



Fife County Council

GUARDBRIDGE CONCRETE PROTECTION WORKS

Bat Survey Report





Fife County Council

Bat Survey Report

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EXECUTIVE SUMMARY

Bat surveys were completed by WSP on behalf of Fife County Council in advance of concrete protection works of a road bridge at Guardbridge, St Andrews. The road bridge and adjacent foot bridge were identified to have features with potential to support bat roosts during an initial roost suitability assessment in February 2018. One dusk emergence survey and one dusk emergence/dawn return survey were therefore undertaken of the road bridge and foot bridge from May to July 2018; this report details the methodology and findings of these bat activity surveys.

Bat activity surveys followed industry best practice (Collins, 2016). Four surveyors were positioned at different locations surrounding the bridges in order to observe all potential roost features and record any bats emerging from or returning to such features.

No bats were recorded emerging from, or returning to potential roost features within the foot bridge or road bridge. All bats observed were foraging along the treeline, banksides and under/over the bridges. Additionally, the presence of street lighting illuminating the bridges throughout the hours of darkness greatly reduced the suitability of potential roost features for use by bats. Considering this reduced suitability, the lack of roosting behaviour observed during surveys and in general activity restricted to low numbers foraging, it is reasonable to conclude that the bridges are not used by roosting bats at this time. As no roosts have been identified, the development will not require a European Protected Species (EPS) mitigation licence for works effecting bats at this stage.

Whilst not strictly enforced (through EPS mitigation licensing or planning policy), the following mitigation and enhancement recommendations are provided:

- Trees along the bank should be retained to maintain this area as a foraging and commuting corridor;
- Inclusion of nectar-rich plant species in any replanting required to restore banks (these are attractive to night-flying insects to enhance foraging opportunities for bats);
- Re-design of street lighting on current bridges to avoid light spill onto the sides of the bridges;
- Installation of bat bricks or bat tubes into the fabric of restored road and foot bridge or installation of additional bat boxes to suitable retained trees to increase the roosting opportunities for bats in the surrounding landscape.

It is anticipated that the works will progress from March 2019. However, if the development programme is delayed beyond April 2019, it would be prudent to undertake a pre-construction dusk emergence survey of the bridges to reaffirm the absence of roosting bats from potential roost features which may remain accessible to bats in the subsequent activity season, albeit of low suitability.

1 INTRODUCTION

1.1 PROJECT BACKGROUND

- 1.1.1. Bat surveys were completed by WSP on behalf of Fife County Council in advance of concrete protection works of a road bridge (namely 'New Bridge') at Guardbridge, St Andrews (Ordnance Survey (OS) grid reference NO 45017 19782). The works (hereafter referred to as the "development") are required to reinforce the road bridge.
- 1.1.2. Specifically, one dusk emergence survey and one dusk emergence/dawn return survey were undertaken of the road bridge and adjacent foot bridge, shown on Figure 1 (Appendix A). This report details the findings of these surveys and required mitigation to facilitate the development in line with nature conservation legislation.

1.2 DEVELOPMENT

- 1.2.1. The development will comprise full encapsulation of a scaffolding system across the road bridge, then hydrostatic blasting and concrete protection works. All debris and waste will be collected and removed to a licenced tip as necessary. No water shall be permitted to enter the River Eden and measures will be in place to ensure this (positive drainage or pumping). There will be no works undertaken of the bases to the arches forming the road bridge.
- 1.2.2. In addition, an anode will be installed on the eastern bankside and electric current installed across the bridge.
- 1.2.3. The development is anticipated to commence in March 2019. All works associated with the development are anticipated to extend across a six-month period, with completion in September 2019.

1.3 PREVIOUS BAT SURVEYS

- 1.3.1. A bat roost suitability assessment was completed in February 2018 of the road bridge, foot bridge and former rail bridge (Figure 1), in search of potential features that could support roosting bats.
- 1.3.2. The road bridge is in relatively good condition, however expansion joints between the cantilever arms of the bridge and the suspended span may provide bats access to roosting opportunities within the internal structure of the bridge (e.g. within the service ducts). Stonework around these potential roost features were however noted to be damp at the time of survey, reducing the suitability for roosting bats. Overall the road bridge was assessed to provide low potential to support roosting bats.
- 1.3.3. The foot bridge also offers potential roosting opportunities. Whilst there are no large apertures, multiple small cracks and crevices are present on the exterior of the structure which could lead to potential roosting opportunities. The structure was assessed to offer low to moderate potential for transitional roosting bats.
- 1.3.4. In addition, the pillars remnant from the former railway bridge, as well as the abutments on either bank, were assessed for roosting bats at the time of survey. However, the former railway bridge pillars and abutments were scoped out of future consideration with regards to roosting bat potential following discussions with Scottish Natural Heritage (SNH).
- 1.3.5. Given the potential for roosting bats within the road and foot bridges, further activity surveys were recommended to inform any European Protected Species (EPS) Mitigation Licence requirements.

1.4 LEGAL COMPLIANCE

- 1.4.1. Bats and their roosts are afforded a high level of protection under the Conservation of Habitats and Species Regulations 2017 (the 'Habitat Regulations'), the legislation means that it is an offence to:
- Deliberately capture, injure or kill a wild bat;
 - Deliberately disturb wild bats; 'disturbance of animals includes in particular any disturbance which is likely:
 - (a) to impair their ability —
 - (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.' and
 - Damage or destroy a breeding site or resting place used by this species.
- 1.4.2. Protection is also afforded under the Wildlife and Countryside Act 1981 (as amended) with respect to disturbance of animals when using places of shelter, and obstruction of access to places of shelter.

2 METHODS

2.1 BAT ACTIVITY SURVEYS

- 2.1.1. Bat activity surveys were carried out from May to July 2018, during the optimal season for activity surveys. The methodology used is industry standard and in line with recommendations of the Bat Conservation Trust¹ (BCT).
- 2.1.2. The foot bridge and road bridge were subject to activity surveys whereby surveyors watched and listened for bats emerging from, or returning to the potential roost features. The level of survey effort employed was proportional to the level of potential for roosts to be present. The number and timing of survey visits is shown in Table 1 below. Surveyor locations were utilised to fully cover the potential roosting features. These surveyor locations are shown in Figure 1 (Appendix A). One dusk survey and one dusk/dawn survey were undertaken. As the dusk/dawn survey was undertaken during one 24-hour period this constitutes one survey according to BCT guidelines. To carryout both a dusk and a dawn survey during one visit is above the minimum level of survey effort required by BCT guidance. This additional survey effort was thought beneficial in order to gain additional information on roosting behaviour.
- 2.1.3. The dusk emergence surveys began 15 minutes before sunset and continued until 1.5 – 2 hours after sunset. The dawn return to roost survey began 1.5 – 2 hours before sunrise and finished 15 minutes after sunrise.
- 2.1.4. The surveyors used BatBox Duet bat detectors to listen to and record echolocation calls of bats observed. Each BatBox Duet was connected to a digital recorder to store data recorded. During the survey, surveyors mapped the flight-lines used by any bats observed and noted any features used by the bats to exit/enter the bridges. Incidental records of bat activity in the vicinity of the surveyor locations were also collected.

Table 1 - Dates for Bat Dusk Emergence / Pre-dawn Return Survey Visits

Survey Visit	Type of Survey	No. Surveyors	Date of Survey	Survey Start Time	Survey End Time
1	Dusk Emergence	4	10/05/18	20:50	22:39
2	Dusk Emergence	4	18/07/18	21:33	23:17
	Dawn Return	4	19/07/18	03:20	05:05

2.2 LIMITATIONS

- 2.2.1. A single digital recorder was not operating correctly during the first 25 minutes of the dusk survey on 10/05/18. This does not limit the findings of the survey because the species likely to be observed emerging from potential roost features within the road and foot bridges (*Pipistrellus* species and/or Daubenton's bat *Myotis daubentonii*) would typically emerge from 30 minutes after sunset, and after when the digital recorder was working properly. Additionally, the surveyor would have still been able to observe emergences from the bridges and detected echolocation using the BatBox Duet, had they occurred. This position was also covered during the dusk/dawn survey on 18/07/18, when no equipment issues were noted.
- 2.2.2. No desk-based bat call analysis was undertaken of the survey data as only emerging/returning bat passes were to be taken into consideration in the scope of the survey. As no emergences/returns were observed, no bat call analysis was required. Species given in this report are supplied by field identification only.

¹ Collins, J. (2016) *Bat Conservation Trust Bat Surveys for Professional Ecologists Good Practice Guidelines*, 3rd Edition, Bat Conservation Trust, London

3 RESULTS

- 3.1.1. No bats were recorded emerging from, or returning to potential roost features within the foot bridge or road bridge surveyed.
- 3.1.2. The street lighting lining the road bridge illuminated the majority of the potential roost features on the western face of the foot bridge and eastern face of the road bridge.
- 3.1.3. An average of 25 bats were recorded foraging over or under the bridges during the dusk survey on 10/05/18; all were identified in the field as either common pipistrelle *Pipistrellus pipistrellus* or soprano pipistrelles *Pipistrellus pygmaeus*. Common pipistrelle and soprano pipistrelle were also recorded foraging over or under the bridges during the dusk/dawn survey on 18/07/18. A summary of results can be found in Table 2.

Table 2 - Results Summary

Survey Visit	Type of Survey	Date of Survey	Species Identified in the Field	Communing Activity	Foraging Activity
1	Dusk Emergence	10/05/18	Common pipistrelle and soprano pipistrelle	Majority of commuting was from east to west under the foot bridge. Bats also flew over the bridge and west to east. First bat was seen at 21:00 (c. 0.25 hours before sunset).	Foraging occurred along the tree line on the banks and between the arches under the bridges.
2	Dusk Emergence	18/07/18	Common pipistrelle and soprano pipistrelle	Majority of commuting was from east to west under the foot bridge. Bats also flew over the bridge and west to east.	Foraging occurred along the tree line on the banks and between the arches under the bridges. First bat was seen 3:26 (c. 1.25 hours before sunrise).
	Dawn Return	19/07/18	Common pipistrelle and soprano pipistrelle	Majority of commuting was from east to west under the foot bridge. Bats also flew over the bridge and west to east.	Foraging occurred along the tree line on the banks and between the arches under the bridges.

4 DISCUSSION AND RECOMMENDATIONS

4.1 BAT ROOST PRESENCE/ABSENCE

- 4.1.1. Despite initially assessing the bridges to be of low to moderate suitability to support roosting bats, there were no observations of bats returning to or emerging from the foot or road bridge during the dedicated dusk and dawn surveys.
- 4.1.2. Currently, street lighting may be a limiting factor on the suitability of the foot bridge for roosting bats. The angles of lights illuminate both the top of the bridge and adjacent face, where the majority of potential roost features were initially identified. Continuing to light the face of the bridges during construction would therefore not represent any further deterioration of suitability. However, lighting should not be angled so as to light the banks/surrounding vegetation and use of hoods, or other luminaire design features, should be considered if necessary to avoid light spill onto bankside vegetation.
- 4.1.3. In light of the reduced suitability of potential roost features to be used by bats (through lack of cover/shelter due to illumination), no evidence of roosting behaviour and low levels of foraging bat activity in general, it is reasonable to assume that these structures are not currently used by roosting bats. Therefore, there is no requirement for an EPS mitigation licence at this stage.
- 4.1.4. Given that the development is anticipated to commence in March 2019, any potential roost features within the road bridge that could be taken up by transitional roosting bats during next years' activity season (i.e. April to September 2019) will be inaccessible to bats by virtue of the encapsulation construction method.
- 4.1.5. If the development programme is delayed beyond April 2019, it would be prudent to undertake a pre-construction dusk emergence survey of the bridges to reaffirm the absence of roosting bats from potential roost features which may remain accessible to bats in the subsequent activity season, albeit of low suitability.

4.2 FORAGING AND COMMUTING BAT ACTIVITY

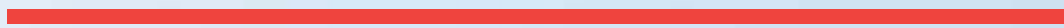
- 4.2.1. During the activity surveys, all bats observed were foraging along treelines at the banks, or flying under/over the bridges. Retaining the continuity of trees along the bank may be important to maintaining this area as a foraging and commuting corridor. Where possible trees and scrub on the bankside should be retained; no vegetation clearance is anticipated.

4.3 ECOLOGICAL ENHANCEMENT MEASURES

- 4.3.1. Whilst mitigation and/or compensation measures are not strictly required (typically stipulated through EPS mitigation licensing), planning policy promotes the inclusion of ecological enhancement. Accordingly, it is recommended that consideration is given to the following enhancement measures:
- Inclusion of nectar-rich plant species in any replanting required to restore banks, these are attractive to night-flying insects to enhance foraging opportunities for bats;
 - Re-design of street lighting on current bridges to avoid light spill onto the sides of the bridges; and
 - Installation of bat bricks or bat tubes into the fabric of the restored road and foot bridge or installation of additional bat boxes to suitable retained trees to increase the roosting opportunities in the surrounding landscape for bats.

Appendix A

FIGURES



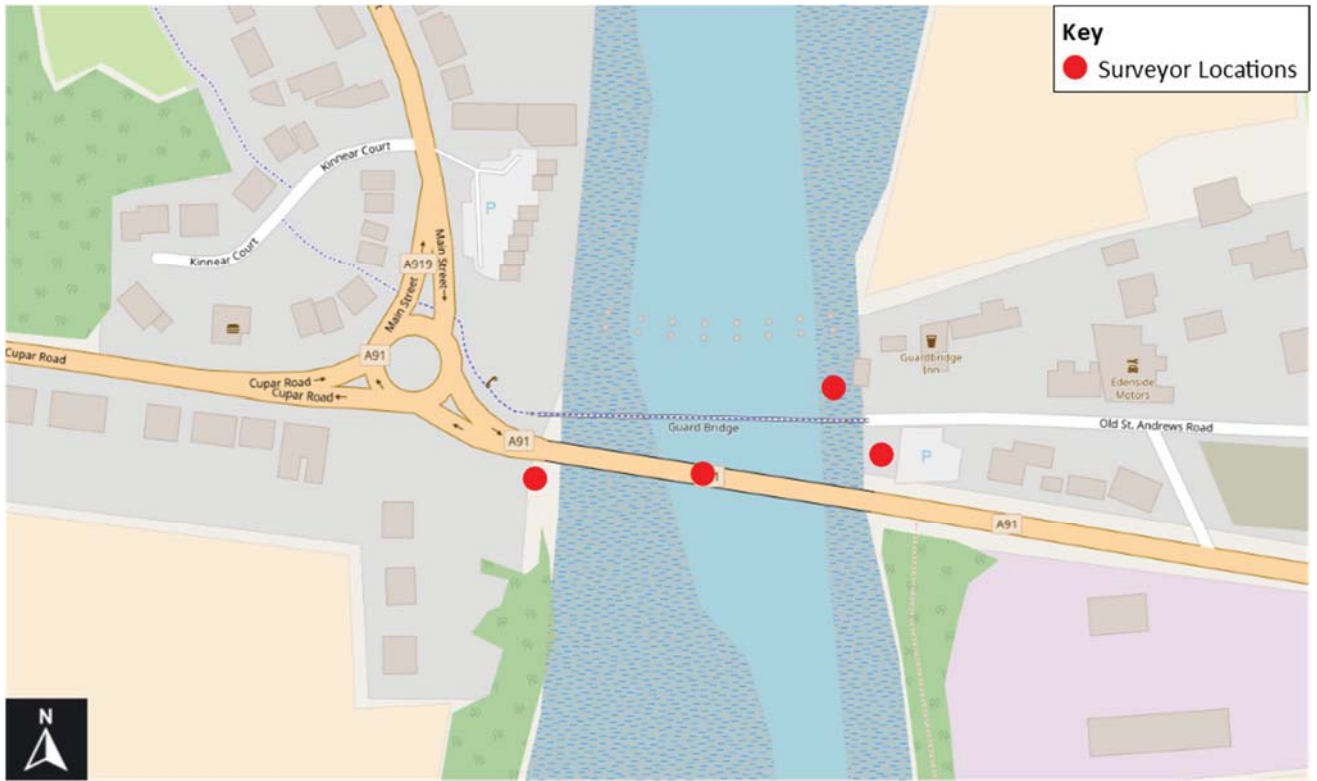


Figure 1 - Surveyor Locations



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