Appendix 5.4. Bat Surveys Report, 2020

BAT SURVEYS CONDUCTED AT MORTARSTOWN WASTE WATER TREATMENT PLANT AND PUMPING STATION, CARLOW

Report Prepared for
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ABSTRACT

Structure:	Mortarstown Waste Water Treatment Plant and Pumping Station, Carlow
Grid Reference:	Mortarstown Waste Water Treatment Plant S715 747 Pumping Station S715 756
Bat species Present:	Soprano pipistrelle, Leisler's bat (treatment plant) Soprano pipistrelle, Common pipistrelle & Leisler's bat (pumping station)
Proposed Works:	Mortarstown WWTP Replace existing inlet works with new inlet works Replace existing circular stormwater holding tank Two new rectangular primary settlement tanks Extension to existing blower building Replace existing two final settlement tanks Ancillary site works Kilkenny Road Pump Station Replace existing foul pumps with 2 new foul pumps Replace existing storm water pumps with 2 new pumps Install new stormwater overflow screen + ancillary site works
Impact on Bats:	There will be no impact on bats.
Bat Surveys by:	Caroline Shiel
Dates:	29th September 2020 & 5th November 2020

CONTENTS

1. SUMMARY

I was contracted by Julie Larkin of Atkins Global, to conduct bat surveys on the site of Mortarstown waste water treatment plant and pumping station. The waste water treatment plant is situated in Mortarstown townland on the southern side of Carlow town, whereas the pumping station is situated immediately west of the R448 Kilkenny Road. There are plans to extend the area of both the waste water treatment plant and the pumping station.

The sites were first surveyed for bats on 29th September 2020. Daylight surveys were confined to inspections of the exteriors of buildings on site, due to covid 19 restrictions. Internal surveys of all buildings will be conducted in Spring 2021. Overnight bat activity was assessed by placing a remote Songmeter 4 bat detector at both sites, set to record bat calls from dusk until dawn.
On 29th September 2020 it was not possible to survey the area of the proposed extension area to the west of the existing Mortarstown site due to access issues. This area was surveyed on 5th November 2020. The survey was confined to assessing the area for potential bat roosts and foraging areas. It was too late in the year to conduct bat activity surveys (ie after September 30th).

2. AIMS OF BAT SURVEY

(a) To determine the importance of the sites for bats.

(b) To assess the impact of the proposed extension works on bats using the sites.

(c) To make recommendations in order to reduce the impact of extension works on bats using the sites.

3. INTRODUCTION

3.1 Bat Species

Bats belong to the Order Chiroptera and to date nine species are recorded as resident in Ireland. These nine species are divided into two families – Family Vespertilionidae which contain nine of our Irish species (Daubenton's bat *Myotis daubentonii*, Natterer's bat *Myotis nattereri*, Whiskered bat *Myotis mystacinus*, Leisler's bat *Nyctalus leisleri*, Long-eared bat *Plecotus auritus*, Soprano Pipistrelle *Pipistrellus pygmaeus*, Common Pipistrelle *Pipistrellus pipistrellus* and Nathusius Pipistrelle *Pipistrellus nathusii*) and one species in the family Rhinolophidae –the Lesser Horseshoe bat *Rhinolophus hipposideros.*
Brandt's bat *Myotis brandii* has only been recorded once in Ireland from a site in Co. Wicklow and is classified as a vagrant. In 2013 a single male Greater horseshoe bat *Rhinolophus ferrumequinum* was recorded in Co. Wexford. This bat was also considered to be a vagrant. During the field season of 2020 recordings were made of a Greater horseshoe bat in Co. Wicklow. Futher investigations are on going.

3.2 Legislation

The serious decline in bat populations both in Ireland and across Europe has led to conservation measures and appropriate legislation being drawn up and implemented in an attempt to stabilise population numbers. It is estimated that bat populations across Europe

have decreased by up to 60% in the last 30 years. As they are highly specialised animals, bats serve as biological indicators and are often amongst the first animal species to show signs of population change due to the activities of man. Destruction of roosts and foraging areas, coupled with the widespread use of pesticides, are the key reasons for the decline in numbers of bats in Ireland. Efforts should be made to retain known bat colonies and methods to lessen disturbance to these animals should be incorporated into any development.
Bats' dependency on insects has left them vulnerable to habitat destruction, land drainage, agricultural intensification and increased use of pesticides. Their reliance on buildings has also made them vulnerable to building repairs and the use of chemicals for timber treatment. Roosting or hibernation sites in caves, mines, trees and disused buildings are also often lost to development.

Irish Legislation

Wildlife Act 1976 – In the Republic of Ireland, under Schedule 5 of the Wildlife Act 1976 all bats and their roosts are protected by law. It is an offence to disturb either without the appropriate licence. This Act was further strengthened by the Wildlife Amendment Act 2000.

E.U.Legislation

Under the Habitats Directive 1992 (EEC 92/43), each member state of the E.U. was requested to identify habitats of national importance and priority species of flora and fauna. These habitats are now designated as Special Areas of Conservation (SAC). In Ireland, all bat species, except one are classified as Annex IV species under the Habitats Directive. Annex IV species are species in need of strict protection. The exception is the Lesser Horseshoe bat which is an Annex II species (Priority Species). Annex II species are species requiring the designation of Special Areas of Conservation specifically for their protection. All species of bat in Ireland are strictly protected under the Habitats Directive to include deliberate disturbance of these species, particularly during the periods of breeding, rearing and hibernation. It also specifies deterioration or destruction of breeding or resting places.

International Legislation

Ireland has ratified two international wildlife laws pertaining to bats

(a) The Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention, 1982) – part of this convention stipulates that all bat species and their habitats are to be conserved.
(b) The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention 1979, Enacted 1983). This was instigated to protect migrant species across all European boundaries.

4. PROPERTY:
Mortarstown Waste Water Treatment Plant
Grid Reference: S715 747
Mortarstown WWTP is situated on the southern side of Carlow town between the R448 regional road and Green Road. The site entrance is on the Green Road. The current site consists of several buildings and settlement tanks. The buildings include the administration building/site office and storage sheds built in red brick, and a large red brick building, housing inlet works, at the north western corner of the existing site. There are three large circular settlement tanks in the centre of the site.

Figure 1 – aerial view of layout of Mortarstown Waste Water Treatment Plant

The proposed extension area lies to the west of the existing site. It is currently surrounded by security fencing. Access to the area of the proposed extension area was not possible on the date of the first survey on 29th September 2020.

Kilkenny Road Pumping Station
Grid Reference: S715 756

Figure 2 - Pumping station on Kilkenny Road within red boundary. The pumping station lies immediately east of the River Barrow. The red star indicates the position of the remote Songmeter.

5. SURVEY METHODOLOGY

Daylight Inspections

On 29th September 2020, a daylight survey of the buildings at Mortarstown Wastewater Treatment Plant was conducted. This survey was confined to searching for signs of bats on the external walls of the buildings. It was not possible to conduct internal surveys due to covid restrictions.

The external walls of the buildings were examined for evidence of bats using a high powered torch, paying particular attention to any crevices around fascias and soffits. Window sills were inspected for possible accumulations of droppings.

A daylight survey was also conducted of the two small buildings on the site of the pumping station. External walls were examined for any signs of bats.

Bat Detector Surveys

As it was not possible to again access to either site during the night, a single Songmeter 4 remote bat detector was placed on each of the two sites to record calls from dusk to dawn on 29th September 2020 to 30th September 2020.

The bat detectors were set to record from approximately 20 mins before sunset (Sunset = 19.08) until 20 mins after sunrise (Sunrise = 07.27).

Figure 3 - Mortarstown Waste Water Treatment Plant – position of remote detector indicated (star). The location of the proposed extension is indicated within the red lines

At Mortarstown Waste Water Treatment Plant the Songmeter detector was placed on the security fence on the eastern side of the proposed extension area (Figure 3). The microphone was positioned to face towards the extension area.
At the Pumping Station the Songmeter detector was placed on steps between the two buildings in the centre of the site (Figure 2).

6. SURVEY CONSTRAINTS

Weather was favourable on the evening of the survey but heavy rain commenced at approximately 23.00. Weather improved at approximately 05.00 and bats became active again.

7. SURVEY RESULTS

7.1 Daylight survey

All buildings on site were examined externally for evidence of bat usage. No signs of bats were recorded at either Mortarstown WWTP or the Pumping Station.

7.2 Bat Detector Survey

No hand-held bat detector surveys were conducted as access was not permitted to either site after dark. Bat activity was recorded by means of remote Songmeter4 detectors.

On the evening of 29th September 2020 weather conditions were favourable. Weather = 50% overcast, calm & dry. Temp = 15 C. However, heavy rain commenced at approximately 23.00. This is reflected in the results of the recordings where no bats were detected flying during the period of heavy rain fall. Rain eased towards dawn and bats were recorded flying again.

Table 1 – **Results from Songmeter placed on the boundary fence of proposed extension area at Mortarstown WWTP (Sunset = 19.08, Sunrise = 07.27)**

Time	Extension Area Mortarstown Waste Water Treatment Plant
19.46	Soprano pipistrelle
19.47	Soprano pipistrelle
20.10	Leisler's
20.32	Leisler's
06.02	Soprano pipistrelle

Total no. of calls = 5

Only 5 bat calls were recorded overnight in the area of the proposed extension – three Soprano pipistrelles and two Leisler's bats. These bats were all commuting. No sustained feeding was recorded.
This section of the proposed extension area along the boundary fence is relatively exposed. Other, more sheltered areas of the extension area may be favoured by bats.

Table 2 – Results from the Songmeter placed at the pumping station (Sunset = 19.08, Sunrise = 07.27)

Time	Pumping Station
19.15 - 19.30	1 Soprano pipistrelle (19.29 – first bat)
19.30 - 19.45	12 Soprano pipistrelle, 2 Common pipistrelle + many pip social calls
19.45 - 20.00	38 Soprano pipistrelle, 2 Leisler's
20.00 – 20.15	46 Soprano pipistrelle, 1 Common pipistrelle
20.15 – 20.30	13 Soprano pipistrelle
20.30 – 20.45	1 Soprano pipistrelle
20.45 – 21.00	0 calls
21.00 – 21.15	1 Soprano pipistrelle
21.15 – 21.30	3 Soprano pipistrelle
21.30 – 21.45	3 Soprano pipistrelle
21.45 – 22.00	1 Soprano pipistrelle
22.00 - 22.15	1 Soprano pipistrelle
22.15 – 22.30	0 calls
22.30 – 22.45	1 Common pipistrelle
22.45 – 23.00	Rain
23.00 – 05.15	Rain
05.15 – 05.30	1 Soprano pipistrelle
05.30 – 05.45	2 Soprano pipistrelle
05.45 – 06.00	Light Rain
06.00 – 06.15	Light Rain

06.15 – 06.30	Light Rain
06.30 – 06.45	Light Rain
06.45 – 07.00	Light Rain
07.00 – 07.15	6 Soprano pipistrelle (07.08 – last bat)

Total no. of calls = 135 (129 Soprano pipistrelle, 4 Common pipistrelle, 2 Leisler's)

There was constant activity of Soprano pipistrelles from 19.29 recorded flying and foraging at the pumping station up until heavy rain commenced at approximately 23.00 when activity ceased. A small number of Common pipistrelles and two Leisler's bat calls were also detected. Low levels of bat activity were recorded prior to sunrise when rain fall eased.
The pumping station is located immediately beside the River Barrow and has a shelter belt of semi-mature willow along the river bank. The presence of the river and semi-mature trees represent ideal foraging conditions for bats.
It was not possible to gain access to the pumping station site to conduct dusk and dawn hand held bat detector surveys. Therefore it has not been confined if bats are roosting in either of the two buildings on site.

7.3 Site Visit on 5th November 2020
Mortarstown Waste Water Treatment Plant
Access was arranged to survey the proposed extension area at Mortarstown WWTP. A site visit was conducted on 5th November 2020 to assess the site for potential roosting sites and potential foraging areas. It was too late in the season to conduct bat detector surveys (ie after September 30th).
Access to the extension area was gained via a gate on a slip-road off the R448 road, on the western side of the site. The boundary of the site was walked and surveyed for trees with roosting potential for bats. No trees on the site were considered to have potential as bat roosting sites. There are no buildings on the site.
A single storey dwelling house backs onto the north western portion of the site as shown by blue star in Figure 4. There is a row of very mature Horse chestnut trees to the front of this house. These trees have ideal crevices for bats are were assessed as having high potential for roosting bats. There are also potential roost sites in the dwelling house roof and sheds. However, the tenant reported no sightings of bats in the internal roof space of the dwelling house. He reported seeing a lot of bat activity in summer months on the slip-road in front of the house and in the garden.
A bat detector survey should be conducted during 2021on the premises to establish if bats are roosting on site.

Figure 4 – showing position of single storey dwelling house backing onto site (blue star)

Pumping Station
Kilkenny road pumping station was also resurveyed on 5th Nov to examine the two small buildings for roosting potential for bats. The red brick building was considered to have medium potential for bats under the roof. The cement building was assessed as having low potential for roosting bats.

8. RECOMMENDATIONS AND MITIGATION MEASURES

8.1 Derogation Licence

The proposed extension project to Mortarstwon Waste Water Treatment Plant and Pumping Station currently does not require a derogation licence from the National Parks and Wildlife Service.

8.2 Future Works

If timing allows, additional hand-held bat detector surveys should be conducted in the vicinity of the dwelling house on the slip-road off the R448 and at the site of the pumping station.
These bat detector surveys have been scheduled for 2021.

9. BIBLIOGRAPHY

Bern Convention (1982) Convention on the Conservation of European Wildlife and Natural Habitats.

Bonn Convention (1979) Convention on the Conservation of Migratory Species of Wild Animals. In particular: The Agreement on the Conservation of Populations of European Bats.

Corbett, G. B. and Harris, S. (1991) Handbook of British Mammals. 3rd Edition, Blackwell Scientific, Publications.

Council of the European Communities (1992). EC Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora

Fairley, J. (2001) *A basket of weasels*. Published Privately, Belfast.

Fossitt, J. (2000) *A Guide to Habitats in Ireland*. Kilkenny: The Heritage Council.

Hayden, T. and Harrington, R. (2000) *Exploring Irish Mammals.* Town House, Dublin.

Hutson, A. M. (1993) *Bats in Houses*. The Bat Conservation Trust.

Kelleher, C. & Marnell, F. (2006) Bat Mitigation Guidelines for Ireland. *Irish Wildlife Manuals,* No. 25. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland

Mitchell-Jones, A. J. and McLeish, A. P. (2004) *Bat Workers' Manual*, 3nd Edition, JNCC.

O' Sullivan, P. (1994) Bats in Ireland. *Special Zoological Supplement, The Irish Naturalists'* Journal.

Racey, P.A. and Swift, S.M. 1986 The residual effects of remedial timber treatment on bats. *Biol. Cons*. **35**: 205-214.

Russ, J. (1999) *The Bat of Britain and Ireland – Echolocation calls, sound analysis and species identification*. Alana Ecology Ltd.

Whilde, A. (1993) *Threatened mammals, birds, Amphibians and fish in Ireland, Irish Red Data Book 2: Vertebrates*. Belfast, HMSO.

Wildlife Act 1976 pp 1-209. Dublin: Government Publications.

Wildlife Amendment Act 2000. Dublin: Government Publications.

10. PHOTOGRAPHS

Photo 1 – Administration building and office

Photo 2 – red brick sheds to rear of administration building

Photo 3 – view from administration building to west of settlement ponds

Photo 4 – view south from administration building. Small red brick building

Photo 5 – view east towards entrance to site. Red brick building adjacent to road

Photo 6 – large red brick in-flow building at north western corner of site

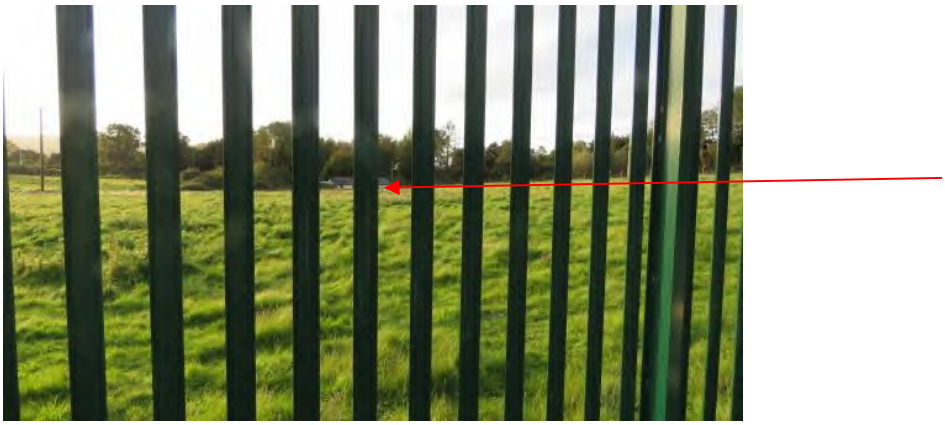

Photo 7 – view of proposed extension area. Position of house on R448 indicated

Photo 8 – position of Songmeter mounbted on fence indicated

Photo 9 – view east from boundary fence back towards administration building

Proposed Extension Area to Mortarstown WWTP

Photo 10 – entrance to proposed extension area from slip road off R448

Photo 11- view of slip-road looking north with two dead elm trees on site boundary

Photo 12 – view of slip-road looking north. Good foraging potential for bats

Photo 13 – semi-mature sycamore tree on western side of slip-road. Low roosting potential for bats

Photo 14 – single storey dwelling house on slip-road backing onto proposed extension area

Photo 15 – close up of front elevation of roof of dwelling house

Photo 16 – mature coppiced horse chestnut trees in front garden of dwelling house

Photo 17 – crevices with high potential for roosting bats in Horse Chestnut trees

Photo 18 – southern boundary of garden and proposed extension area with some mature trees

Photo 19 – Area of brambles to rear of dwelling house used for cover by fox

Photo 20 – Rear of dwelling house backing onto proposed extension area

Photo 21 – Rear of dwelling house backing onto proposed extension area. Roof appears to have potential access points for bats

Photo 22 – boundary fence between existing Mortarstown site and proposed extension area

Photo 23 – Boundary fence between community school and southern side of proposed extension area

Photo 24 – south west corner of proposed extension area

Pumping Station

Photo 25 – small red brick building housing pumping equipment

Photo 26 – rear of small red brick building housing pumping equipment

Photo 27 – potential roosting sites under roof

Photo 28 – showing Songmeter detector in position on steps

Photo 29 – small cement building at pumping station

Photo 30 – no obvious roosting potential for bats in cement building

Photo 31 – showing proximity of pumping station to River Barrow

Photo 32 – Western boundary fence along River Barrow with semi mature willow along river banks