



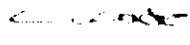
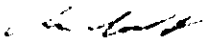

Bat Risk Assessment Report

Vindolanda Museum, Northumberland

Vindolanda Charitable Trust

Quality Control

Report Status: Draft

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BAT RISK ASSESSMENT SURVEY

Vindolanda Museum, NE47 7JN Northumberland

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1.0 EXECUTIVE SUMMARY

- 1.0.1 Total Ecology was commissioned by Mrs. Sonya Galloway of the Vindolanda Charitable Trust in April 2016 to undertake a bat risk assessment survey of the museum buildings at Vindolanda Museum, near Bardon Mill in Northumberland. The approximate National Grid Reference for the centre of the site is **NY 77246 66371**.
- 1.0.2 The Survey is required to accompany a planning permission application to build extensions to the Vindolanda museum building for an exhibition area and activity space. The building risk assessment survey took place on the 19th April and was undertaken by Ian Craft MCIEEM (licensed bat worker, no 2015-15085-CLS-CLS), Sacha Elliott (trainee bat worker) and Charlotte Wade GradCIEEM (trainee bat worker).
- 1.0.3 All of the building surveyed on site, have gaps in the mortar, under ridge tiles and in the stonework of the buildings. Building A1 is assessed as having a confirmed roost and buildings A2 and A3 are assessed as having high potential to support roosting bats. It is likely that development will have an impact upon bat species, either at individual and population level on the proposed elevation whereby works will be carried out.
- 1.0.4 It is recommended that three nocturnal surveys are to be carried out during the bat activity season (May-September) in order to gain satisfactory understanding of how the building is utilised by bats and their importance to local bat populations.
- 1.0.5 As further surveys are considered necessary, further recommendations are outside of the scope of this report and will be provided following the completion of the nocturnal surveys.

2.0 INTRODUCTION

2.1 Background

2.1.1 Total Ecology was commissioned by Mrs. Sonya Galloway of the Vindolanda Charitable Trust in April 2016 to undertake a bat risk assessment survey of the museum buildings at Vindolanda Museum (Chesterholm Museum), near Bardon Mill in Northumberland. The approximate National Grid Reference for the centre of the site is **NY 77246 66371**.

2.1.2 The survey is required to inform improvements to the site as part of the 'Unlocking Vindolanda Wooden Underworld Project', this will include extensions to the north elevation of building reference A1 of the museum building for an exhibition area and further extension for activity space. The building risk assessment survey for bats was undertaken on the 19th April 2016 by Ian Craft MCIEEM (licensed bat worker, no 2015-15085-CLS-CLS), Sacha Elliot (trainee bat worker) and Charlotte Wade GradCIEEM (trainee bat worker).

2.2 Site Description

The site is situated within Hadrian's Wall World Heritage Site, located within Northumberland, approximately 2km north of Bardon Mill and approximately 19km north-west of Hexham. The site consists of Roman auxiliary fort, museum, shop, coffee shop and gardens. The Chainley burn runs adjacent to the west of the site. Several more water bodies surround the site, the Bradley burn approximately 95m north, Brackies Burn approximately 160m north and the Doe Sike approximately 270m south-west of the site. The River South Tyne lies approximately 1.8km to the south of the site. Beyond, the wider area is dominated by agriculturally managed land including Crag Lough, an inland lake approximately 1.5km from the site and Muckle Moss National Nature Reserve which lies 2.3km to the east. The A69 road lies approximately 1.6km south of the site. (Figures 1, 2, Appendix A).

2.3 Survey Objectives

2.3.1 The objectives of the survey were to assess the buildings in terms of their potential to support, or actual evidence of, roosting bats. This assessment will form the basis of recommendations for further survey work and/or mitigation and compensation for bat species, where appropriate.

3.0 METHODOLOGY

3.1 Desk Study

- 3.1.1 A request was issued to Northumberland Bat Group for any information regarding protected/controlled species on, or in the direct vicinity of the site. The Magic website was searched for the details of Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR) and Local Nature Reserves (LNR) within 2km of the site.

3.2 Survey Approach

- 3.2.1 The survey for bats involved external and internal examination of the properties following the methodology outlined in the *Bat Worker's Manual* (Mitchell-Jones and Mcleish 2004). The survey was undertaken by Ian Craft MCIEEM (licensed bat worker, no 2015-15085-CLS-CLS), Sacha Elliot (trainee bat worker) and Charlotte Wade GradCIEEM (trainee bat worker) on 19th April 2016.

3.3 Buildings

- 3.3.1 The building exteriors were visually assessed for potential access points and evidence of bat activity in April 2016. Features which have potential as access points were sought, such as small gaps in barge/soffit/fascia boards, raised or missing ridge tiles or flashing and gaps in mortar, brick and/or stonework. Evidence that potential access points were actively used by bats including staining within gaps and bat droppings or urine staining under gaps was recorded. Indicators that potential access points were likely to be inactive included the presence of cobwebs and general detritus within the access.
- 3.3.2 The interior of the building was also visually assessed where possible for evidence of bat activity and/or for the potential to be used by bats. Evidence of a roost was determined as the presence of a dead or live bat, concentrated piles or scattered droppings, food remains such as insect wing fragments as well as scratch marks and/or staining.

3.4 Surveyor Experience

3.4.1 Ian Craft (Licence no 2015-15085-CLS-CLS)

Ian has held a bat licence for around 7 years and has been carrying out commercial bat surveys for around 10 years. During this time he has carried out on average around 20-30 risk assessments each year and 50-100 nocturnal surveys for projects ranging from wind farms to large scale housing

developments and individual barn conversions. He has also been involved in preparing and submitting EPSM bat licences for a range of developments.

3.4.2 **Sacha Elliott**

Sacha is in her 3rd season of bat work which has included carrying out risk assessments, dawn and dusk surveys and hibernation surveys on a variety of projects and properties. She's currently working towards a class 1 bat licence and also carries out volunteer work with Durham Bat Group at Durham Cathedral.

3.4.3 **Charlotte Wade**

Charlotte is in her second bat survey season, receiving in house training carrying out dusk emergence surveys and dawn re-entry surveys on a wide range of developments ranging from individual properties, schools and hospitals. She is an active member of Durham Bat Group, attending bat care workshops, bat walks within the North-East and volunteering at Durham cathedral and the Durham Lumiere event.

4.0 SURVEY RESULTS

4.1 Desk Study and Consultation Response

4.1.1 The results obtained from MAGIC search of designated areas show that there is one National Nature Reserve (NNR); Muckle Moss, three Sites of Special Scientific Interest (SSSIs); Muckle Moss, Roman Wall Escarpments and Roman Wall Loughs. Northumberland National Park is also located within 2km of the site. In addition there is also two Special Areas of Conservation (SACs); Border Mires, Kielder-Butterburn and Roman Wall Loughs. There were no Local Nature Reserves (LNRs) within 2km of the site.

4.1.2 A request was sent to Northumberland Bat Group seeking any information regarding bat species on, or within 2km of the site. Consultation data will be added upon its receipt.

4.2 Habitat Description

The site itself is situated within Hadrian's Wall World Heritage Site, located within Northumberland, 2km north of the village of Bardon Mill and approximately 19km north-west of the town of Hexham. The site consists of a 4th century Roman fort, museum building, natural woodland and several streams surrounding the site. The Roman fort is built on a spur of land adjacent to two streams, Bradley Burn and Brackies Burn which adjoin together to become the Chinley Burn which flows immediately west of the site. Several more water bodies include: Doe Sike approximately 270m south-west, Bean Burn approximately 600m south-west, Kingcairn Burn approximately 700m west and the Red Burn approximately 1km south-west of the site. Further north of the site is Crag Lough, an inland lake approximately 1.5km from the site. In the wider area lies heather moorlands, grazed pasture, bracken covering Barcombe Hill and the River South Tyne lies to the south of Bardon Mill. The habitats on site provide excellent foraging and roosting opportunities for bats with ecological links to further foraging habitat in the local area provided by several water bodies which surround the site.

4.3 Internal/ External Surveys

4.3.1 Full details of the findings of the building assessment can be found in Table 2 overleaf with photographs in Appendix B and building plan shown in Figure 3, Appendix A. In summary, evidence of bats were found in building A1 where bat droppings were recorded on the northern elevation and bat species found on the wall top. The bat was located where the proposed extension will be carried out between the two windows (Photograph 4, Appendix B). Several access points

were noted during the survey, large gaps under the fascia boards, gaps in the mortar and under the ridge tiles and flashing on the northern elevation where the proposed extension will take place. Building reference A2 was noted to have large gaps in the mortar on the northern elevation where buildings A1 and A2 adjoin (Photograph 7, Appendix B). Further gaps were noted on the eastern elevation of building reference A3; gaps were present in the mortar and under tiles on the roof edge. Two species of bird's nests are present to the entrance of the museum, several house martins *Delichon urbicum* and a blackbird *Turdus merula* nest were noted during the risk assessment survey.

4.3.2 Overall, all of the buildings on site have high potential of providing roosting opportunities for roosting bats due to the gaps present in the exterior of the buildings and the surrounding habitat potentially providing excellent foraging for bat species. All of the building surveyed on site, have gaps in the mortar, under ridge tiles and in the stonework of the buildings. Building A1 is assessed as having a confirmed roost and buildings A2 and A3 are assessed as having high potential to support roosting bats. Table 1 below shows the features considered when attributing a level of potential to a building.

4.3.3 **Table 1** Features typical of buildings within the different risk categories (BCT 2016).

Likelihood of bats being present	Feature of the building or built structure and its location
Higher	Pre-20th century or early 20th century construction. Agricultural buildings of traditional brick, stone or timber construction. Large and complicated roof void with unobstructed flying spaces. Large (>20 cm) roof timbers with mortise joints, cracks and holes. Entrances for bats to fly through. Poorly maintained fabric providing ready access points for bats into roofs, walls, bridges, but at the same time not too draughty and cool. Roof warmed by the sun, in particular south facing roofs. Weatherboarding and/or hanging tiles with gaps. Low level of disturbance by humans. Bridge structures, follies, aqueducts and viaducts over water and/or wet ground. For rarer species, buildings or built structures in the core area of their distribution. Buildings and built structures in proximity to each other providing a variety of roosting opportunities throughout the year. Buildings or built structures close to good foraging habitat, in particular mature trees, parkland, woodland or wetland, especially in a rural setting
Lower	Modern, well-maintained buildings or built structures that provide few opportunities for access by bats. Small, cluttered roof space. Buildings and built structures comprised primarily of prefabricated steel and sheet materials. Cool, shaded, light or draughty roof voids. Roof voids with a dense cover of cobwebs and no sections of clean ridge board. High level of regular disturbance. Highly urbanised location with few or no mature trees, parkland, woodland or wetland. High levels of external lighting.

4.3.4 Table 2 Building Structural Features.

Building Code (Figure 3, Appendix A)	Building construction details	Structural features present					Other structural features of note	Potential bat access and roosting points	Internal features	Evidence
		Gables	Barge boards	Soffit Boards	Fascia Boards	Flashing				
A1 Photos - 1,3,4,5,7 and 9, Appendix B	A single storey building with a pitched and hipped slate roof. Wooden and UPVC frames and doors present throughout.	X	X	X	X	X	N/A	Gaps are present under the tiles, ridge and flashing. Larger gaps are noted on the wall and under the fascia boards. Several gaps in the mortar.	Small roof void present with felt situated under the tiles. Bat droppings were located on the northern elevation. Bat species found on wall top in between the two windows.	
A2 Photos - 2,6,7 and 9, Appendix B	Building of stone construction, with slate tiles and a pitched roof. Wooden frames surround the doors and windows.	✓	X	X	✓	✓	N/A	Large gaps in mortar on south-west elevation above the window on the ground floor. Several gaps noted where buildings A1 and A2 adjoin.	Small roof void present with felt situated under the tiles. None noted.	
A3 Photos - 1,2,8 and 9, Appendix B	A two-storey sandstone building. Pitched and hipped slate roof with slate tiles. Wooden frames surround the doors and windows.	✓	✓	X	X	✓	N/A	Gaps present on the roof edge under the slate tiles on the eastern elevation. Several gaps are present in the mortar.	Small roof void present with felt situated under the tiles. Blackbird nest and several house martins nesting at museum entrance on the north-east elevation.	

- i. To survive, to breed or reproduce, or to rear or nurture their young, or
 - ii. In the case of animals of a hibernating or migratory species, to hibernate or migrate; or
- b. to affect significantly the local distribution or abundance of the species to which they belong.

5.3.4 Under the law, a bat roost is any structure or place used for shelter or protection e.g. a building, bridge or tree. Bats use many roost sites and feeding areas throughout the year and they tend to re-use the same roosts for generations.

5.4 National Planning Policy Framework

5.4.1 The NPPF outlines government planning policies and how they should be applied within local authorities. The framework places an emphasis on sustainable development, encouraging the re-use of land that has previously been developed over using land that has a higher environmental value and by minimising impacts on biodiversity. The NPPF states that developments should aim to conserve or enhance biodiversity and encourages opportunities to incorporate biodiversity in and around developments.

5.5 UK and Local Biodiversity Action Plans (BAP)

5.5.1 Noctule *Nyctalus noctula*, soprano pipistrelle *Pipistrellus pygmaeus* and brown long-eared bats *Plecotus auritus* are listed as UK priority species (UKBAP, 2007). Actions for conservation effort have been identified for each of these species, which include consideration of the effects of land use, the promotion of habitat creation, enhancement and improvement and the protection of roosts via the implementation of legislation and policy.

5.5.2 Several species of bat are listed as UK priority species (UKBAP, 2007). There are ten species of bat known to occur in Northumberland, which has a generic local BAP which aims to cover all species of bats recorded within the district as species of conservation concern (NBAP, 2014). All bat species are therefore included under the NERC Act.

5.6 Legal Implications of Proposed Development

5.6.1 It is not currently known whether the proposed works will contravene legislation relating to bats and their roosts as nocturnal surveys have not been undertaken and therefore the presence or absence of roosting bats has not been determined.

6.0 RECOMMENDATIONS

6.1 Survey Conclusions

- 6.1.1 Based upon the building features recorded during the external and internal assessment, habitats present within the local area, Building reference A1 is assessed as having a confirmed roost and building references A2 and A3 are assessed as having high potential for roosting bats.
- 6.1.2 The nocturnal survey requirement is determined through reference to the recommended bat survey guidance (BCT, 2016) and based upon the assessed potential of the surveyed building to contain roosting bats. Following this guidance, it is recommended that three nocturnal surveys are to be carried out during the bat activity season (May-September) in order to gain satisfactory understanding of how the building is utilised by bats and their importance to local bat populations.
- 6.1.3 There are several access points in all buildings surveyed. Particularly in building reference A1, where there were bat droppings recorded under the ridge tiles on the northern elevation (Photograph 5, Appendix B). Potential access points are gaps in the mortar on the western elevation of building reference A2 (Photograph 6, Appendix B). Gaps were noted on the northern elevation where buildings A1 and A2 adjoin (Photograph 7, Appendix B). Further potential access points were noted on the roof edge under the eastern elevation of building reference A3. The surrounding habitat offers good forging potential in close proximity, consisting of several water bodies including a lake and the River South Tyne, nature reserve and woodland located within a 2km radius of the site.
- 6.1.4 Any works to the Vindolanda Museum (Building reference A1) should not be undertaken without nocturnal surveys being carried out.

APPENDIX A

Figures



Legend

- ★ Site Location

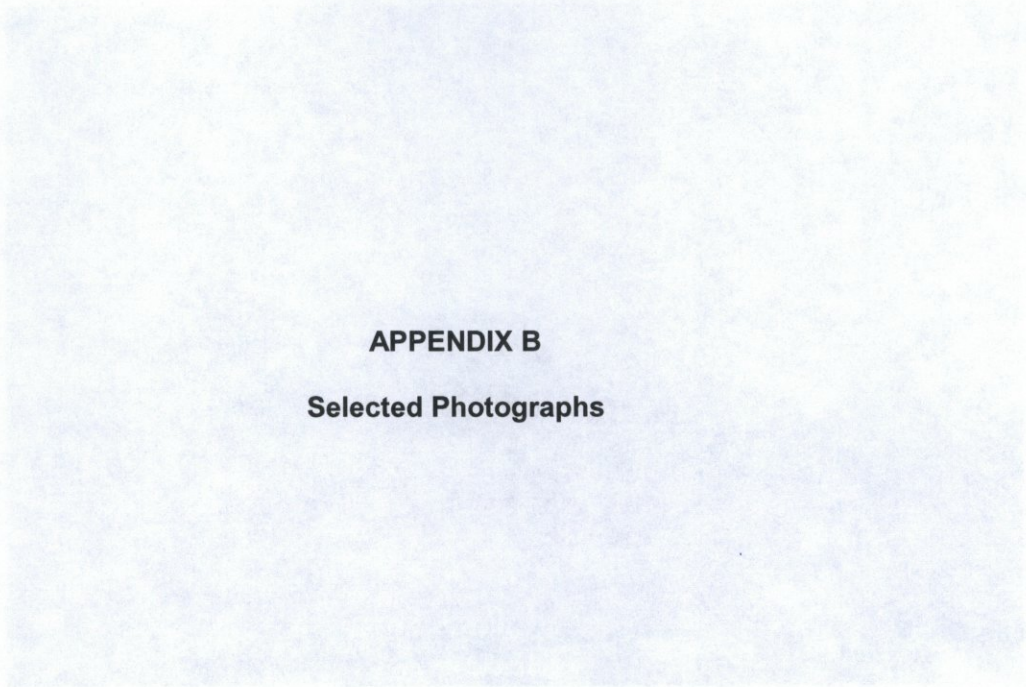
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Project	Roman Vindolanda Museum
Title	Aerial Map
Client	Vindolanda Charitable Trust
Date	21/04/2016
Ref	Figure 2

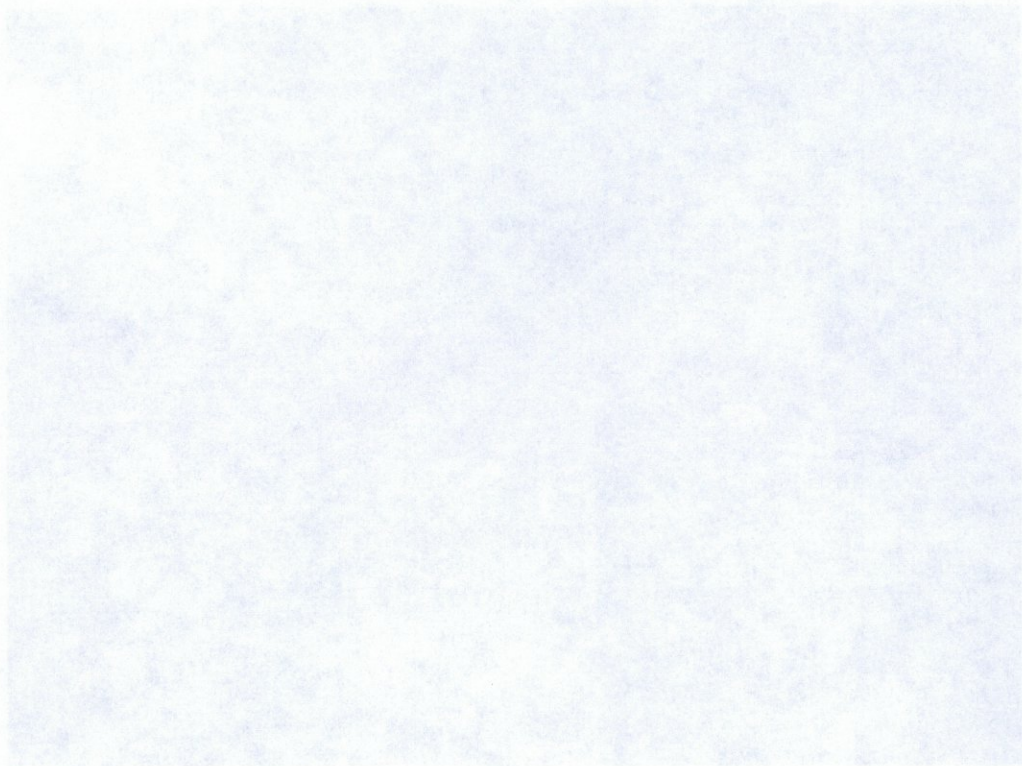
Photograph 1: First floor view of Building A



APPENDIX B

Selected Photographs

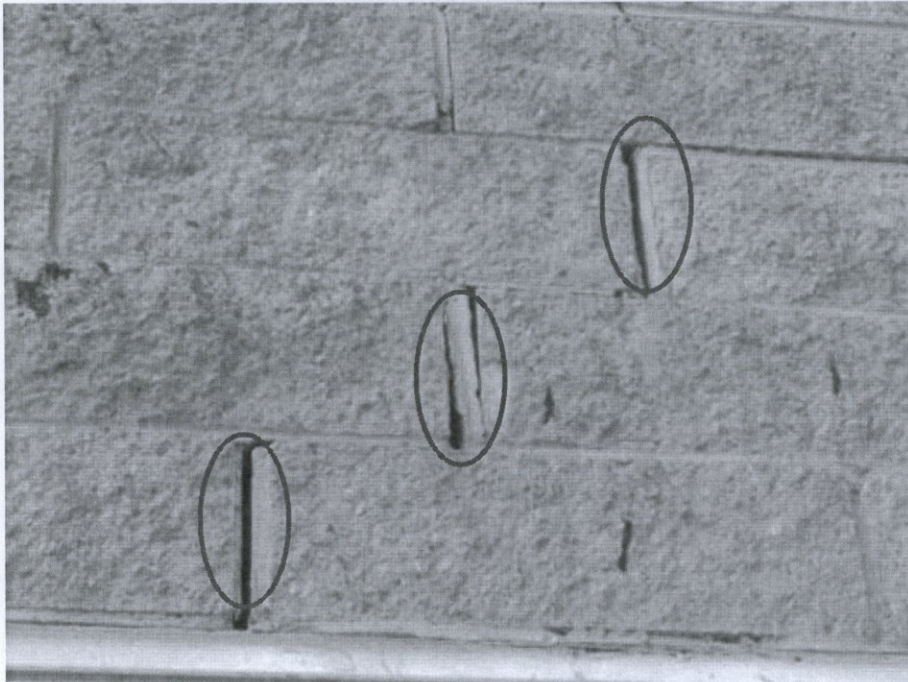
Photograph 2: Surroundings of Building A and B



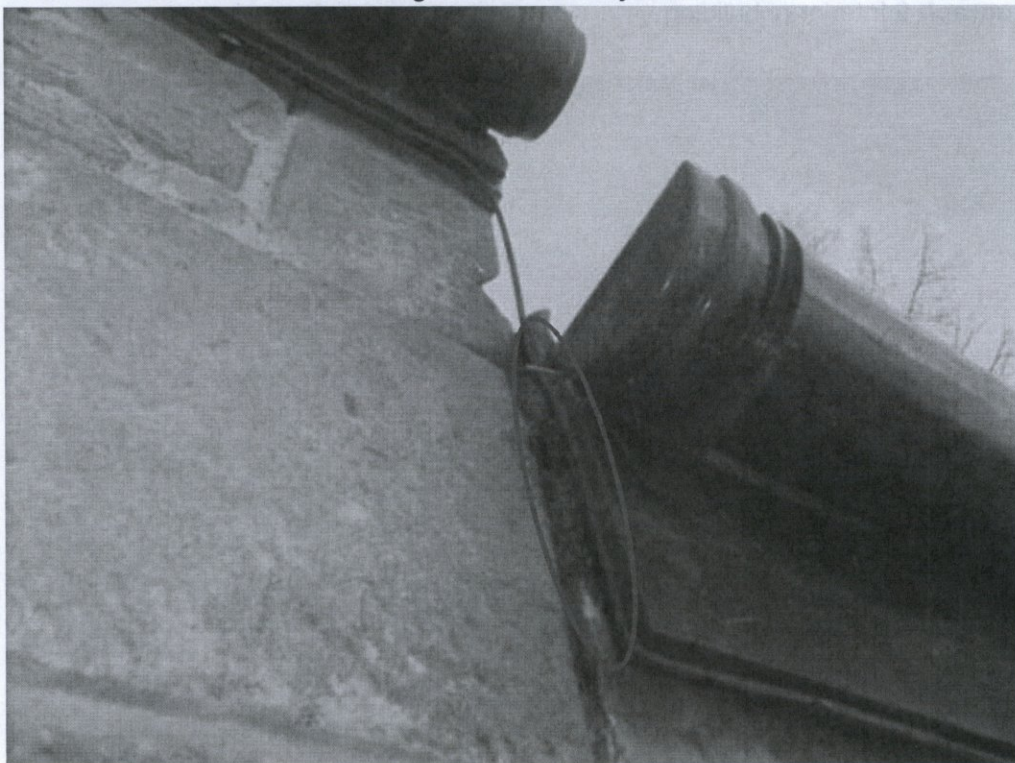
Photograph 3 Northern elevation of Building A1, where proposed extension will be carried out.



Photograph 6 Example of potential bat roosting opportunities, located on the western elevation of building reference A2.



Photograph 7 Further potential bat roosting opportunities, gaps located on the northern elevation where buildings A1 and A2 adjoin.



**APPENDIX C
Report Conditions**

The performance of environmental protection measures and of buildings and other structures in relation to acoustics, vibration, noise mitigation and other environmental issues is influenced to a large extent by the degree to which the relevant environmental considerations are incorporated into the final design and specifications and the quality of workmanship and compliance with the specifications on site during construction. Total Ecology Ltd. accept no liability for issues with performance arising from such factors

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