

Technical Report

Bat Mitigation Report

Ysgol y Hafod, Wrexham

Wynne Construction

September 2021



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1 Introduction

1.1 Terms of Reference

Atmos Consulting Ltd (Atmos) were commissioned by Wynne Construction in August 2021 to undertake a Preliminary Bat Roost Assessment (PBRA) along with the required bat surveys of the main school building at Ysgol y Hafod Primary School in Johnstown near Wrexham, hereafter referred to as the 'Site'.

The works involve an extension to the southern end of the existing Junior school building, internal remodelling of the ceilings in the northern end of the school and a single storey extension to the Old School House to accommodate Early Years education and an associated outdoor play area.

This report supersedes a letter issued to Wrexham County Borough Council (WCBC) alongside the planning submission with the interim bat survey results as of 26th August 2021 (Atmos ref. 26613 R2 Rev1).

In addition, Atmos were commissioned to undertake an extended Phase I habitat survey and desk study of the infant and junior school sites, as well as complete a BREAAAM assessment of the Site. These surveys were carried out to support a planning application for the above works. The results from these surveys are available in three separate reports (Atmos Ref: 26613/R1/Rev1, 26613/R3/Rev1 and 26613/R4/Rev1).

1.2 Site Context

The Site is Ysgol yr Hafod Primary School, and it is located on Bangor Road, Johnstown, Wrexham, LL14 2SW (Grid reference: SJ 30450 46241). The Site is in current use as a primary school, with a large proportion of the Site being occupied by buildings and play areas for children.

The PBRA and bat surveys were of the main school building, which comprised of two sections, the original building and the southern extension, linked by a sloping felt-roofed reception area.

1.3 Background Information

A daytime internal and external Preliminary Bat Roost Assessment (PBRA) was originally undertaken on 19th August 2019 by Marches Ecology on behalf of WCBC. This found seven old (> 1 year) droppings within the roof space of the original school building and several potential access points into the roof space. The loft spaces of the original school building were considered complex and restrictive, and not suitable for the typical breeding or roosting requirements for loft-dwelling species such as brown long-eared bat *Plecotus auritus*. Habitat for crevice-dwelling bats such as pipistrelle *Pipistrellus* species was present, and there is potential for the building to be used by single / low numbers as an occasional / transient roost.

The original building and newer rear extension were subject to dusk surveys in August and September 2019 and no bats were recorded to emerge from either building. The original school building had therefore once supported bats, but they were not considered to be present at the time of the surveys.

At the time, the extension proposals were to affect the newer rear extension only. No works were confirmed within the original school building, although internal refurbishments were mentioned to be possible.

The report (Marches Ecology Ref. C411/Bat Surveys/V1.0) recommended that should the works not commence within 12 months of the date of the inspection / surveys, updated surveys may be required.

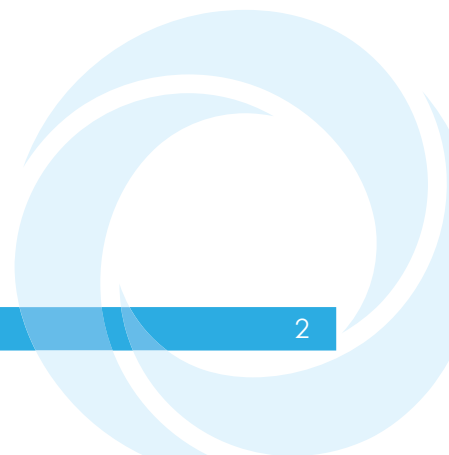
1.4 Objectives

The objective of the study was to assess the structure for its potential to support protected species including, but not limited to, roosting bats and birds which could potentially be impacted by the proposed works.

Following the assessment of the structure, three bat activity surveys were undertaken and are also reported in this report.

The results of the surveys are presented with the following details:

- legislative context;
- field survey methodology;
- field survey results;
- evaluation and impact assessment; and
- mitigation measures



2 Relevant Legislation

2.1 Bats

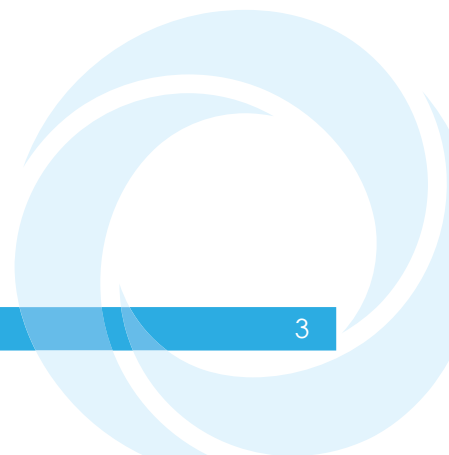
All bat species in the England and Wales are protected through the Wildlife and Countryside Act (1981) (as amended); the Countryside and Rights of Way Act, 2000; the Natural Environment and Rural Communities Act (NERC, 2006); Environment (Wales) Act 2016 and by the Conservation of Habitats and Species Regulations (2017). Bats are commonly referred to as European Protected Species (EPS).

It is an offence to deliberately or recklessly:

- capture, injure or kill a bat;
- harass an individual or group of bats;
- disturb a bat while it is occupying a structure or place used for shelter or protection;
- disturb a bat while it is rearing or otherwise caring for its young;
- obstruct access to a breeding site or resting place, or otherwise deny the animal use of the breeding site or resting place;
- disturb a bat in a manner that is, or in circumstances which are, likely to significantly affect the local distribution or abundance of the species to which it belongs;
- disturb a bat in a manner that is, or in circumstances which are, likely to impair its ability to survive, breed or reproduce, or rear or otherwise care for its young;
- disturb a bat while it is migrating or hibernating;

It is also an offence of strict liability to:

- damage or destroy a breeding site or resting place of a bat even if they are not in use at the time (i.e. a summer roost during the winter period).



3 Methodology

3.1 Desk Study and Consultation

In August 2021, data was obtained from the North Wales Environmental Information Records Centre, Cofnod, relating to protected and priority species and sites within a 2 km buffer of the school.

On 4th August 2021, a phone consultation was carried out with Emma Broad, the WCBC County Ecologist. It was agreed that an updated PBRA be carried out to ascertain whether site conditions (and thus suitability for bats) had changed in the intervening time since the 2019 surveys. If conditions had not changed, no further surveys would be required.

3.2 Review of Previous Information

The Marches Ecology surveys in 2019 found no evidence that the school was in current use by bats, but historic droppings were found in the roof space of the original school building indicating it had previously been a bat roost.

The newer rear extension and felt-roofed linking building were not found to support roosting bats.

3.3 Preliminary Bat Roost Assessment (PBRA)

A daytime internal and external survey was undertaken by a suitably experienced ecologist, on the 17th of August 2021. The southern and northern portion of the school building and surrounding habitat were assessed for their potential to support bats, as well as the accessible internal loft spaces in both buildings.

Additionally on the 3rd September, an external PBRA was undertaken of the Old School House.

Any evidence of further protected species or features that could support such species was also recorded.

The survey involved a detailed external and inspection of the buildings, in line with Bat Conservation Trust (BCT) guidance (Collins, 2016), to look for potential entry/exit points for bats and any potential roosting features, such as gaps beneath roofing tiles and openings within soffits. A search was also carried out for any evidence of roosting bat presence; including the presence of bats, bat droppings, and urine/fur oil staining.

The potential of the buildings to host roosting bats was then categorised as per the criteria within the BCT survey guidelines, as summarised in Table 1.

Table 1: BCT Bat Roost Categories

Potential suitability	Key features
Negligible	Negligible habitat features not likely to be used by roosting bats
Low	A structure or tree with one or more potential roost Sites that could be used by individual bats opportunistically. However, these potential roost Sites do not provide enough space, shelter, protection and or suitable foraging/commuting habitat to be used on a regular basis or by large numbers of bats
Medium	A structure or tree with one or more potential roost Sites that could be used by

	bats due to their size and surrounding habitat but which are unlikely to support a roost of high conservation importance
High	A structure or tree with one or more potential roost Sites that are obviously suitable for use by large numbers of bats on a regular basis and potentially for longer periods of time owing to their size and surrounding habitat
Confirmed roost	A structure or tree supporting evidence of bat presence, such as droppings and feeding remains.

3.4 Bat Emergence / Re-entry Surveys

As a result of the bat assessment of the school buildings, and the progression of the plans for refurbishment, it was deemed necessary to undertake further bat emergence / re-entry surveys of part of the school. This is due to the fact that works to the internal ceilings of the original school building are proposed, which was confirmed to have once been a roost by the presence of bat droppings.

The newer southern building was considered to continue to offer a similar low level of bat roost potential as recorded in 2019, with no significant changes. Therefore, as agreed with the WCBC Ecologist, the bat surveys did not specifically cover the newer southern extension.

Three surveys (two dusk emergence and one dawn re-entry) were undertaken as per the BCT survey guidelines in line with a building of confirmed bat presence (Collins, 2016), in order to characterise the type of roost present within the original school building.

Bat activity was recorded using a combination of visual observation and aural frequency division bat detectors (Anabat SD2 and walkabout), which enable the bats' ultrasonic calls to be heard and recorded for later analysis. Dusk emergence surveys started around 15 minutes before dusk and finished 1.5 hours after dusk. Dawn re-entry surveys begin 1.5 hours before sunrise and continue for around 15 minutes after. The date, time, and weather conditions during the survey is provided in Table 2 (below).

Table 2: Bat survey timing and weather conditions

Visit	Date	Time	Sunrise /sunset	Surveyor s	Temp. (degrees)	Wind speed (Beaufort Scale)	Rain
1- Dusk	18/08/21	20:15-22:02	20:32	CH GH PD	18	1	None
2- Dusk	01/09/21	19:45-22:01	20:01	FM GHNR	15	1	None
3- Dawn	17/09/21	05:19-07:05	06:49	FM LW NR	12	0	None

Based in the external PBRA, the features were covered by three surveyors, positioned as shown in the image overleaf.

Surveyor 1 was positioned on a corner between the east-facing aspect of the original school building and the south-eastern end, affording sight of louvre windows, and loose slates in the roof and missing mortar on the gable end.

Surveyor 2 was positioned in the eastern end of the front playground, offering visibility of the front of the school building, with focus on louvre windows, gaps in the lead flashing, missing mortar and slipped slates.

Surveyor 3 was positioned on the western corner of the old school building. This afforded visibility of a partly boarded-up louvre window and gaps in the mortar on the eastern gable end, and on the south-western elevation, slipped slates on the dormer and a further louvre window.

Figure 1: Surveyor locations for 2021 surveys



Source: Atmos Consulting Ltd using Google imagery, August 2021

3.5 Limitations

The external PBRA was able to fully assess the external elevations of the buildings for bat evidence and no limitations were perceived.

The internal PBRA was limited to the loft spaces which were accessible. Three loft spaces were entered, one within the original building and two within the newer southern extension.

The loft space in the original building afforded partial access to the entirety of the internal space. Whilst it was possible to see a large part of the roof space, boarding was only present in a small area of it, around the boiler header tank. The loft spaces were complex and of varying levels, and due to health and safety considerations were not fully accessed due to lack of boarding. The results presented below are therefore based on an assessment of the accessible loft space, and consideration of the potential suitability of the remaining spaces that were observed from a distance.

The loft spaces of the newer southern building were accessed in two places. In one, larger space it was possible to climb into the loft and walk around, whereas in another it was used for storage and was very full of items if it was only possible to look around from the loft hatch.

In terms of the roost surveys, due to time and weather constraints, only one survey was technically completed in August, with the second extending into the 1st of September. This minor variation in timing is not considered a limitation.

The location of surveyor 3 was constrained by the newer extension and a glazed bike store, meaning it was the only possible location where these features could all be observed.

4 Survey Results

A summary of the survey results is provided below. Further details of features and supporting photographs are provided in Appendix A.

4.1 PBRA

A PBRA was undertaken of the rear extension and original school building. This included an external and internal survey. An external PBRA was undertaken of the Old School House.

4.1.1 Existing Rear Extension

The rear building at the school is a newer extension. It is a single storey building constructed of red brick with a shallow pitched tiled roof with solar panels on the western end. It is of modern construction and in good condition, with a well-sealed roof and the fascias and soffits largely intact. Small gaps in the soffits were noticed where the wood had bowed slightly, however these were covered in cobwebs and subject to night-time illumination due to nearby lighting on the wall beneath the roof.

This building was considered to be in a similar condition to when it was surveyed previously in 2019 and was therefore not subject to additional repeated surveys in 2021.

Internally, two roof spaces were accessed in the newer school building. The internal roof was in good, clean condition with intact insulation and felt. No evidence of bats or access points into the roof were noted.

4.1.2 Original School Building

Externally, the original school building presented numerous potential features for roosting bats, in particular gaps at the roof verge, slats in louvres that provided ventilation into the loft, gaps between slates and missing slates.

Internally, the accessible loft space provided variable suitability for roosting bats. The area around the access point into the loft and the boiler tanks was largely unsuitable for bats. This section of the loft contained motion sensor strip lighting which was activated with movement, meaning it is possible the roof space could be illuminated if bats were to trigger the sensors.

Small numbers of old bat droppings were found on some of the raised surfaces within the loft, but no new droppings. It is possible these were of a similar age to those discovered by Marches Ecology in 2019.

The remainder of the roof space was not directly accessible due to lack of boarding. It was observed to be open with relatively unrestricted flight areas. The wooden louver windows afforded direct access into the loft space, and provided free movement of air and ventilation, as well as influx of daylight which may limit its suitability as a roost except in areas in shadow and those which would be more sheltered.

The roof itself appeared to be in reasonable condition internally, with no daylight visible between the lath and plaster. However, the Caretaker mentioned that there are frequent leaks from the roof into the school during bad weather.

Due to the presence of bat droppings, the building was considered a confirmed roost. Given its character, it is considered the roof space could support small numbers of individual bats rather than a maternity or hibernation roost.

The surrounding area is built-up with no direct flightline linkages to the trees and grassland of the playing fields which provide potential foraging habitat. It is also subject to night-time street lighting to the front and security lighting on other elevations.

4.1.3 Old School House

The Old School House is a two-storey building built of red brick construction and with a pitched slate roof. The roof of the Old School House was in generally good condition. Some small gaps were noted beneath lifted tiles but these were only occasional.

The surrounding area is built-up with few to no bat flightline and foraging habitat and is subject to night-time street lighting. It is considered to be of low bat roost potential at most.

4.2 Bat Emergence / Re-entry Surveys

On the first bat survey, which was a dusk emergence survey, one soprano pipistrelle *Pipistrellus pygmaeus* emerged from the south-eastern elevation of the building, observed by surveyor location 3 at 20:42. This bat was heard and not seen, but appeared to emerge from the original school building close to the dormer-style roof structure as shown in the image overleaf as number 1. There was one other foraging bat (common pipistrelle) recorded at 21:51 along the tree line to the rear of survey location 3. No other bat activity was recorded during the survey.

During the second dusk survey, no bats were recorded emerging from the building, but small numbers of pipistrelles were recorded foraging and commuting across the site.

During the final dawn survey, one pipistrelle was recorded re-entering at location 3 under the lip of the felt roof at the front of the building at 06:31. This bat emitted social calls whilst circling before re-entering the roof. It did not echolocate a traditional call to enable it to be identified as either a soprano or common pipistrelle, therefore it has been described as a pipistrelle for this reason. Further pipistrelles were recorded commuting and foraging in small numbers during the survey.

During the surveys, it was also possible to consider the night-time lighting around the school, both from lighting on the building itself and street lighting. Timed lights were present around the east, west and southern elevations of the original school building emitting a relatively low but constant level of light. The lights were low on the building meaning the roof and louvre windows were relatively dark and remained potentially suitable as roosts. The newer extension was well-lit with lights beneath the roof at regular intervals, meaning the only potential roost locations (small gaps in the soffits) were well-lit and rendered less suitable.

The front of the school was partly illuminated by street lighting, but some features were not directly lit, meaning the building still provided potentially suitable habitat.

Figure 2: Roost locations



Source: Atmos Consulting Ltd, 2021

5 Evaluation and Impact Assessment

All species of bat in the UK are protected under the Wildlife and Countryside Act 1981 (as amended) and as European protected species under the Conservation of Habitats and Species Regulations 2010. This legislation also applies to roost locations, whether or not they are occupied at the time.

Suitable mitigation is therefore required to ensure that the bats present can be protected and that the population of common pipistrelles in the local area is capable of maintaining favourable conservation status.

The bat roost surveys undertaken in the August and September 2021 confirmed the presence of roosting pipistrelle bats within the school buildings. A soprano pipistrelle roost is considered to be present in the original school building, whilst a pipistrelle (not possible to determine species) roost was recorded in the felt-roofed reception building.

It is considered that the buildings act as occasional roosts for male bats, or day roosts for a small number of individual bats. The signs do not indicate the buildings support a maternity roost. They are also draughty and are unlikely to provide sufficient insulation to maintain a constant temperature for a hibernation roost.

There are no proposed works to the felt-roofed reception building, but bats roosting within the roof may be subject to indirect disturbance due to noise and vibration during daytime working hours. The potential effects on bats roosting within the original school building are assessed below.

5.1 Pre-construction impacts

The works to the internal ceilings of the old school building will result in the disturbance of one confirmed bat roost within the same building, and potential disturbance to a second roost nearby. This would be an adverse impact on the individual bats present in the absence of mitigation and would constitute an offence under the legal protection afforded to bats.

There are anticipated to be no direct or indirect effects on bats arising from the construction of the new extension. This is due to the distance of the works, the fact that they are to take place on a separate building and that there is already an existing level of noise and disturbance provided by the school.

5.2 Construction impacts

The bat roosts are likely to be disturbed during the works as there will be works to remodel ceilings which will involve partial or complete removal of ceilings, exposing the roof space and changing the roost conditions. The roost itself within the old school building will not be destroyed but will be subject to disturbance. This disturbance will be temporary during the works. Following the works, the roost will remain and continue to be suitable for occasional bats.

5.3 Post-development impacts

Upon the completion of the extension, the roosts will be able to continue to function as previously. The usage of the building during the daytime is considered to be a similar pattern of use that is already present within the school and will thus not result in any additional effects on roosting bats.

6 Mitigation

6.1 Rationale

The mitigation measures proposed below are intended to provide sufficient assurance to WCBC that the effects on bats are capable of being mitigated via a development licence from Natural Resources Wales (NRW).

As such, the intention is that any condition attached to the consent for the proposals is worded such that the bat mitigation measures will be carried out in accordance with this Bat Mitigation Report. This would allow a licence application to be submitted to NRW without delay upon consent, avoiding the need to discharge nature conservation-related conditions beforehand.

6.2 Bat Mitigation Licence

The works to replace and reconfigure the ceilings in the original school building will not result in a permanent loss of roosting habitat. They will cause temporary disturbance to two roosts. It is therefore considered that a disturbance licence could be obtained from Natural Resources Wales (NRW) for the works (following granting of planning permission) to cover temporary disturbance, but with long-term retention of the roosts.

A detailed Method Statement will be prepared in support of this licence application, providing details of the timing of works, safe working practices to minimise the chances of bats being present during the works and measures for the enhancement of roosting habitat for bats in the long term. This is outlined below.

6.2.1 Method Statement

Proposed Scheme

The proposed development will comprise the following:

1. An extension to the junior school on hardstanding to the rear of the newer school building offering increased accommodation;
2. Refurbishment of the original school building including refitting of ceilings; and
3. Single-storey extension to the Old School House to include Early Years education facilities

Work elements 1 and 3 are not considered to affect the bat roosts. Work element 2 will result in disturbance to a small soprano pipistrelle roost within the roof of the old school building due to works to the ceiling space, and indirect disturbance to a small pipistrelle roost within the felt-roofed reception due to noise and vibration.

Bat Avoidance Measures

The Named Ecologist or accredited agent will attend site prior to the commencement of works to induct all site staff and deliver a toolbox talk setting out the requirements under the licence.

In order to ensure there is no short-term loss of roosting habitat, immediately prior to the commencement of works, two bat boxes of a type similar to a 'Vivaro Pro Woodstone

Bat Box' will be installed on a suitable tree on-site which will not be affected by the works. It will be attached to a south-western facing side of a tree, mounted at least 2.8m from the ground and protected from prevailing winds. This will act as a receptor box should any bats be recovered during the works. The exact location of the boxes will be agreed with the Named Ecologist or accredited agent.

If a bat is discovered, this will be removed to safety by the Named Ecologist or accredited agent and placed within the bat box located on the tree mentioned above.

Replacement Roosting Habitat

The works to the school will result in the temporary disturbance of two occasional pipistrelle roosts. This will be mitigated for in the short term by the installation of suitable bat boxes to offer alternative habitat during the works.

Long-term roost provision

In the long term, roosting habitat will continue to be provided in-situ. The roof of the old school building and reception area will continue to function as occasional bat roosts, therefore no further roosting habitat is considered necessary.

The bat boxes installed on suitable trees during the works will remain in place to provide enhanced roosting habitat. The bat boxes will be placed on land that is within the ownership of Ysgol y Hafod.

Lighting

There is anticipated to be no additional lighting in the areas where the roosts are present above the levels that are already currently present.

6.2.2 Timing of Works

The school building does not support a maternity roost. It is also less suitable for a hibernation roost. There are therefore no specific timing constraints to the works posed by the bat roosts. However, working during the winter would be preferable to minimise the risk of encountering and disturbing a roosting bat.

Once a confirmed timescale for the works has been developed, this will be included within the Method Statement for the bat licence. Immediately prior to the commencement of works, the Named Ecologist or accredited agent will be present to deliver a toolbox talk, supervise the installation of the receptor bat box and supervise the roof stripping.

6.2.3 Ecological Compliance

Ecological Compliance Audits will be included within the licence Method Statement, with the following Key Performance Indicators (KPIs) for bats included:

- Destruction of known bat roosts on the site is not carried out until an EPS licence is granted by NRW.
- Building work is carried out according to the procedures specified in the licence method statement.

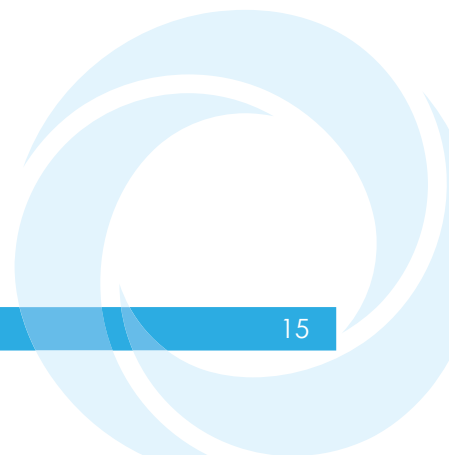
- Temporary roost provision is created during the works as per the EPS licence method statement.

The Named Ecologist or accredited agent will provide the necessary input during the works and will provide a report to NRW on completion. The structure/tree on which the bat boxes are to be located within the existing site and is within the ownership of the school.

6.2.4 Maintenance

The bat boxes installed on trees within the school grounds will be checked from the ground to ensure they are in good condition on a regular basis by the school Caretaker or other nominated person. Any defects will be reported to the Named Ecologist and they will be rectified as soon as practicably possible.

For a scheme this size, there is no post-construction monitoring proposed to monitor the usage of the boxes by bats. The boxes should remain in situ and be capable of being used by bats (i.e. in good condition and not subject to night-time lighting) for at least five years.



7 Conclusion

Ysgol y Hafod was subject to an external and internal inspection and three activity surveys timed between August and September 2021. The updated PBRA found the original school building to host a confirmed bat roost (historic droppings) and exhibit several external roosting features.

The newer rear extension was confirmed to remain in a similar condition to earlier 2019 surveys and it was agreed with the WCBC Ecologist that it would not be subject to additional surveys on this basis.

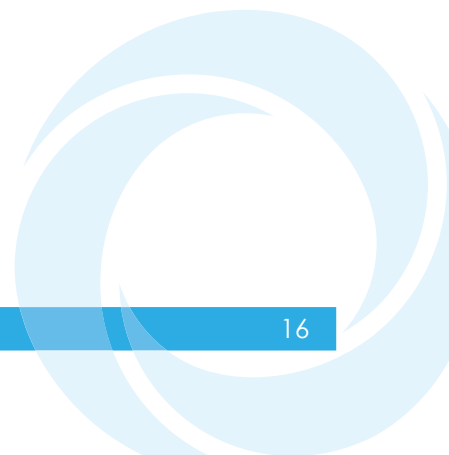
The Old School House exhibited potential roost features externally due to missing or slipped slates, but as no works are proposed to the roof, no further surveys or mitigation are necessary.

Three surveys were undertaken in August and September 2021 focussing on the original school building. They recorded the presence of two confirmed bat roosts – one single soprano pipistrelle in the roof of the old school building, and one pipistrelle beneath the felt roof of the adjacent reception building.

The buildings are considered to support occasionally roosting individual bats and are not considered to provide maternity or hibernation habitat.

The works to replace and refurbish the ceilings in the original school building will result in temporary disturbance to the roost in the school, and indirect disturbance to a roost in the reception roof due to noise and vibration. During the works, two bat boxes will be installed on suitable trees as alternative roosting habitat. In the long term, the roosts will be capable of being used following the completion of works, so no replacement long term roosting habitat is required.

As such, it is considered that the favourable conservation status of pipistrelle bat populations in the area will be maintained.



References

Collins. J. (ed.) (2016). Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London.

Appendices

Appendix A. Images and further details

Description	Images
Front north—facing elevation of original school building showing slatted louvres which lead into the loft space	
Small gaps beneath lead flashing where front section of building meets a different roof section	

Description	Images
Slipped slates on the rear, southern elevation and louvre window observed by surveyor 3	
Eastern elevation showing louvre window into loft space and gaps in mortar along roof line	
Partially boarded up louvre window into loft space on western elevation of original school building	

Description	Images
Close up example of missing mortar where roof line meets wall	 A close-up photograph of a brick wall and roofline. The bricks are reddish-brown. There is a visible gap in the mortar where the roofline meets the wall, indicating a structural issue. A blue downspout is visible on the left side of the wall.
Internal loft space in original school building showing lath and plaster lining beneath the slate roof and strip lighting	 An interior photograph of a loft space. The ceiling is made of dark wooden beams with lath and plaster lining. A strip of white lighting is visible on the left. The floor is covered with a layer of brown insulation or debris. A white metal box or unit is visible on the right side.

Description	Images
Raised section of loft space accessed by ladder with no boarding. Light from louvre window can be seen in distance	
Image into adjacent loft space showing partial boarding and exposed ceiling beneath. Direct access was not made in this area.	

Description	Images
Dust and disintegrated historic bat droppings on top of water tank in loft space	
Newer rear extension showing modern construction and gently sloping roof	

Description	Images
Image to show boarding below roof line with no gaps	
Lighting positioned on wall directly beneath the roof, illuminating the small gaps between the soffits	

Description	Images
Image to show small gap between boarding and cobwebs around it	
Internal loft space in newer extension	

Description	Images
Old school House with relatively good condition roof.	