



Energy Island North Sea

Scope Report – Radar and Radio Interference

Energinet

Date: 26 January 2022

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1 Project introduction and background

With the Climate Agreement for Energy and Industry of the 22nd of June 2020, the majority of the Danish Parliament decided that Denmark will become the first country in the world to develop two energy islands. One of the islands will be located in the North Sea ("Energieø Nordsoen") with a capacity of 3 GW offshore wind surrounding the island. This island can be further scaled up to allow for grid connection of up to 10 GW offshore wind on the island. It is expected that Energieø Nordsoen will be in full operation by 2033.

The Danish Energy Agency (DEA) has initiated the Strategic Environmental Assessment (SEA) and associated technical reports.

This scope report includes a detailed description for the planned activities concerning the technical report regarding radar and radio interference for Energieø Nordsoen.

2 Scope

The purpose of this work package is to determine and map current radars and radio systems relevant to the project area in order to assess the consequences of the project on the radar and radio signals as well as to propose mitigation measures to reduce possible impact.

3 Planning and execution of work

The planned activities include:

- Collect data from relevant stakeholders – can include a meeting with the Royal Danish Navy (Marinestaben).
- Mapping of relevant existing, including stationary as well as mobile systems.
- Mapping of relevant existing radio link systems, including stationary as well as mobile systems.
- Conduct a sensitivity analysis that addresses potential impacts of energy island and the planned offshore wind farms on the functioning of radar, radio links, including communication systems between the island and its surroundings.
- Propose measures to avoid or mitigate impacts of the energy island and offshore wind farms on radar and radio link systems, as relevant, covering the construction phase as well as the operation phase of the OWF.

Upon commencement of the services, Energinet will provide a set of project assumptions regarding the energy islands and the wind farm layout (turbine type, number, positioning of turbines etc.) that is to be used for the sensitivity analysis.

3.1 Data collection

Knowledge of nearby radar and radio systems from available existing sources such as previous Environmental Impact Assessments (EIAs) undertaken near the project area (Thor, Vesterhav Syd, Vesterhav Nord and Horns Rev 3 OWF) will be the starting point for identification of relevant stakeholders to address.

Dialogue with relevant stakeholders, organizations and authorities will be entered in order to collect data and information used for determining which radar and radio systems are present in and near the planned Energieoe Nordsoen. Mapping includes both civil- (e.g. airports, metrological radars) and military radar systems and radio systems. Stationary as well as mobile radars and radio systems are included.

Information is mainly to be gathered through available public information, telephone and email correspondences. If possible, a meeting will be arranged with the Royal Danish Navy (Marinestaben), who is regarded as particularly important in the survey and assessment process. Energinet is responsible for the first contact to Marinestaben.

The Energieoe Nordsoen is located far from shore and thereby far from radar and radio links systems. It is therefore not considered necessary to collect data from neighbouring countries. However, will Norway, Britain and Germany be included in the sensitivity analysis.

3.2 Sensitivity analysis

The sensitivity analysis on the relevant radar and radio systems in the Energieoe Nordsoen area will cover the construction phase as well as the operation and decommissioning phases. The sensitivity analysis will also include communication systems between the island and its surroundings. The sensitivity analysis will rely on project assumptions provided by Energinet (design, layout, turbine type, number, positioning of turbines etc.).

The analysis of radar systems will cover radar coverage of both surface and aerial targets and possible impact on these systems. Moreover, the analysis will include a risk assessment of false radar signals and radio links.

Existing knowledge and experiences from similar Danish and international OWF and relevant studies may be used in the analysis where applicable. If any potential consequences are encountered that cannot be characterized as negligible, a technical analysis and evaluation of the consequences is executed. It is anticipated that the analysis will be performed in close collaboration with Marinestaben and other relevant parties as Danish Civil Aviation and Railway Authority (Trafikstyrelsen) if needed. The sensitivity analysis will follow relevant national and international guidelines and practices where applicable.

3.3 Cumulative impacts

Projects of relevance within a reasonable distance are briefly described in the technical report. Based on the sensitivity analysis, the possible cumulative effects to the radar and radio systems from other projects in the area will be identified.

3.4 Mitigation measures

As relevant, proposals for measures to mitigate adverse impacts of interferences on radar and radio systems are given. It is anticipated that the evaluation of the need for mitigation measures will be performed in close collaboration with Marinestaben and other relevant parties as Danish Civil Aviation and Railway Authority (Trafikstyrelsen).

4 Technical report

The primary delivery is a technical report. The first section of the technical report will present a method description and a description of project scenarios. A brief introduction to the main principles of radar and radio systems will be

followed by a short description of relevant national and international guidelines and practices. A description of the relevant legislation will be included where applicable.

The report will present mapping of existing radar and radio systems together with records of consulted institutions and gathered data and information. The relevant radar and radio systems will be described along with map illustrations. Based on this, the report will comprise a sensitivity analysis of the project's potential impacts on the functioning of radar and radio systems, both in relation to the construction and the operation phase, followed by proposals for mitigation measures to reduce or mitigate impacts of the Energieoe Nordsoen. Possible data gaps and insufficiencies of importance for the analysis will be identified and described in the last section of the technical report.

The report will be submitted in a draft version, and a final draft version. After the Authorities' review, NIRAS will submit a final report. Quality assurance documentation (technical/communication/language review) will be included with each submitted version of the report.

The time schedule for the work package is:

- **Week 38 2021:** 1st draft of scope report
- **Week 40 2021:** Final version of scope report
- **Week 22 2022:** 1st draft technical report
- **Week 34 2022:** Final draft, including appendices and data
- **Week 39 2022:** Final version of technical report