Attachment 3

Bat Survey

Bord na Móna Technical Services
Environmental Impact Assessment:
Impact on Lesser Horseshoe Bat
(Rhinolophus hipposideros)

Proposed Development of
Clogrennane Lime Kiln at Ballybrody Quarry, Ennis, Co. Clare

by
Mary Tubridy and Associates

for
Bord na Móna Environmental Ltd
February 2005
CONTENTS

Non-technical summary

1 Introduction
   1.1 Brief
   1.2 The study area
   1.3 Bat biodiversity and the status of Lesser Horseshoe bat in Clare

2 Methodology

3 Results
   3.1 Characteristics of the receiving environment
   3.2 Impact assessment
   3.3 Mitigation

References
Non-technical summary

This report was prepared in response to a request by An Bord Pleanála for an environmental impact assessment of the proposed lime kiln to be undertaken. To this end Bord na Móna Environmental Ltd. commissioned Mary Tubridy & Associates to undertake an impact assessment of the proposed development on the Lesser Horseshoe bat (*Rhinolophus hipposideros*). This bat species is listed under Annex II of the EU Habitats Directive and is present in significant numbers at two maternity roosts both designated Special Areas of Conservation (SAC), within 2km of the development site.

Due to the limited time constraints imposed by An Bord Pleanála, effective field monitoring of the bat species was not possible. The assessment, therefore, which was undertaken in January 2005, involved field inspections of the area directly affected by the development, inspection of the two adjacent SAC designated sites, consultations with local bat experts and a review of relevant literature and records. Existing records on the status of the lesser horseshoe bat at the designated sites reveals that over the last twenty years the population is relatively stable in one and fluctuates in the other.

The assessment revealed that the site of the proposed development is of low significance for lesser horseshoe bat or other species of bats. No caves are found in the quarry and the site of the lime kiln does not support any semi-natural vegetation which would provide food for bat prey. Therefore it is of low value as a feeding area. In the absence of the development of the lime kiln its value will continue to be low.

An additional impact associated with the proposed limekiln is the increase in rock production within the existing quarry. However, the regularity of blasts will not change but the strength of blasts will rise to provide a 15% increase in output to feed the kiln.

It was concluded that these impacts will not have a significant effect on the status of lesser horseshoe bat in the designated sites in the vicinity of the site.

As a precautionary measure and in view of the importance of the nearby designated maternity roosts the following mitigation measures are recommended:

- **Avoidance of blasting during times when bats are active i.e. after dark**
- **Use of minimal lighting at night time particularly adjacent to areas with scrubby vegetation around the margins of the quarry.**
- **Summer survey (over three nights in suitable weather) to discover the relative importance of the quarry site as a commuting route for bats in the designated sites.**
- **Management of berms to promote their colonisation by adjacent woodland habitat.**

Mary Tubridy and Associates 2/2005
INTRODUCTION

1.1 Brief

A report was requested by Bord na Móna Environmental Ltd on the possible impacts of the proposed lime kiln in Ballybrody Quarry on the Lesser Horseshoe bat (Rhinolophus hipposideros). The brief for the report specified that an assessment of the proposed development should be undertaken to determine the impacts, if any, on the bat populations within the vicinity of the site. This particularly related to the proximity of the proposed development to two designated maternity roosts of the Lesser Horseshoe Bat, an Annex II species listed in the EU Habitats Directive. It also recognised that as the time constraints for the project did not allow for field work, the assessment would be based primarily on existing sources of information and a reconnaissance of suitable habitats for foraging, roosting or hibernating bats which could be affected by the development.

1.2 The study area

The site of the lime kiln is situated in a limestone quarry at Ballybrody, 5km from Corofin and 6km from Ennis along the R476. The quarry has traditionally been exploited for limestone rock. The rock contains few fractures and is of high quality for quarrying. A technical assessment carried out in 2003 concluded that major faults and steepened bed tilting are absent from the site. Caves have not been observed at the site. Current output from this quarry is 600,000 tons per year.

It is situated in a pastoral area surrounded by land containing a high cover of semi-natural vegetation. It is bounded by pasture to the south, scrubland to the west and north, a conifer plantation to the east, and the site is transected by the regional road, R476. The conifer plantation contains an extensive area of mixed woodland/hazel scrub extending 2km northeast of the site in an area known as Ballygriffy. While no conservation designation covers any part of the site it is adjacent to two designated Special Area of Conservation for Lesser Horseshoe Bat. These are Toonagh House (SAC no. 002247) and Ballycullinan (SAC no. 002246). These are situated 1km and 2km respectively from the site.

1.3 Bat biodiversity and the Lesser Horseshoe Bat in Clare

All Irish bat species are protected under the Irish Wildlife Act (1976) and the Wildlife Amendment Act (2000). While all species are listed in Annex IV species of the EU Habitats Directive 1992 (EEC 92/43) only the lesser horseshoe bat is also an Annex II species. This implies that designated sites...
SAC's of European importance should be established to ensure the maintenance of the conservation status of this species. A breeding colony of female lesser horseshoe bats totalling more than 100 individuals and/or a winter sites of more than 50 are the criteria used to designate sites as Special Areas of Conservation. Together with these statutory obligations Ireland has ratified two international wildlife laws pertaining to bats. These are The Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention, 1982) and The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention 1979, enacted 1983).

The lesser horseshoe bat (Rhinolophus hipposideros) is the only member of the horseshoe family to occur in Ireland and it supports the second largest national population in Europe. It is the smallest European horseshoe bat, and it is the most sensitive to disturbance and confined to the six counties of Mayo, Galway, Clare, Cork, Limerick, and Kerry. The lesser horseshoe population in Ireland was estimated at 12,000 in 1994 (O'Sullivan, 1994). However, a recent project undertaken by the National Parks and Wildlife Service has revealed current populations to be in the region of 9,000-10,000 (NPWS, 2003). Currently populations are highest in the south-west in County Kerry followed by County Clare. There are c. 20 designated SAC's for this species of bat in County Clare.

Designated sites are typically used as maternity roosts in summer. At summer roosting sites females gather in large numbers usually between May and September forming maternity colonies where they give birth to just one young every second year. These sites are typically derelict stone buildings with a slated roof where a bat can hang freely in the attic space. Unlike other bat species lesser horseshoes are unable to crawl and must be able to fly directly into a roost through an open window, door or chimney. As well as maternity roosts bats require feeding and commuting areas. The bats forage predominantly in deciduous woodland and riparian vegetation within c. 3km of the maternity roost (Bontadina et al. 2002 and Biggane 2003). They rely on linear landscape features such as treelines, stonewalls and hedgerows to navigate and commute from roosts to feeding sites as unlike other bat species they do not fly out in the open.

Toonagh House situated circa 1km from the quarry is a significant maternity colony roosting in the stable block of an estate. Recent records for 2004 suggest 76 bats roosting there in summer (pers comm. NPWS Conservation Ranger). The second SAC site at Ballycullinan located 2km north of the quarry is a very significant maternity colony of over 130 bats roosting in a derelict dwelling (pers comm. NPWS Conservation Ranger).

The species are very faithful to a roost site and will return to the same site each year. The nursery colony gathers in the attic space in a dark area with high temperature and humidity. Suitable summer roosting sites are becoming...
increasing difficult to find in County Clare due to the current rise in housing development and the renovations of previously derelict buildings (Biggane, 2004).

In autumn - early winter, September to November, the bats leave the maternity roost and go to hibernation sites for the winter. In contrast to maternity roosts, few of the winter hibernation sites are known in Ireland. These hibernation sites are structures which maintain a constant low temperature throughout the winter, typically caves, souterrains, cellars and icehouses. However, the species does not hibernate throughout the entire winter but will arouse and feed during mild winter nights when temperatures reach 10°C and insects are active. During this time they may also return to the maternity roost for short periods (Biggane, 2003).

The nearest known hibernation site is about 5km south-east of the quarry, Ballyallia cave, which has ~30 hibernating lesser horseshoe bats each year. There are numerous caves and sink holes adjacent to the designated sites; four of these are 1km south of the Quarry and two are about 4km north west. However none of these caves have lesser horseshoe bats recorded in them.

Lesser horseshoe bats are very sensitive to disturbance and normally do not occupy the same building as humans. The major threats to this species are

(1.) loss of suitable summer and winter roosting sites due to the demolition or renovation of derelict buildings for human occupation;
(2.) loss of commuting routes linking roosts to foraging sites and
(3.) loss of suitable foraging sites.
2 METHODOLOGY

Field work, consultations and literature review were carried out by Dr Sinead Biggane. The assessment was prepared jointly by Drs Sinead Biggane and Mary Tubridy.

An initial assessment of the value of the local environment as feeding or commuting areas was assisted by an examination of Discovery Series Maps Nos. 57 and 58 and a recent colour aerial photograph of the quarry and its environs. A further examination was carried out during a site visit on Tuesday 25th January 2005. The area for development was surveyed with quarry manager Mr. Martin Tierney. The aim of that assessment was to assess the potential value of the area as a foraging site for bats and the consequences for bat populations such this area become unavailable as a feeding ground. The SAC sites in question were visited to assess whether adequate hedgerows/treelines are present to connect these roosts to the quarry and the possibility of the bats flying to this site.

The current and previous Conservation Rangers in charge of this site were contacted for information on recent emergence counts at both maternity roosts. Bat expert Dr. Kate McAney (The Vincent Wildlife Trust) was contacted for her comments on these sites and the likely impact of the development.

The impact assessment was informed by an awareness of the current significance of the site for the Lesser horseshoe bat through information obtained from the literature and consultations, details of the impact of the development provided in maps, written accounts and consultations and the authors previous experience of similar development.
3 CHARACTERISTICS OF THE RECEIVING ENVIRONMENT

The quarry, including the proposed site for the lime kiln operation, is of low value as a habitat for Lesser Horseshoe bat.

As the quarry does not contain caves it is unlikely to support any areas suitable for winter hibernation.

The quantity and quality of this vegetation which is predominantly scrub (blackthorn, hawthorn, bramble, hazel etc) does not appear suitable as an actual foraging destination for the lesser horseshoe bats as the species prefers mature broadleaved woodland and riparian habitats (Bontadina, 2002; Schofield, 2002 and Biggane, 2003). It may be used as a commuting route by bats travelling from the roost to suitable feeding areas. However this would have to be confirmed by survey work.

A review of the existing information on the status of the maternity roosts suggests that these sites are of major significance for Lesser Horsehoe bat in Clare.

Counts at both sites for 2004 were 76 at Toonagh and 135 at Ballycullinan. If the overall number of the species in Ireland is 10,000 and 3,000 in Clare then 2% of the national population and 7% of the Clare population is found in these two sites. The continuous presence of such large populations in this area may suggest that quarrying has not had a significant impact on summer activity.

Numbers have fluctuated greatly at Toonagh due to local impacts on site management over the last ten years but have stabilised in the last two years. Numbers at Ballycullian have been consistently rising from 60 in the 1980’s to their present level. There is no information on the winter hibernation sites used by these populations. Neither has survey work been carried out on the commuting routes and foraging habitats used by the lesser horseshoe bats at Toonagh and Ballycullinan.

An assessment gained through the site visit, examination of the aerial photograph and Discovery Series maps Nos. 57 and 58 suggest that Lesser Horseshoe bats from both sites are more likely to commute to and forage in woodland lying 2-3km east of these roosts in the area known as Ballygriffy woods north-east and east of the quarry. This is an extensive area of mixed woodland with associated rivers, lake and riparian habitats and lies within the recorded foraging range 0.44-3.22km recorded for the species (Bontadina,
Clogrennane Kiln Ballybrody, Co Clare

2002 and Biggane, 2003). Commuting to this location may involve use of the semi-natural vegetation around the margin of the quarry.

Only a thorough investigation of the activity of both colonies in summer completed by a bat expert could provide an assessment of the nature and significance of the marginal areas of the site to bats. Such a study would involve following the bats on foot in summer over a series of nights using a bat detector and pinpointing which hedgerows are used for commuting and what direction the bats are heading.
4 IMPACT ASSESSMENT

4.1 Nature of the development

The development involves the construction of a number of new buildings on site and associated site works. Developments include improving an internal access road, levelling of the site for lime kiln etc, erection of a fence to separate lime kiln from remainder of site, the construction of a lime kiln, blower house, heavy fuel oil tanks, silo storage, gas oil tank, conveyors and a three truck bay loading structure. Using materials cleared from the site, berms, 4-5 m high and 1-20 m wide will be constructed along the eastern and southern boundaries. The site is currently clear of vegetation, therefore no semi-natural vegetation will be cleared to facilitate these building and associated site works.

As the lime kiln will require 108,000 tonnes of rock per year and with the quarry currently produces 600,000, there will be a 15% increase in output. The increased volume of rock will be produced by increasing the size of the regular blast, which currently takes place every three weeks. Despite the increase in blast size, the overpressure and vibrational levels will be maintained to the correct standards (12mm/sec vibration and 125db overpressure).

The conversion of limestone into calcium oxide will take place in the kiln giving rise to potential discharges of particulate matter. These discharges will be subject to EPA licensing.

4.2 Significant impacts

No significant impacts will result from these developments as this preliminary assessment suggests that this site is not of significance to the population of Lesser Horseshoe bats in the maternity roosts in the nearby designated sites.

The most important individual sites in the locality are those designated roosting areas and the feeding areas offered in the vicinity of Ballygriffy Woods.

The removal of small amounts of semi-natural vegetation may have an effect on the commuting routes used by Lesser Horseshoe bats. However in the absence of a summer it is impossible to assess the significance of that impact.
Noise pollution and increase in vibrations may have a negative affect on the local Lesser Horseshoe populations especially to Toonagh which is closest to the activity. However the continued presence of a high number of bats at this site suggests that the population has not been affected by quarrying. No information exists on the potential impact of the emissions resulting from the presence of an operational lime kiln.

5 MITIGATION

While this study has not revealed any evidence for significant negative impacts to the local populations of Lesser Horseshoe bats it is recommended that the development incorporates the following mitigation measures as 1) the nearby sites are of major significance and 2) timing did not allow for the full characterisation of the site.

These measures relate to landscaping, operations and monitoring.

5.1 Landscaping

Existing scrub habitats around the quarry should be maintained to act as a buffer against disturbance to the activity of bats around the site. This semi natural vegetation should not be removed directly or indirectly (by building berms on top of it) unless required for essential quarry operations.

All berms should be planted with native species commonly found near the site such as hawthorn, blackthorn to increase the amount of semi-natural habitat. The plants used should be sourced locally.

5.2 Operations

Blasting should only occur during daylight hours to avoid disturbance to foraging bats.

Scrubby areas with semi-natural vegetation should not be lit at night to avoid disturbance to foraging Lesser Horseshoe bats. Overnight lighting should be minimised on site.

5.3 Further research

The significance of the quarry as a commuting route should be clarified by carrying out a summer survey. If this survey showed that bats were selectively using the area in the vicinity of the lime kiln then further mitigation measures may be necessary. A summer survey should be carried out over three nights at each roost to discover the relative importance of

Mary Tubridy and Associates 2/2005
Clogrennane Kiln Ballybrody, Co Clare

community routes used by the bats in the vicinity of the lime kiln. Bats should be followed on foot using a bat detector to pinpoint which hedgerows are used for commuting and in what direction the bats are heading.
References


NPWS (2003) Lesser horseshoe bat database


Personal Communication

Mr. Bob Steede, Conservation Ranger, NPWS, Corofin Clare
Dr Kate McAney, The Vincent Wildlife Trust, Donaghpatrick, Headford, Co Galway.

Mary Tubridy and Associates 2/2005