 2.6.7 The previous surveys (Enfys Ecology, 2018) found small piles of droppings within Area 'a' (as shown on Figures 2.2 and 2.4) and a small number of day-roosting LHS; it was likely that this area was used by a small number of LHS as an occasional day roost. As this area could not be accessed during any of the surveys in 2022-2023, for mitigation purposes it is assumed that this area is used in the same way as previously concluded, as well as a potential hibernation roost for individual/ small numbers of bats. While the basement of the neighbouring house (shown on Figure 2.2) is not part of the proposed works and could not be surveyed due to being under separate ownership, it was surveyed in 2016 and 2017 (Enfys Ecology, 2018) and LHS were found to be using this basement in small numbers. Therefore, it is also be assumed that this area is still in use in the same way and any works that would directly disturb bats within the basement (primarily works to the adjoining Area 'a') will be mitigated for accordingly.
- 2.6.8 In the absence of mitigation, the proposed works have the potential to destroy a maternity roost of LHS bats, which could have a detrimental impact on the species at a local and regional level. As long as mitigation detailed within this document (Section 3) is followed, the works will not impact the favourable conservation status of any of the species involved. Due to the low numbers of pipistrelle bats (and previously *Myotis* sp. and BLE) using the building, the roost loss/modification is not predicted to impact either species at a local, regional or national level. The loft space roosting area for the LHS maternity roost will largely be retained; it will be reduced in length by approximately a third but will still be over 10m long, with the same width and height. The works to the loft space will be carried out at a time of year so they will be completed prior to the next maternity season, but will not impact the hibernation season. The emergence point from the loft space on the southern gable will be replicated in the rebuild works and an additional entrance point will be created on the northern gable via a cavity wall that will lead to a purpose-built bat porch/ light sampling area (see details in Section 3). It is not considered that the conversion of the main chapel will impact any important roosting areas, nor any hibernation roosts but it will result in the loss of a large internal flying space that the bats were observed using and night roosting in; a purpose-built bat shed will provide a compensatory internal flying area and night roost. Works to Area 'a' will be carried out at the same time as the loft and roof so as to avoid maternity and hibernation seasons, which will also reduce the disturbance on the neighbouring basement during important roosting periods, should bats be using this basement as part of the maternity or hibernation roosts. The continued ecological function of the site will be maintained if mitigation is implemented correctly. There will be a risk to individual bats that may be present within the site during the works and therefore it will be

essential to follow the mitigation and Reasonable Avoidance Measures (RAMs) detailed in this document and the subsequent licence method statement to reduce this impact.

2.6 Nesting Birds

- 2.6.1 There were swallow nests present within the Chapel during the hibernation surveys of 2023. Mitigation and compensation for nesting birds will be provided and is detailed in Section 4.

3.0 Mitigation, Compensation and Enhancement - Bats

- 3.1 **As the building is a known bat roost, no works to any areas of the building can 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.**
- 3.2 The bat mitigation guidelines state that for maternity roosts of rarer species there should be *'...timing constraints. Like-for-like replacement as a minimum. no destruction of former roost until replacement completed and usage demonstrated...'* (Mitchell-Jones, 2004). This applies to the LHS maternity roost but as the roost will largely be retained as opposed to destroyed, the works will be undertaken outside of the maternity period, and be completed before the next maternity period, so the bats have a familiar roost to return to. The maternity roost will not be excluded at any point during the works. For the roosts of small numbers of common species, which are not a maternity site, 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. This applies to the small numbers of common and soprano pipistrelles, *Myotis* sp. and potentially BLE bats.
- 3.3 The previous mitigation strategy produced in the original survey report (Enfys Ecology, 2018) proposed the retention of the loft space (with a reduction in size as a result of the demolition works) and a new entrance created on the northern gable which was low down on the gable and then provided access via an expanded cavity wall. A purpose-built bat porch was then to be constructed around the entrance at the bottom of the wall to provide a light sampling area. This proposed mitigation is still considered appropriate following the surveys in 2022 and 2023 and is detailed below with some additions to include an additional LHS entrance point and mitigation for swallows.
- 3.4 As bats were using both gables to emerge in the 2016 and 2017 survey, the original report had suggested removing the emergence point on the southern gable to reduce the risk to bats that were emerging and then 'dropping' into the road (Enfys Ecology, 2018). During the 2022 emergence survey, LHS were only observed emerging from the southern gable and flying directly into the adjacent woodland, no bats were observed emerging from the other elevations; therefore, it is considered necessary to replicate their access point on the southern gable in the rebuild works, the 'slit', and allow for their continued use of this entry/

emergence point and its connectivity to the adjacent woodland. As the proposed works intend to demolish approximately one third of the front (southern section) of the building and re-build it set back from the original front aspect, and use this area as a car park/turning area, the risk to the bats dropping onto the road on emergence will be significantly reduced. There will be lighting constraints within the car park area so as not to discourage the bats from the entrance and the adjacent trees on the woodland boundary will remain to provide immediate cover on emergence.

3.6 Roosting opportunities for crevice dwelling bats will be provided through panel boxes in the loft space and bat porch, as well as the provision of access points behind the felt within the loft space to allow for roosting behind the slates/tiles.

3.7 Mitigation, compensation and enhancement measures will be included in the licence application and are also included below.

3.8 *Mitigation - Destructive Works*

- Due to the presence of a maternity roost, the entire destructive works and rebuild of the front aspect of the Chapel need to take place between 15th September – 15th April of consecutive years. As it cannot be ruled out that the loft space and Area 'a' are in use by hibernating bats, all destructive works (including removal of all roof structures and the ceiling, as well as the dismantling works of Area 'a') will be carried out during the first eight weeks of this period (15th September – 15th November) to reduce the risk of disturbance to hibernating bats, and discourage bats from entering the building during the winter months.
- Due to the delicate nature of the project and the need for the demolition and rebuild of the front aspect to be carried out by hand, the works to this aspect, and then the internal conversion works, could potentially take several years to complete. Therefore, a new internal wall, that will form the base of the new front aspect, will be built first. This will section off the building from the area that will be demolished, including the roof and bat roost.
- The construction of the bat loft and entrance points (including the bat porch) will be completed by April 15th of the consecutive year of the works commencing. Ongoing demolition (by hand) and internal works can continue after this date as long as the loft space is sound insulated and lighting guidelines are adhered to.
- 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 period. To reduce the impact of disturbance on the bats (if present), the works to all of the following structures **will be carried out by hand** and inspected prior to works

by/supervised by a licensed ecologist who is named on and authorised to act under the specific licence granted by NRW for this works.

- Removal of all roof structures – supervision required following pre-works checks (where possible to check from the scaffold).
 - Removal of the ceiling – pre-works checks minimum.
 - Removal of the coal store structures and pulpit.
 - Demolition of the front aspect – pre-works checks minimum, assuming the roof and ceiling will have already been removed, the risk of bats been within the walls are low – but this will be confirmed by the ecologist.
 - Demolition/ dismantling of Area 'a' – Pre-works checks and supervision.
 - Re-pointing of the stone walls on any aspect of the building – checks/supervision.
- The ecologist will carry out an inspection of the potential roosting areas prior to the start of any works using an endoscope and high-powered torch where necessary. If it can be determined that no bats are present then works can continue in these areas without supervision. If there are any areas that cannot be inspected fully, or bats are found, then works to these areas will be carried out under supervision. If the LHS maternity roost is still present when the works are due to commence then works will be postponed until the roost has vacated the building.
- All works to the walls and roofs will be undertaken by hand. Slates will be carefully turned over in order to check beneath for resting bats and then slid down the roof.
- Measures can be implemented (outside of the maternity season) to make the roost site unfavourable for bats to encourage the bats to leave/deter the bats from winter roosting prior to the works commencing; these will be managed by the ecologist.
- Three bat boxes (such as a woodstone/woodcrete multi-chamber bat box suitable for both summer and winter roosting bats) will be made available on site prior to the start of works to be available for the different crevice dwelling species that are found within the site (the exact location of installation to be agreed with the licenced ecologist). If a bat is found (that is not a LHS) and accessible it should be captured and placed in the appropriately designated bat box for that species, 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 crevice dwelling bat is found and is not accessible, 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 LHS (not hibernating) are present within the works area, a sheet/tarpaulin will be put up to act as a screen to isolate the bats from the working area. As the working area moves, the bats will be encouraged into a different area of the building and again screened off with a sheet/tarpaulin so they can remain within the familiar space. No LHS will be captured or encourage to fly out into daylight.
- If, in the unlikely event, a hibernating bat (not LHS) is found, works will be postponed in that area until the temperatures increase. A bat box suitable for hibernation will be made available and if it is absolutely necessary to continue the works, or the bat is in immediate danger, and accessible, then they will be placed within the bat box as quickly as possible, with minimum handling and disturbance to prevent the bat waking up. If a number of hibernating bats, or hibernating LHS, are found then works will be delayed until the temperatures increase and the bats are active again.
- 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.

3.9 *Compensation and Enhancement – Roost Retention, Modification and Replacement*

3.9.1 Following the reduction in size of the building, the loft space will be retained and made available for the continued use of the LHS maternity roost:

Loft Space

- The roof will be lined with traditional Bitumen 1F felt and NOT breathable membrane. The breathable membranes can be fatal for bats if they get caught and trapped in the fibres; even breathable membranes that claim they are safe for bats are not and should not be used.
- Where possible, existing timbers will be used within the loft space to allow bats to recognise the roosting area and encourage continued usage. If they cannot be used within the main roof structure they will be installed within the loft space as additional features. Any additional timbers used within the loft space (including the additional roosting provisions and the bat porch detailed below) will be untreated or pressure treated wood. If treatment is required, only timber treatments listed on Natural England Technical Information Note TIN092 will be used.

- The loft space will sound insulated (particularly across the loft floor) so as to prevent disturbance from any ongoing works and the inhabited dwelling once works are complete.
- The retained bat loft will be approximately 10m length (minimum) x 10m width and 2m height. The bat mitigation guidelines (Reason and Wray, 2023) state that the minimum height for a LHS maternity roost is 2.8m. The existing loft space is 2m high to the apex and will be retained at this height (as a minimum) as it is established that bats are using it. Therefore, the replacement ceiling will be at the same height as the existing ceiling, or LOWER down within the building. The ceiling height will not be raised as part of the works as this will reduce the height of the loft space available to the bats.
- Additional roosting provisions for LHS will be provided within the loft space through rough sawn batten ladders on the underside of the felt, between the rafters. These will be set either side of the ridge board. The felt will then be cut in areas along the ridge to provide additional roosting areas for crevice dwelling bats underneath the slates.
- A hot box will be created by installing two triangular plywood panels attached to the rafters (see Figure 3.1) (Vincent Wildlife Trust, 2013). There must be at least 900mm between the joists and the bottom of the plywood to provide adequate flight room with a minimum thickness of 6.5mm plywood.
- To enhance the loft space for crevice dwelling bats, four panel boxes will be installed within the loft space (exact locations will be determined by the ecologist on site). These will comprise a sheet of 500mm x 500mm plywood, secured to the roof or internal gable along three edges by 25mm x 25mm strips of wood, leaving the bottom edge open for bats to crawl up behind the plywood panel.
- An access hatch into the lesser horseshoe roost loft will be created, this will be locked and **accessed by licenced bat workers only**. Access must be made available during monitoring survey visits, during summer and winter; and any other times of year if cleaning is required.



FIGURE 3.1 - HOT BOX EXAMPLE © VINCENT WILDLIFE TRUST (2013)

Access Points

- The existing 'slit' access point on the southern gable will be replicated on the rebuild of this aspect (see Figure 3.3). Ideally the original stone work of this feature should be retained and installed within the new gable wall so the bats can continue to use their existing, familiar entrance. If it is not possible to use the existing feature, the entrance point will be replicated with a vertical slit in the stone work, at a minimum size of 200mm x 300mm. The replicated access point will be in the same position as the existing access point, just above the position of the loft floor. The access point will be baffled internally (without reducing the access point area) to limit airflow within the loft space.
- An additional entrance point into the loft space will be created on the northern gable (see Figures 3.2 and 3.3). This will comprise an opening into the gable wall (approximately 2m high above the ground) and access into the loft through an enlarged cavity wall. A purpose-built bat porch will be constructed around the entry point on the gable wall to create a light sampling/sheltered flying area.
 - The entrance point in the gable wall will be a horizontal hole in the stone work, at a minimum size of 300mm x 200mm. The entry point will be low down on the gable, with the top of the entry point set at 2m above ground level. This entrance point will not be grilled as it will be protected by the bat porch.
 - This entrance point would lead to an internal cavity created within the wall, that leads up to the loft space. The cavity wall on the northern gable will need to be expanded (at least within the area from the bat entrance to the loft, similar to a chimney breast) to create enough space for the bat tunnel.
 - The cavity tunnel for the bats will be approximately 555mm x 1150mm, to ensure there is sufficient space for multiple bats to use the access point at once, the entire length of the tunnel up to the loft space.
 - The entrance point into the loft space will comprise an opening from the tunnel with no obstructions.
- *Bat Porch*
 - A purpose-built bat porch will be constructed around the entry point on the northern gable. This will be positioned between the two proposed windows on this gable.
 - The porch will be a lean-to structure adjoining the gable wall, and will be approximately 1.8m x 1m x 2.5m high (at the highest point of the roof against the gable) to incorporate the entrance point. Due to the limited space within the rear garden, the porch cannot extend further than 1m from the building as it would prevent access to all areas of the garden.
 - The porch will be constructed of breezeblock with timber cladding to fit the character of the Chapel.
 - The roof will be lined with Bitumen 1F felt and timber cladded. Rough sawn timber battens will be installed over the felt to provide roosting locations.

- An entry point into the porch for bats will be installed on the northern elevation (to avoid illumination from the windows either side) and will be at approximately 2m high from ground level. The entrance will be 400mm x 400mm and will be grilled (by a horizontal metal bar placed halfway (at 200mm) and one vertical metal bar down the centre (at 200mm along the width), to prevent unauthorised access and deter predators (see Figure 3.2).
- Two panel boxes (as described above) will be installed within the porch to create roosting opportunities for crevice dwelling bats.
- An access hatch will be installed on either the eastern or western elevation of the porch, this will be 0.5m x 0.5m and padlocked. This access hatch will be used by a licenced ecologist for monitoring purposes only.
- The porch will be left empty to allow sufficient flying space within it. The porch will not be used for storage or accessed by the residents/home owners.
- To encourage entry into the bat porch, additional hedge/shrub planting will be required around the access point (but not obscuring it). This will connect up to additional planting along the eastern boundary (see Section 3.10).

3.9.2 Further roosting opportunities will be created with the provision of three bat boxes, which will be erected prior to the works commencing to provide temporary refuge for any bats that are found during the works, as well as long term roosting opportunities for bats using areas around the site. These will be erected onto areas of the building and walls within the site that will not be subject to disturbance from the works; exact locations will be determined by the ecologist. They will be placed at least 3m above the ground, on a southerly facing elevation and away from any windows, doors or other light sources. Woodcrete or woodstone boxes will be used, as these will last longer with limited maintenance; the exact model of the boxes will be agreed with the ecologist prior to purchasing. The boxes must only be checked by a licensed bat worker.



FIGURE 3.2 - PROPOSED ELEVATIONS SHOWING BAT ENTRANCE POINTS AND BAT PORCH

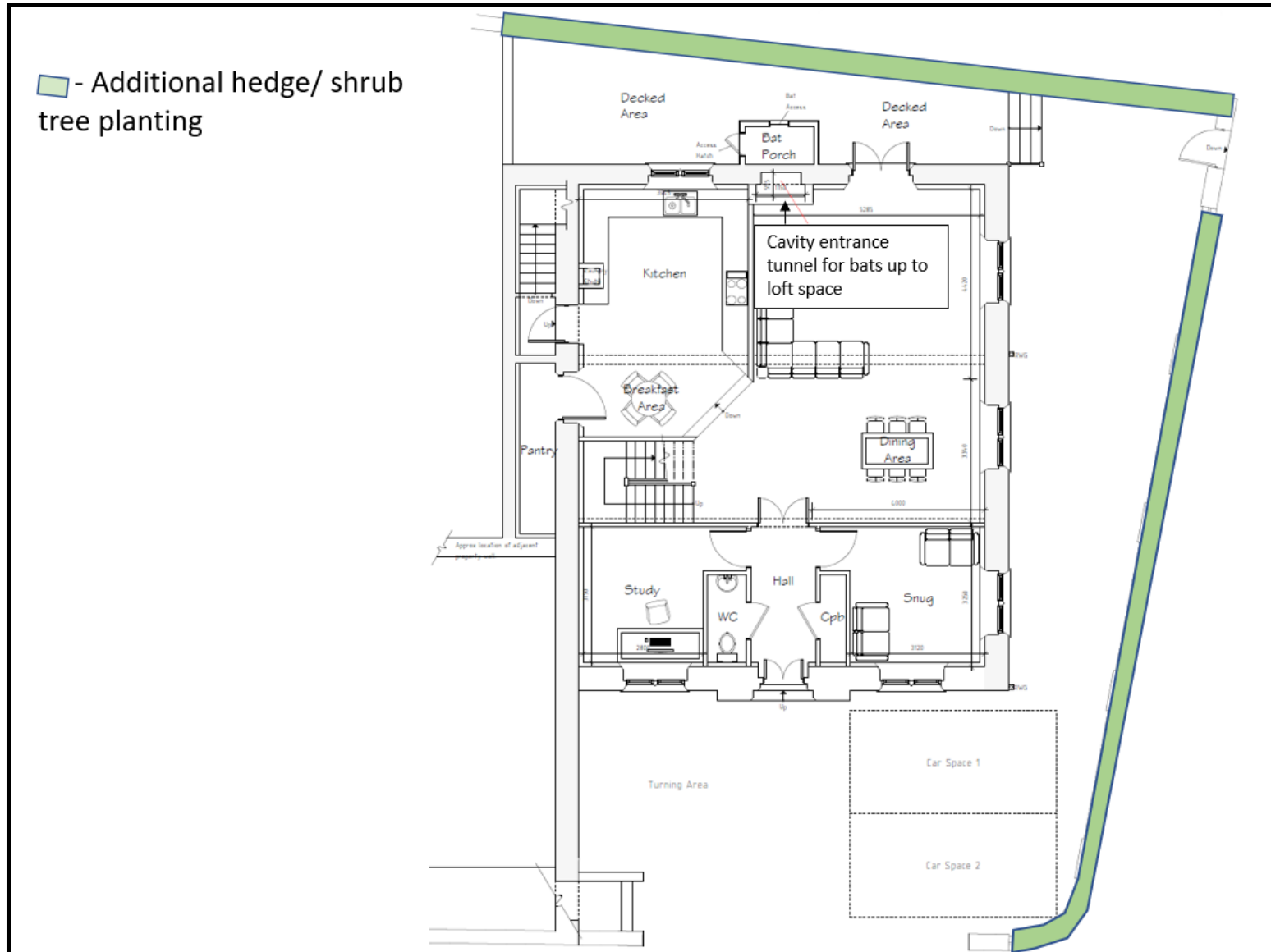


FIGURE 3.3 - PROPOSED GROUND FLOOR PLANS SHOWING LOCATION OF NEW BAT SHED AND ADDITIONAL PLANTING

BASE IMAGE © BLUEPRINT ARCHITECTURAL LTD

3.10 *Lighting*

3.10.1 ILP (2023) 'Bats and Artificial Lighting at Night' guidance conclude that for bats, artificial lighting at night (ALAN) is thought to increase the chances of predation by avian predators (such as owls and hawks) and in lit areas, bats are known to modify their behaviour, potentially in response to this threat. Illuminating a bat roost can cause disturbance and this may result in the bats deserting the roost, or even becoming entombed within it. Lighting would therefore be considered an obstruction under the legislation protecting bats and their roosts. In addition, artificial lighting can also affect the feeding behaviour of bats.

3.10.2 As LHS are sensitive to lights, the external lighting must be planned carefully so as not to illuminate any LHS entrance points or flight lines. The habitats surrounding the building are suitable for bats and the emergence survey recorded bats using these areas to commute and forage. Therefore, any new lighting has the potential to impact bats and nocturnal birds.

3.10.3 **There is currently no external lighting plan as part of the proposed scheme.** If it is considered necessary to install some additional lighting once the development is complete, it will be minimal and a lighting plan will be submitted to, and agreed by, NRW, Wrexham County Borough Council and the ecologist. To reduce the potential impact of additional lighting, which may be installed, the following measures must be incorporated into the lighting plan.

- There will be no lights focused on, or illumination of, any of the roost entrances or bat and bird mitigation as detailed in this document. There will be no lights focussed on any trees or hedgerows within the site (including the proposed additional planting).
- Due to the existing street lighting, it is not possible to create any dark buffer zones around the site; however, bats are using the site with the current lighting situation so as long as no additional lighting is focussed on any of the bat mitigation or vegetation within the site, it is considered that bats will continue to use the site.
- There will be no additional external lighting installed in the rear garden that will illuminate the bat porch or the area between the bat entrance and the adjacent proposed hedgerow.
- Any external or security lighting will be limited to provide some dark periods during the night. The lighting will be motion activated, directed downwards, and not stay on longer than one minute, in order to provide maximum darkness when not needed as well as providing safe lighting conditions for residents when required.
- Any lighting within the proposed parking area to the south of the building will be low level down lighting, from a height of no more than 1m. Hoods will be used where necessary to prevent light spillage up to the LHS entrance point on the southern gable

and the adjacent tree line. This lighting will also be on motion sensors on a short timer (> 1 minute) to provide dark periods during the night.

- All windows will have glazing treatments, such as one-way glass, tinted or obscured glass or retrofitted films fitted to reduce light spill from inside the lit building. Where possible, particularly on the northern and southern gables, the windows will be fitted with a motorised black out blind connected to light switch and photocell so that when a light is switched on between dusk and dawn, the blind will automatically operate to prevent light spillage close to the entrance points.

3.10.4 After avoiding, wherever possible, the potential impacts of Artificial Lighting At Night (ALAN) through scheme designs, if further mitigation measures are required in the form of lighting controls, ILP (2023) recommend that a lighting professional helps to select those light sources, lamps, LEDs and their fittings which are most appropriate for the project. To assist with the decision-making process, ILP (2023) suggest that the following are considered when choosing luminaires:

- All luminaires should lack UV elements when manufactured. Metal halide, compact 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 light source (3000Kelvin or lower) should be adopted to reduce blue light component.
- Light sources should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats (Stone et al, 2012).
- Internal luminaires can be recessed (as opposed to using a pendant fitting) where installed in proximity to windows to reduce glare and light spill.
- Waymarking inground markers (low output with cowls or similar to minimise upward light spill) to delineate path edges.
- Column heights should be carefully considered to minimise light spill and glare visibility. This should be balanced with the potential for increased numbers of columns and upward light reflectance as with bollards.
- Only luminaires with a negligible or zero Upward Light Ratio, and with good optical control, should be considered - see ILP (2021) GN01.
- Luminaires should always be mounted horizontally, with no light output above 90° and/or no upward tilt.
- Where appropriate, external security lighting should be set on motion sensors and set to as short a possible a timer as possible.
- Only if all other options have been explored, accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it only to where it is needed. However, due to the lensing and fine cut-off control of the beam inherent in modern LED luminaires, the effect of cowls and baffles is often far less than anticipated and so should not be relied upon solely.

3.11 Further Enhancements – Flight Lines

3.11.1 Based on the most recent emergence survey in 2022, the bats were emerging from the southern gable and accessing the adjacent woodland to the south directly. The road along the eastern boundary of the site is well illuminated and could be deterring bats from emerging on the northern gable and travelling round to the southern woodland. As the street lighting will be retained, additional planting along the boundary will help create a darker flight path between the proposed bat porch and entrance on the northern gable, and the woodland to the south. To encourage the bats to use the mitigation entrance porch, and enhance the site for bats (and birds), additional native hedgerows will be planted along the northern and eastern elevations, along the road to join with the existing woodland. Table 3.1 provides recommended native species which could be used and Figure 3.4 shows the areas where planting will be concentrated.

TABLE 3.1 - SUGGESTED TREE/HEDGEROW SPECIES

Latin name	Common name
<i>Prunus spinosa</i>	Blackthorn
<i>Crataegus monogyna</i>	Hawthorn
<i>Corylus avellana</i>	Hazel
<i>Acer campestre</i>	Field maple
<i>Rosa canina</i>	Dog rose
<i>Cornaceae</i> sp.	Dogwood
<i>Euonymus europaea</i>	Spindle
<i>Viburnum opulus</i>	Guelder rose
<i>Viburnum lantana</i>	Wayfaring tree
<i>Sorbus torminalis</i>	Wild service tree
<i>Sorbus aucuparia</i>	Mountain ash/rowan
<i>Sorbus aria</i>	Whitebeam
<i>Prunus avium</i>	Wild cherry
<i>Prunus padus</i>	Bird cherry
<i>Pyrus pyraster</i>	Wild pear
<i>Prunus domesticus</i>	Denbigh plum
<i>Prunus domesticus</i>	Damson
<i>Ilex aquifolium</i>	Holly

3.12 Monitoring

3.12.1 Monitoring of the new roost will take place the first summer after the mitigation bat loft has been constructed - between May and August of year one, and then again between May and August in years three, five, seven and ten. Monitoring will comprise a day time check by a bat licenced ecologist of the bat loft and bat shed and an emergence survey (May – August). Monitoring of the bat loft will also be carried out during the winter months (January and February) to determine if the bat loft is also a hibernation roost. As the current situation

within the loft is unknown with regards to hibernation, monitoring will be carried out in Year 1 and Year 3, but it will not be continued, nor will the mitigation be considered unsuccessful, if bats are not found to be hibernating within the building.

- 3.12.2 Mitigation will be considered a success if monitoring finds bats using the bat mitigation areas – primarily that the LHS maternity roost continues to use the building. As other species of crevice dwelling bats were only present in small numbers, on an occasional basis, as long as all the mitigation for crevice dwelling bats detailed in this document is employed, it will be considered a success. If monitoring proves unfavourable after the first year, a data logger will be left in the bat loft to monitor temperatures and humidity levels to determine if the environment is suitable. If results continue to be unfavourable then further liaison with NRW, the property owner and the ecologist will be carried out to agree mitigation improvements.

3.13 *Auditing*

- 3.13.1 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.
- 3.13.2 The licensed ecologist will be available throughout the project to provide advice on more detailed points as the project progresses.
- 3.13.3 A record of visits will be kept and a toolbox talk will be given to all those who will be involved in the project.
- 3.13.4 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. An ecological compliance audit will be completed every 4 months until the bat mitigation loft and entrance porch are in place; then every six months until the remaining works are completed; by an externally appointed body as required as a planning condition and by the bat licence. The Key Performance Indicators (KPI's), for which the audit compliance measures will be based on, are listed in Appendix A. Monitoring and Compliance Audit reports will be submitted to NRW and the local planning authority and success will be determined by the achievement of performance indicators detailed in Section 3.14.

3.14 *Performance Indicators*

- 3.14.1 The surveys showed the Chapel is in use by a LHS maternity roost; the most recent emergence showed 30 bats but previous surveys showed up to 51 bats in 2017 (Enfys Ecology 2018). The chapel is also in use by a small number of common and soprano pipistrelles, *Myotis* sp. and potentially BLE as occasional day roosts and night roosts.

Therefore, the mitigation measures will be considered successful if the following are achieved:

- The audit found that all mitigation measures were in place as per this document and the licence method statement.
- The work was carried out within the proposed timescales.
- LHS continue to use the loft as a maternity roost following the works. While it is expected that numbers may drop initially due to a less familiar environment, it is expected that monitoring after Year 3 should see an increase in numbers from 30 bats.
- Any of the crevice dwelling species previously identified on site are using any of the additional bat mitigation, including the bat loft, bat porch and bat boxes.
- Any other bat species recorded using the provided roosting areas within the site.

3.15 *Timetable of Works*

3.15.1 Table 3.2 details the timing, phasing and duration of the construction activities and monitoring of the new roost. This is based on works commencing in September of 2024 (Year 0); should works be delayed then Year 0 will be adjusted to that of the start year and the subsequent years will correspond.

Salem Chapel, Pentre Broughton – Mitigation Strategy

TABLE 3.2 - TIMETABLE OF WORKS (BATS) AND MONITORING SCHEDULE

Work Detail	August 2024	15 th September 2024 – 15 th November 2024 (Year 0)	November 2024 – February 2025 (Year 0 – 1)	November 2024 – 15 th April 2025 (Year 0 – 1)	April 2025 – April 2029	May – August 2025; 2027; 2029; 2031; 2033	Jan – Feb 2026; 2028; (2030)
At least three bat boxes will be purchased and made available within the site.							
Internal brick wall constructed to separate the area of building to be retained (including the bat roost in the loft) from the aspect that will be demolished. Destructive works to the existing roof, ceiling and Area 'a'.							
Planting of hedgerow/trees							
Completion of bat loft, bat porch and entrance points, including the replicate slit on the new front aspect							
Demolition of the front aspect and re-build along the new brick wall; completion of internal works							
Monitoring of maternity roost - internal checks and emergence surveys							
Monitoring of hibernation roost – internal checks							

3.15 *Mitigation Contingencies*

- 3.15.1 If, when carrying out the pre-works checks or during works, it becomes apparent that a higher number of 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 the licence amended. Further surveys may be required.

3.16 *Persons Responsible for Implementing the Works*

- 3.16.1 During the works, Aaron Edwards (owner) will be responsible for implementing the works as detailed in the bat licence with Enfys Ecology as the named ecologist.

3.17 *Mitigation Site/Compensation Ownership Post-Construction*

- 3.17.1 The building will remain in the ownership of Aaron Edwards 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, will 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.
- 3.17.2 A detailed management and maintenance plan for the mitigation bat roost will be included within the licence application method statement. The scope of the management will be informed by (but not limited to) the condition provided within the NRW response below:

5. In respect of (a), I advise component provisions of the management and maintenance plan include
- (i) defined aims and objectives (including targets that can be used as key performance indicators for monitoring purposes);
 - (ii) Habitat management and roost maintenance prescriptions
 - (iii) The detail of the skills and competencies required by those undertaking identified works (including building maintenance) surveillance) including whether they require European Protected Species licenses for the activities proposed;
 - (iv) Surveillance and monitoring proposals methodologies and reporting requirements; and
 - (v) Periodic review mechanism for the Management Plan;

4.0 Mitigation, Compensation and Enhancement - Birds

4.1 There were (inactive) swallows' nests found within the Chapel during the hibernation surveys in 2023. These bird nesting areas, as well as potential nesting areas for other species, will be lost as part of the conversion works.

4.2 In order to minimise the risk of harm or disturbance to birds on site, and to mitigate for the loss of nesting opportunities the following methods will be employed:

- Specific Reasonable Avoidance Methods (RAMs) for all works on site
- Addition of swallow nest cups
- Addition of other nest boxes

4.3 *Reasonable Avoidance Measures: During Works*

4.3.1 As swallows and potentially other birds are nesting within the Chapel, destructive works will be constrained by the bird nesting season (which is March to September - inclusive) with no work taking place within this period. Works are already constrained on this building by the bat maternity season (which is mid-April to mid-September – inclusive).

4.3.2 If works must be conducted to the building during March or September (either side of the bat maternity season), then a thorough search for any nesting birds will take place immediately prior (no more than 48hrs beforehand) to the commencement of works (that may cause disturbance) by a suitable qualified ecologist. If any nest is recorded then all works to that section of the building would have to cease until the nestlings have fledged.

4.3.3 Under the Wildlife and Countryside Act 1981 (as amended) all birds, their nests and eggs are protected during the breeding season (typically March to August inclusive) from killing/ destruction, damage and disturbance.

4.4 *Addition of Swallow Nest Cups*

4.4.1 Swallows prefer to nest in covered structures. To provide nesting opportunities, at least two swallow nest cups will be installed within the mitigation bat porch. As this shed is primarily for night roosting and for crevice dwelling species that can use areas behind the panel boards, and on the basis that both birds and bats were sharing the same space within the Chapel congregation area for these purposes, it is not considered that the presence of swallows will deter the bats.

- Two blocks of rough sawn untreated/ pre-treated wood will be installed within the bat shed, not above or next to the bat entrances or panel boxes. These blocks should be approximately 300mm long.
- Swallow nest cups will then be installed onto the blocks.

- Entrance for swallows will be the same as the LHS entrance on the northern elevation.

4.5 *Addition of Other Nest Boxes*

- 4.5.1 To compensate for the loss of bird nesting habitat in the conversion works, and enhance the site for birds, bird nesting opportunities will be provided by including bird boxes around the site. A minimum of three boxes suitable for small birds need to be erected on site - one suitable for *Passer domesticus* (house sparrows) with a 32 mm entrance, one for smaller birds (28 mm) and one suitable for *Sturnus vulgaris* (starlings) with a 45 mm entrance. Examples of suitable bird boxes are: vivara pro woodstone house sparrow nest-box; vivara pro seville 28mm woodstone nest-box; vivara pro woodstone starling nest-box. Woodstone nest boxes are more durable and require less maintenance than wooden boxes. These boxes will be mounted onto walls within the site (or the building itself where possible).

5.0 Biosecurity Risk Assessment

5.3 *Biosecurity Risk Assessment - Bats*

- 5.3.1 Table 5.1 below relates to ecologists employed to monitor bat populations that come into direct contact, i.e. handling bats, but is applicable to these works where bats may need to be captured and moved to a bat box, as well as contractors and ecologists entering the bat roosting areas.
- 5.3.2 There are currently no confirmed cases of White Nose Syndrome in the UK bat population but this fungal disease has caused widespread mortality in bats in the USA. Cases have been confirmed in some areas of Europe but the disease in this region does not appear to cause high levels of mortality.
- 5.3.3 Transmission in the UK is most likely to arise due to the increasing trend of 'International Bat Work' with bat ecologists from the UK travelling to other countries where the disease is known to be present. The fungal spores can be persistent on equipment and clothing.

TABLE 5.1 - BIOSECURITY RISK ASSESSMENT FOR WHITE NOSE SYNDROME AND COVID19 IN RELATION TO BATS

Risk	Transmission Vector	Level of Risk	Consequences	Control Measures
Introduction of White Nose Syndrome to the bat population.	Bat ecologists, their equipment & clothing	High if ecologists have taken part in bat work in areas of known infection outside the UK. Low if ecologists have not taken part in bat work in areas of known infection outside the UK.	The spread of the disease throughout the bat population. Due to bats being very mobile animals the infection could eventually spread throughout the UK.	The most effective way of preventing the spread of White Nose Syndrome is to use 'site specific' equipment such as gloves and holding bags. This is the approach that will be adopted for this site. Avoid capturing and/or handling bats unless absolutely necessary. The Bat Conservation Trust guidelines for reducing the risk of transmission of White Nose Syndrome will be adhered to at all times.
Covid 19	Bat ecologists	Low	A risk of passing Covid 19 on to bats. The virus that causes COVID-19 hasn't been isolated from any of the UK's 17 resident breeding bat species.	When handling bats, practice good hygiene and wear a facemask to reduce the risk of possible transmission. No surveyors showing any Covid symptoms or feeling generally unwell will attend site.

6.0 Legislation

6.1 *Bats*

All species of bat, their breeding sites and their resting places in England and Wales are protected through a 'dual' system of protection, under the England and Wales Habitats Regulations and W&CA. Because two regimes give legal protection to bats, the implications of both regimes must be fully understood (Reason & Wray, 2023).

Regulation (Reg.) 43 of the England and Wales Habitats Regulations makes it an offence to:

- deliberately capture, injure or kill a bat;
- deliberately disturb bats (which includes any disturbance which is likely to impair their ability to survive, to breed or reproduce, or to rear or nurture their young, or in the case of animals of a hibernating or migratory species, to hibernate or migrate or to affect significantly the local distribution or abundance of the species to which they belong);
- damage or destroy a breeding site or resting place of a bat; or
- possess, control, transport, sell or exchange, or offer for sale or exchange, any live or dead bat or part of a bat or anything derived from a bat or any part of a bat.

Under Section 9 of the W&CA (s.9(4)(b), 9(4)(c) and 9(5) only), it is an offence (in relation to bats) to:

- intentionally or recklessly disturb a bat while it is occupying a structure or place of shelter or protection;
- intentionally or recklessly obstruct access to any structure or place used by a bat for shelter or protection;

or

- sell, offer or expose for sale, or have in their possession or transports for the purpose of sale, any live or dead bat or any part of, or anything derived from a bat (or be responsible for adverts suggesting the intention to do this).

6.2 *Birds*

Under the Wildlife and Countryside Act 1981 (as amended) and the Countryside and Rights of Way Act 2000, all wild birds, their nests and eggs are protected during the breeding season (typically March to August inclusive). This makes it an offence to:

- Intentionally kill, injury or take any wild bird.
- Take, damage or destroy the nest of a wild bird included in Schedule ZA1.

- Take, damage or destroy the nest of any wild bird while that nest is in use or being built.
- Take or destroy an egg of any wild bird.

6.3 *Biodiversity Net Gain – Relevant sections of legislation*

Section 6 of the Environment (Wales) Act 2016:

Biodiversity and resilience of ecosystems duty

(1) A public authority must seek to maintain and enhance biodiversity in the exercise of functions in relation to Wales, and in so doing promote the resilience of ecosystems, so far as consistent with the proper exercise of those functions.

(2) In complying with subsection (1), a public authority must take account of the resilience of ecosystems, in particular the following aspects—

- (a) diversity between and within ecosystems;
- (b) the connections between and within ecosystems;
- (c) the scale of ecosystems;
- (d) the condition of ecosystems (including their structure and functioning);
- (e) the adaptability of ecosystems.

.... (5) In complying with subsection (1), a public authority other than a Minister of the Crown or government department must have regard to—

- (a) the list published under section 7;

- Section 7 of the Environment (Wales) Act 2016:

Biodiversity lists and duty to take steps to maintain and enhance biodiversity

(1) The Welsh Ministers must prepare and publish a list of the living organisms and types of habitat which in their opinion are of principal importance for the purpose of maintaining and enhancing biodiversity in relation to Wales.

(2) Before publishing a list under this section the Welsh Ministers must consult the Natural Resources Body for Wales (“NRW”) as to the living organisms or types of habitat to be included in the list.

(3) Without prejudice to section 6, the Welsh Ministers must—

- (a) take all reasonable steps to maintain and enhance the living organisms and types of habitat included in any list published under this section, and
- (b) encourage others to take such steps.

7.0 References and Useful Information Sources

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