

ROYAL ORDNANCE, BISHOPTON



REMEDIATION AND RECLAMATION EARTHWORKS

ENVIRONMENTAL STATEMENT

APPENDIX 14.12 2006 BAT SURVEY, NOCTURNE

October 2006



Bat Survey

**BAE Systems Royal Ordnance
Bishopton, Renfrewshire**

For Cass Associates

September 2006

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1 Introduction

1.1 Background

Nocturne Environmental Surveyors Limited was asked by Cass Associates to carry out further bat surveys of the Bishopton BAE Systems site for bats in July 2006. Bishopton lies 10 miles from the centre of Glasgow and 4.5 miles from the centre of Paisley. The Ordnance site is approximately 1000 ha of redundant and largely derelict land.

The survey work detailed in this report was to build upon the previous survey work carried out in September 2005. Previous surveys had indicated that bats were using the site; however the surveys did not identify any roosts on site at that time. The 2005 survey also carried out a detailed daytime inspection of the buildings to look for evidence of bat use.

1.2 Remit and Survey Area

The remit of this survey was to carry out a series of fixed point, car and dawn surveys to further assess the use of the site by bats and to identify any roost sites. A car survey of the external perimeter of the site was also undertaken to assess activity.

1.3 Bats and the Law

There are nine species of bat found in Scotland; to date five of these have been recorded in Renfrewshire.

The five are: Pipistrelles, commonly referred to as the 55 kHz Pipistrelle (*Pipistrellus pygmaeus*), and the 45 kHz Pipistrelle (*Pipistrellus pipistrellus*). Brown Long Eared (*Plecotus auritus*), Daubenton's (*Myotis daubentonii*) and Natterer's (*Myotis nattereri*). The most common bats are the Pipistrelles and Brown Long Eared, which commonly use houses to roost in. During the summer the females give birth to their young in maternity roosts often in houses and they spend the summer there. Around August/September they leave the summer roosts to mate and to look for good winter roosts as the summer ones will be too warm. As bats hibernate during the winter they need a cold place with a steady temperature in order to survive a period when their food source, insects, are far less abundant.

Bats are very seasonal in their use of roosts. The important maternity roosts are generally close to good insect habitat, e.g. broad-leaved woodland and water. Adult females gather together in maternity roosts in late May to early June to give birth and rear their single young. The bats usually stay in the maternity roost until the adults leave in August. The young are on the wing in July and they usually leave the roost last. Outside of the period June to August a large variety of roosts are used, some only for a matter of days.

The table below illustrates how during the year bats use different roost types. It is therefore essential that as many possible roost sites are available for roosting bats.

Species	Winter Roost	Summer Roost
Brown Long Eared	Underground & Trees	Old Houses & Trees
Daubenton's	Underground	Stone Structures & Trees
Pipistrelles	Trees, Houses & Underground	Houses and Trees
Natterer's	Underground	Buildings and Caves

Bats and the Law

All bats are protected by the Wildlife and Countryside Act (Schedule 5) 1981 and as amended by the Nature Conservation (Scotland) Act 2004. They are also European Protected Species and are included in Schedule 2 of the Conservation (Natural Habitats, &c.) Regulations 1994, sections 39-41 and 44-46.

The Act and Regulations include provisions making it illegal to knowingly or recklessly:

- Kill, injure, catch or keep bats
- Damage, destroy or obstruct bat roosts
- Disturb bats whilst they are roosting, for example by entering known roosts or hibernation sites
- Sell, barter or exchange bats live or dead

It is a legal requirement to consult Scottish Natural Heritage (SNH) before you do anything that might affect bats or their roosts. This might include:

- Blocking, filling or installing grilles over old mines or tunnels
- Building, alteration or maintenance work
- Getting rid of unwanted bat colonies
- Removing hollow or dead/dying trees
- Re-roofing
- Remedial timber treatment
- Rewiring or plumbing in roofs
- Treatment of wasps, bees or cluster flies

Remember that because bats can potentially return to the same roost every year, bat roosts are protected even if there are no bats there all year round.

The law allows you to tend disabled bats, kill seriously injured ones and disturb bats, which are in the living area of a house.

Activities such as catching, ringing or photographing bats, or disturbing them whilst roosting, can be licensed by SNH, provided they are for scientific, educational or conservation purposes.

These laws are not designed to prevent work but to minimise its impact on the long-term survival of bats.

For further details see sections 9 – 11, 16 – 27, and 69 of the WACA 1981.

If Bats are found:

If bats are uninjured, allow them to fly out of the way.

If injured or sluggish remove to an empty dark box, only if wearing gloves. Keep box still and cool. Do not give food or drink. Call for assistance.

IN ALL CASES WHERE BATS ARE FOUND TO OCCUPY TREES OR BUILDINGS, INFORM SCOTTISH NATURAL HERITAGE (SNH) IMMEDIATELY.
(contact numbers at end of report)

It is important that this information is relayed to any sub contractor who may be unaware of the legal status of Bats.

2 Site Assessment

2.1 Habitat

Several habitats are particularly important for foraging bats: freshwater, woodland, grassland and linear habitats. There are a few key characteristics that make good bat foraging habitats:

- Suitable habitat structure – This varies for different bat species and needs to match the particular flight capabilities and echolocation calls they use;
- High densities of insects – Different groups of insects are important to different types of bats;
- Habitat corridor – These provide both foraging areas and routes that allow bats to move freely between their roosts and feeding areas.

Bishopton provides all of the key habitats important for bats. Retention of this habitat variety is important to the sustainability of the present bat population.

2.2 Local Status of Species

At present, the species that have been identified as using the site are Pipistrelle (*Pipistrellus pygmaeus* and *pipistrellus*), Daubenton's (*Myotis daubentonii*) and Brown Long Eared (*Plecotus auritus*). These are described as being Common and Widespread in a national context.

Locally (out with present site), there are records for two of these species, namely Pipistrelle and Brown Long Eared. Clyde Bat Group holds no records of Daubentons roost for this area.

3 Survey Methodology

3.1 Daytime Surveys

Previous daytime surveys have been undertaken of the buildings and bunker structures within the site. Powerful binoculars and torch were used to inspect internally and externally. Signs to indicate bat use were looked for. These are droppings, urine streaks, grease marks as well as listening for any audible sounds coming from roosts. Moth and Butterfly wings were also looked for which could indicate the presence of a feeding perch. Ladders are also essential to access features above head height.

No reference to methodology for trees is mentioned as no survey work on trees has been carried out.

3.2 Dusk Survey

3.2.1 Static and Multi Point Dusk Survey

This survey involves the person being on foot and either remaining at one location and observing the building whilst listening and recording any emergence or passes of bats. Walking on a pre-determined transect of an identified area.

A Duet Bat Detector linked to a Sony Minidisc recorder is used for this survey.

A powerful torch with a red filter is also used on still water to identify Daubenton's Bats.

3.2.2 Car Survey

Two people are required for this survey. This allows large areas with vehicular access to be surveyed. This method of surveying is recognised and carried out by the Bat Conservation Trust. The equipment consists of a Duet Detector linked to a minidisc recorder mounted on the passenger side window of the car. The car is driven at 15 mph as continuously as possible whilst recording. A GPS was also used to record the route. This method allows the detection of activity whilst covering a large area.

3.2.3 Dawn Survey

This survey is best carried out between June and October. This has been carried out as a Static and Car Survey on the site. Surveyors were looking for swarming behaviour of bats. This happens prior to the bats entering their roost and happens before Sunrise. This is a recognised method of identifying roost sites.

4 Survey Results

4.1 Dusk Surveys

Survey 1 – Dargavel House

17.07.06	Bat Activity	Species	Number of Surveyors	Weather & Timing
Front of House	Numerous Bat Passes and bats observed. Roost discovered	Pipistrelle – 55 and 45	2	Dry Full Cloud Calm 23°C
Rear of House	Small amount of passes, 4 bats observed	Pipistrelle sp	2	

Notes: The surveyors entered the house to look for signs of bats and found 30 bats either dead or alive distributed throughout the house. The roost was located in the turret of the building and bats had been gaining access through an open door at roof height. Some bats were released on site and the rest were taken to Hessilhead for rehabilitation. The open door was secured and the house checked for two nights afterwards to release any trapped bats.

Furthermore, an additional evening survey was carried out on Monday 25 September 2006 as unusual recordings had been detected at Dargavel House. This further survey to listen to social calls of the Pipistrelle species did not identify any further species present.

Survey 2 – Ruined Buildings

18.07.06	Bat Activity	Species	Number of Surveyors	Weather & Timing
Ruined White Washed Farm Buildings	20 Bat Passes Beginning at 22:22 2 Bats observed	Pipistrelle – 55	2	Dry Patchy Cloud Light 23°C
24/181 24/116B 24/116A	23 Bat Passes beginning at 22:24 1 Bat Observed	Pipistrelle - 55	2	

Notes: These buildings were chosen as single moth and butterfly wings had been observed inside by another ecological surveyor. On inspection in the daytime, only 2 or 3 single wings were found in each building and no bat droppings were found internally or externally at these buildings. In our opinion these have been left behind by dead moths or butterflies and not by a bat using the area as a feeding perch. No Brown Long Eared bats were seen, detected or recorded using this area.

Recording analysis identified 3 passes by a Myotis species at the rear of the farm buildings.

Survey 3 – Car Survey

19.07.06	Bat Activity	Species	Number of Surveyors	Weather & Timing
1 Start at Security entrance to site	35 Passes in Total	Pipistrelle – 55 and 45	2	Dry Clear Calm 18°C
2 Start at Security entrance to site	20 Passes in Total	Pipistrelle - 55	2	

Notes: Some of the recorded activity by car survey 1 was near to Dargavel House where a large maternity roost has been recorded.

Analysis of the recordings along this route have only identified Pipistrelle species as well as 3 single Myotis passes on the west side of the site adjacent to the quarry.

Survey 4 - Buffer Zone Car Survey

03.08.06	Bat Activity	Species	Number of Surveyors	Weather & Timing
1 Start at Security entrance to site. Driven from East to West	22 Passes in Total	Pipistrelle species	2	Dry Clear Calm 18°C
2 Start at Security entrance to site. Driven from West to East	21 first circuit 22 second circuit	Pipistrelle species	2	

4.3 Dawn Survey

Survey 1

03.09.06	Bat Activity	Species	Number of Surveyors	Weather & Timing
Large Ponds indicated on Appendix 7.2.4	No activity observed or detected		2	Damp Full Cover Calm 12°C
Route 1 on Appendix 7.2.4	No activity observed or detected		2	

A check of the known roost at Dargavel House was carried out during the survey. Bats were observed swarming prior to entering roost.

Survey 2

10.09.06	Bat Activity	Species	Number of Surveyors	Weather & Timing
Disused Farm Buildings	No activity observed 1 pass observed and detected	Pipistrelle species	1	Dry Clear Calm 23°C
Large Ponds	No activity observed or detected		1	
Industrial Ponds	No activity observed or detected		1	
Derelict House and Office Block at entrance	No activity observed or detected		1	

Survey 3

15.09.06	Bat Activity	Species	Number of Surveyors	Weather & Timing
Large Ponds	No activity observed or detected		1	Patchy Dry Calm 10°C
Car Route	No activity observed or detected		2	

5 Summary and Recommendations

5.1 Summary

It is likely that the large maternity roost at Dargavel is responsible for the majority of the activity around the site. The car surveys have indicated that there are bats present on the rest of the site, but not in great numbers. No further hot spots of activity were identified within the survey area to indicate that there are further roosts on site.

The Dawn Surveys have not identified any further swarming activity other than that displayed at Dargavel House by the known roost. No swarming activity was found near to or at the ponds or around any other buildings observed during these surveys.

Due to the fact that Dargavel House is not being affected by the development, then there is no threat to the roost. According to the master plan at this stage, there will also be sufficient freshwater, woodland, grassland and linear habitat remaining on site to support this roost and other foraging bats coming into the site from the surrounding area.

Although there were very few *Myotis* calls, no swarming was observed or detected by this species. It is widely accepted that locating Daubenton's roosts are extremely difficult as they are highly mobile and can use several different roosts, sometimes for very short periods. It is possible they could be using tree roosts.

It is also accepted that Brown Long Eared bats are very difficult to detect, however, there are very few structures on site that would present roosting places for these bats, although it is accepted that the foraging habitat does exist. Despite the locating of a small amount of insect wings, no other evidence was found to suggest that Brown Long Eared bats were present on site during the surveys.

5.2 Impact of the development

Due to the development being concentrated on one section of the site and the main Pipistrelle Maternity roost being identified on the edge of the development area, it is unlikely that this will have an adverse affect on the resident population within the site at present. The habitat features that exist will remain largely during and after development.

The most likely disturbance will be during construction when there will be an increased presence of machinery and personnel as well as disruption around the main identified maternity roost and possibly to linear foraging features on the site.

Although no evidence of bats was found in any of the buildings surveyed, winter usage of these buildings can not be detected during summer months and should be mitigated for during demolition and within the new development.

5.3 Recommendations

Due to the transient nature of all bat species and their seasonal use of roosts during all times of the year, all buildings that are to be demolished or refurbished are to be checked immediately prior to demolition or work commencing by a Licensed Surveyor. It is also recommended that this work is carried out in the autumn and winter months.

Any mature trees that are to be limbed or felled are checked prior to work commencing by an arborist and licensed surveyor.

All habitat types for bats are incorporated into the design of the site boundary.

Sensitive periods for the active roost i.e. maternity time have limited disturbance programmed for the area surrounding the roost at Dargavel House.

Continual monitoring of the roost during and after the development.

Features that can be enhanced or created on the site to encourage bat activity are incorporated:

Independent bat houses created on the non-residential part of the site to encourage roosting;

Selected underground sites developed for hibernating and roosting bats;

Continual monitoring of the site for 10 years.

6 Contacts and References

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References

Mitchell-Jones, A. J. & McLeish, A. P. (1999). *The Bat Workers' Manual (2nd Ed.)*. JNCC, Peterborough. ISBN 1-86207-462-X. [3rd edition in 2004]

Mitchell-Jones, A. J. 2004. *Bat Mitigation Guidelines*. English Nature, Peterborough. ISBN 1 85716 781 3. [January 2004]

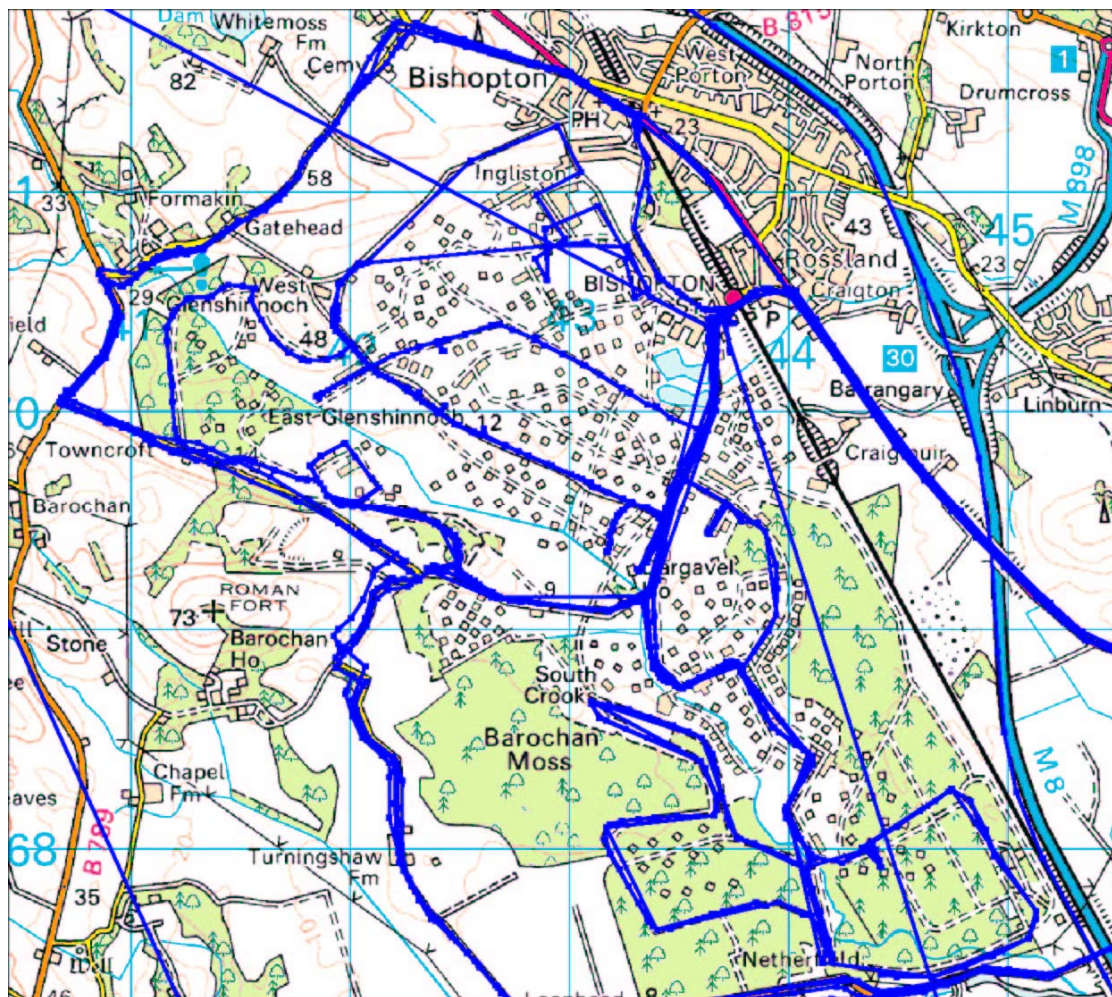
Entwistle, A.C., Harris, S., Hutson, A.M., Racey, P.A., Walsh, A.I., Gibson, S.D., Hepburn, I. & Johnston, J. (2001) *Habitat Management for Bats – A guide for land managers, land owners and their advisors*. JNCC, Peterborough. ISBN 1 86107 528 6

7 Appendices

7.1 Car Survey Routes

Car Surveys were carried out over the site and around the edge of the site to determine activity and what species were active.

Routes of Survey 3 and Survey 4



7.2 Buildings

The map below indicates the static surveys carried out on buildings

