



ENERGY ISLAND BORNHOLM

SCOPE OF WORK WP-H – BATS

ENERGINET

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1. SUMMARY

All adequate existing data and information on bat species for the purpose will be collected from the area surrounding the project area. The information includes both relevant information from land areas as well as survey of relevant wind farms and pre wind farm monitoring programs.

In 2021 to 2023 a number of field surveys will be carried out in the project investigation area and on the surrounding coastline in Denmark, Sweden and Germany.

The survey includes four parts:

- *LIDAR-Bouy Survey*
- *C-Pod Bouy Survey*
- *Offshore Vessel based Survey*
- *Land-based Survey*

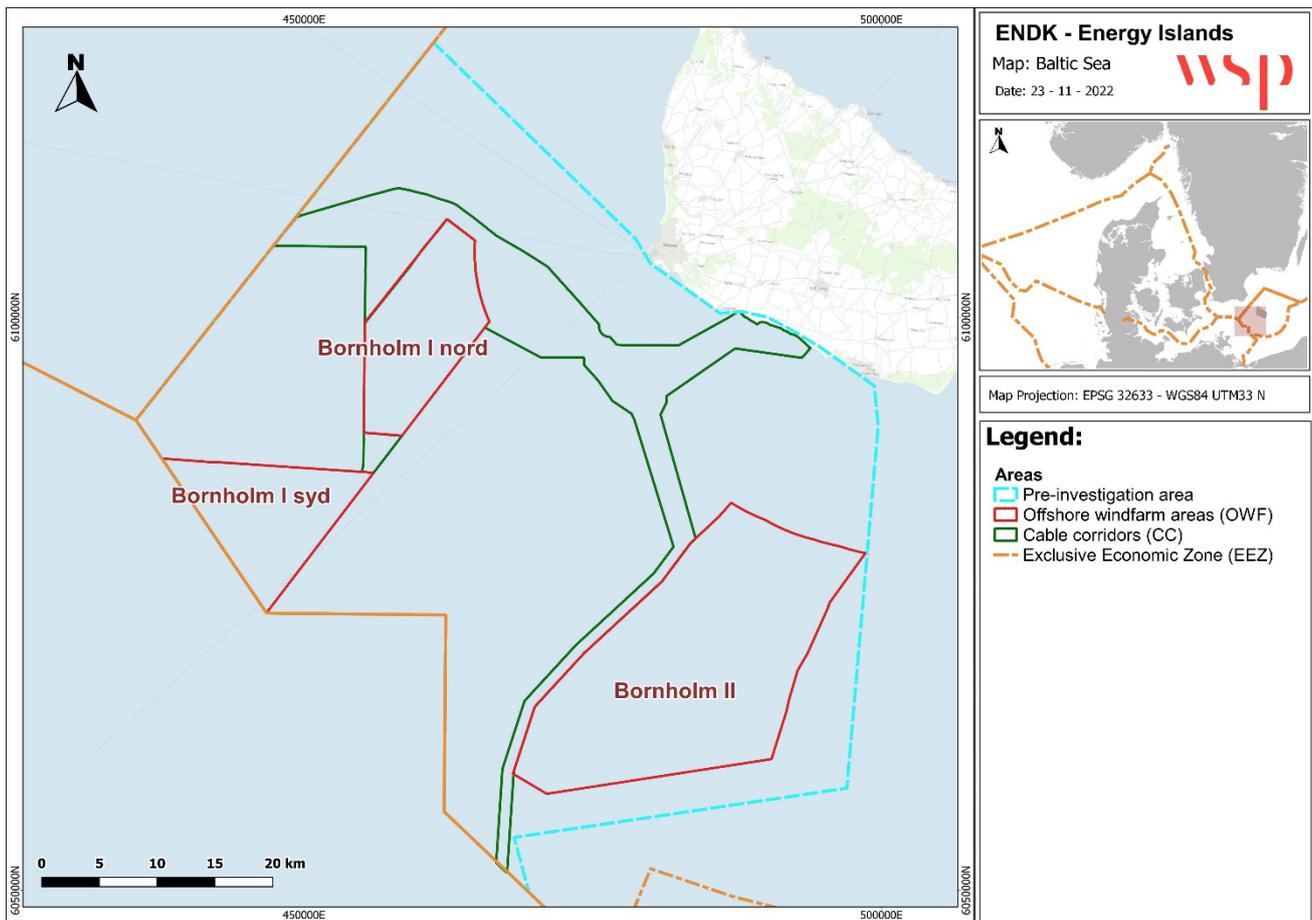
All information will be evaluated and compared with available existing sources and scientific publications addressing wind farm impacts on bats and knowledge of baseline conditions for relevant bat species and populations related to the investigation area.

2. INTRODUCTION

The energy islands mark the beginning of a new era for the generation of energy from offshore wind, aimed at creating a green energy supply for Danish and foreign electricity grids. Operating as green power plants at sea, the islands are expected to play a major role in the phasing-out of fossil fuel energy sources in Denmark and Europe.

After political agreement on the energy islands has been reached, the Danish Energy Agency plays a key role in leading the project that will transform the two energy islands from a vision to reality. The Energy island projects are pioneer projects that will necessitate the deployment of existing knowledge into an entirely new context.

In the Baltic Sea, the electrotechnical equipment will be placed on the island of Bornholm, where electricity from offshore wind farms will be routed to electricity grids on Zealand and neighbouring countries. The offshore wind farms will be constructed approximately 15 km south-southwest of the coast and will be visible, but not dominate the horizon. The turbines off the coast of Bornholm will have an installed production capacity of up to 3,8 GW including overplanting. The two planned windfarm areas for the Energy Island Bornholm are shown in Figure 1.



There is a rising concern about the impact from wind farms on population of bats. The potential risk for bats includes direct collision as well as indirect because of the high pressure near the wind turbine blades.

Offshore wind farms are generally considered less risky for bats because only few bats are expected to feed in long distance from the coast. Exception is area with migrating bats.

The area of the southern Baltic Sea is known as an important area for bat migration. Large number of Nathusius Bat and Noctule Bats are known to migrate from Finland and Sweden through Denmark to Germany, Benelux countries and France. However, the exact pattern of this migration route is not known.

Based on the general knowledge of bat migration around the Baltic it is not unlikely that at least some bats will use a migration route over Bornholm to and from Rugen.

Therefor the present setup aims on describing intensity of bats migrating and the timing of the migration during the autumn and spring.

3. AREA OF INVESTIGATION

The aim of WP H is to collect and analyze data to assess the spatial and seasonal presence of bats.

The activities will make it possible to assess the ecological importance of the project area and to recognize and highlight potential conflicts by constructing and operating wind turbines in the two project areas.

A combination of survey techniques will be applied at several sites in Denmark, Sweden, Germany, at land as well in the marine environment.

WSP and BioConsult SH will carry out surveys at the sites indicated in Figure 1.

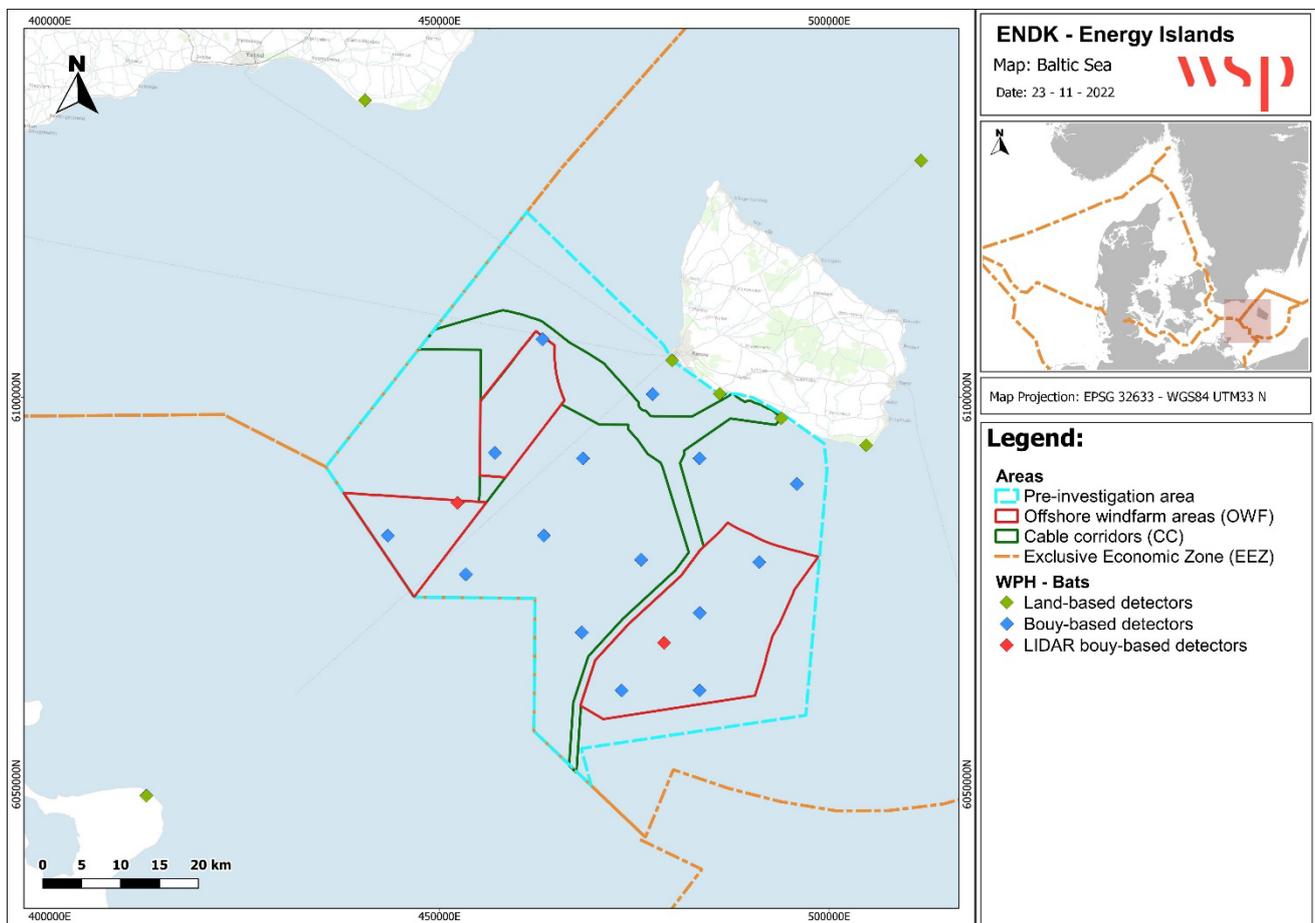


Figure 2 – Map showing all bat detector used for the monitoring, the land based (green), the LIDAR buoy based (red) and the C-POD buoy based (blue).

4. METHODOLOGY

The field survey programs for bat detection offshore and coastal are inspired by methods developed by e.g., *BSH (Bundesamt für Seeschifffahrt und Hydrographie, October 2013) in StUK4 (Standard Investigations of the impacts of Off-shore Wind Turbines in the Marine Environment)*, and *Technical requirements to the monitoring of Bats (TA nr. A04, ver. 3, latest review 30.05.2018, DCE University of Aarhus)*. However, there are no standard survey methods developed for offshore bat survey and it is recommended that different methods are applied and tested during the project.

The surveys will mainly be focused on the most likely migratory seasons; spring (mid-March to mid-June) and autumn (August to October). Due to the uncertainty of bat activity offshore and the risk of foraging bats also in the summer season the offshore monitoring is carried out from March to October.

LIDAR-Buoy Survey

During 2022 bat detectors will be placed on the LIDAR buoy in each project area (not by WSP). The bat activity around these LiDAR buoys will be monitored by the consultant in charge of the LIDAR buoys. The exact positioning of the LIDAR buoys is yet to be decided. When the data from these buoys are available, they will be analyzed together with the data from the C-Pods buoys to describe and quantify the abundance (activity) of the bats within the project area and will be included in the overall assessment of the bats.

Buoy based survey

In addition to the LIDARs, the C-pod station will be used as well. Bat detectors will be attached to the C-pod buoys used for the marine mammal survey (by WSP). The detector will collect data on all bat passes on 15 positions (Figure 2) in the project areas in spring, summer and autumn (March to October) in 2022 and 2023. The service of the bat detector will be coordinated with the service of the marine mammal's data collection surveys. During the maintenance of each individual C-POD station the crew will also replace the bat detectors. During the marine mammal survey in March 2022 the bat detectors will be mounted on the buoys by a dedicated bat detector specialist. Thereafter the maintenance of the bat detector will be carried out by the marine mammal survey crew. The bat buoy survey will include data collection from March 2022 to October 2023.

Offshore Vessel Based Survey

Several vessels are expected to be in the project area for different purpose throughout the years of survey (2022-2023). Based on the schedule for the different surveys (geotechnical surveys, bird surveys and benthic surveys) the most suitable vessels are selected for the bat survey. On these vessels bat detectors are installed (Figure 3). In practice up to two sets of bat detector are available for the monitoring and these will be installed on the vessels in the harbor prior to departure (between March and October). The bat detector will be programmed so they can run completely independent and with no assistance from the staff onboard the vessels. These bat detectors will record the ultrasound from bats around the vessel and save the recording for later analysis. The bat detector will also record the position of the vessel and the time. Weather conditions (wind direction, wind speed and temperature are taken from the vessels logbook).

The vessel-based bat survey will include data collection from March 2022 to October 2023

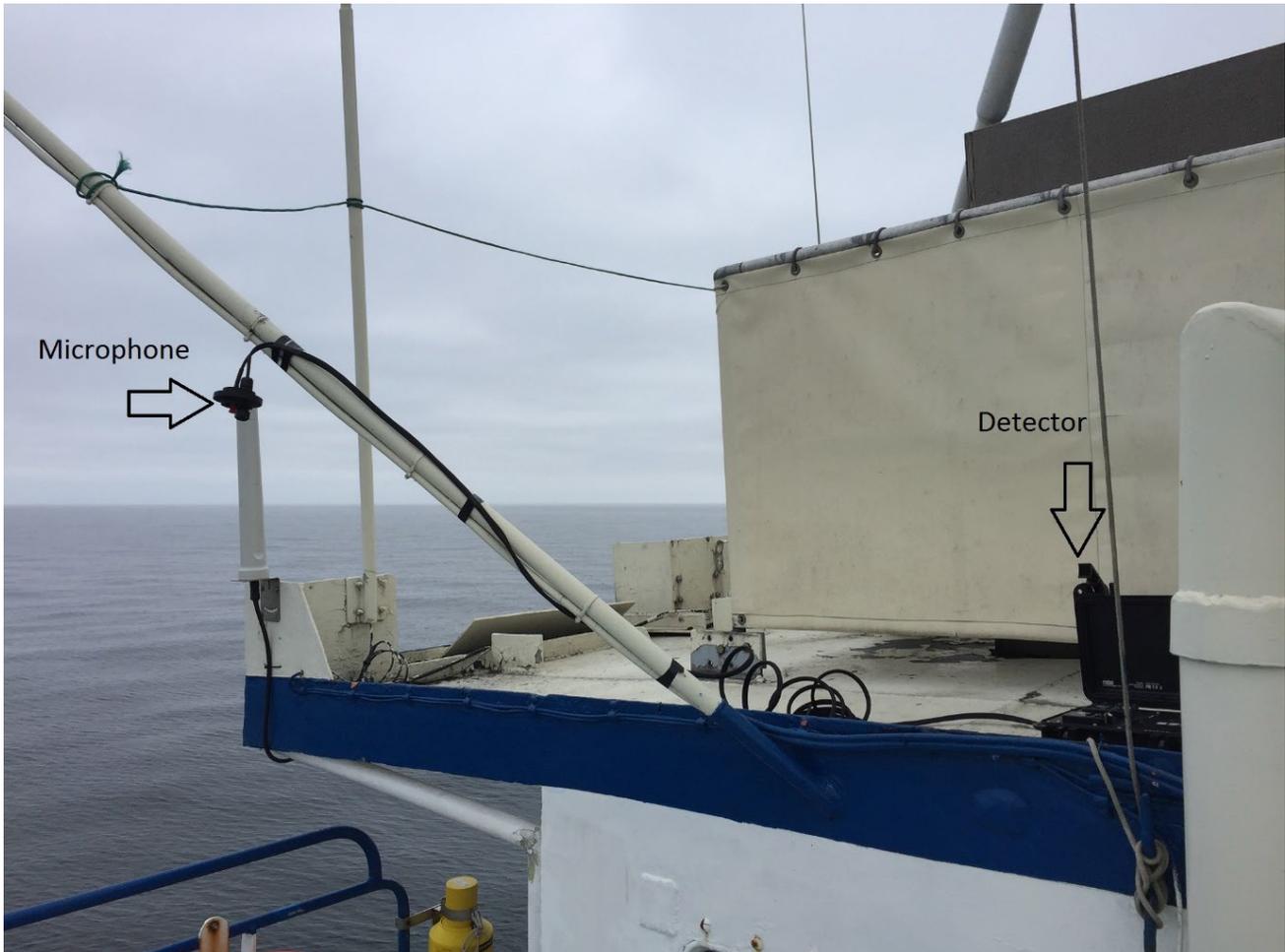


Figure 3 - Automatic bat detector mounted on a survey vessel.

Land-based Survey

Concentration and activity of bat on land may be the strongest indicator for migration of bats. During spring (March-June) and autumn (August-October), the migrating bat species concentrate along the coast, waiting for the right weather condition for crossing the sea. Therefore the activity level measured along the coast may clearly indicate when the sea crossing takes place.

These detectors (Figure 4) will monitor the activity of the bats throughout the season for bat migration to describe and quantify the number of bats waiting near the coast for the ideal weather conditions.

Based on the existing knowledge, coastal areas of bat migration are selected, and bat detectors are installed for long term monitoring. Automatic bat detectors will be installed on the coastal areas around points of expected exit-positions. Suggested sites for six detectors are shown on Figure 2.

Sites onshore on the southern coast of Bornholm will be monitored by a single detector for each site, whereas the detectors on Rügen, Christiansø and Sweden will be double detectors to ensure the data safety.

After analyzing the first-year data, some of the land-based bat detectors might be moved to new location to ensure optimal data collection, but as it looks right now with some data from the fall 2021 – the land based detectors on Bornholm and Christians Ø will stay as they are.

The land-based survey will include data collection from March 2022 to October 2023.



Figure 4 – Bat detector on the southern coast of Bornholm

5. DELIVERABLES

The deliverables under WP-H Bats will include:

- Scoping report
 - Environmental Baseline Note
 - Technical Report
-

5.1 BAT SURVEY SCOPE REPORT

This document constitutes the bat survey scope report. First draft is delivered to Energinet by the end of January 2022, second draft will be delivered after a meeting and acceptance of the program by Energinet. This report describes in detail the planned program and explains the applied methods.

5.2 ENVIRONMENTAL BASELINE NOTE

WSP intends to deliver an environmental baseline note to Energinet in Q1 - 2022. This report will present the existing data for migrating bats in the investigation area based on baseline mappings from other projects in the area. The main focus will be on the information from the Baltic Sea, including information from the Swedish and German coast as well as information from offshore wind farm project. This report is an internal document that will support the writing of the Strategic Environmental Assessment (SEA).

5.3 TECHNICAL REPORT

The technical report will be delivered as a final and approved version to Energinet (in English) including a review process. A technical report will include: Method description, description of baseline situation, proposals for measures to mitigate adverse impacts, as appropriate, identification of possible data gaps and insufficiencies of importance for the environmental assessments and proposal for a monitoring program, as appropriate.

6. MILESTONES

Reporting and time schedules for WP H will strictly follow the deadlines stipulated in the tender documentation and a summary of the these is shown in the table below. A Client Review period of three weeks has been incorporated into the schedule to review the 1st Draft Version of the Bat Report (M41). For the second Client Review a period of two weeks has been incorporated to review the Final Draft Version of the Bat Report (M42).

Table 1 - Overview of WP H milestones.

WP H			
Milestone No.	Milestone	Deadline	Predecessors
M41	Scope Report, 1 st Draft	Week 36 - 2021	-
M42	Scope Report, Final Version	Week 5 - 2022	-
*	Environmental baseline note	Q 1 - 2022	
M43	Technical report, 1 st Draft	Q4 – 2023	-
M44	Technical report, Final draft, including appendices and data input to SEA)	Q4 – 2023	
M45	Technical report, Final version	Q4 - 2023	

*) the Environmental baseline note will be a background report for the SEA and for the Technical Report and is not listed as a numbered milestone.

Occurrences of bats far offshore indicate impacts on migrating bats cannot be excluded. The purpose of the present survey is to collect documentation of possible migration or foraging of bats offshore in the investigation area.

7. PERMITS

The use of bat detector in Germany, Sweden and Denmark for land-based bat migration surveys will have to be approved by the relevant authorities.

The need for permits, identification of relevant authorities and the submission of applications will be carried out by WSP and BioConsult SH.

8. REFERENCES

BSH in StUK4 (Standard Investigations of the impacts of Off-shore Wind Turbines in the Marine Environment (StUK4), Bundesamt für Seeschifffahrt und Hydrographie (BSH), October 2013)

Technical requirements to the monitoring of Bats (TA nr. A04, ver. 3, latest review 30.05.2018, DCE University of Aarhus.

Marine forekomster af flagermus - BORNHOLMS HAVMØLLEPARK - VVM-redegørelse - baggrundsrapport