THOR OFFSHORE WIND FARM

Environmental permits and planning consents

Market dialogue, 25 November 2019

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ENVIRONMENTAL PERMITS AND PLANNING CONSENTS

PURPOSE OF THE PRESENTATION

- To provide information on the planning and permitting process and the environmental documentation to be produced
- To encourage to provide feed-back

CONTENTS

1. Planning and environmental documents to be produced
2. Environmental impact assessment of the land-based project
3. Planning consents for the sub-stations
4. Pre-investigations (technical reports) to feed information into the future EIA process for the offshore project

PLANNING AND ENVIRONMENTAL DOCUMENTS

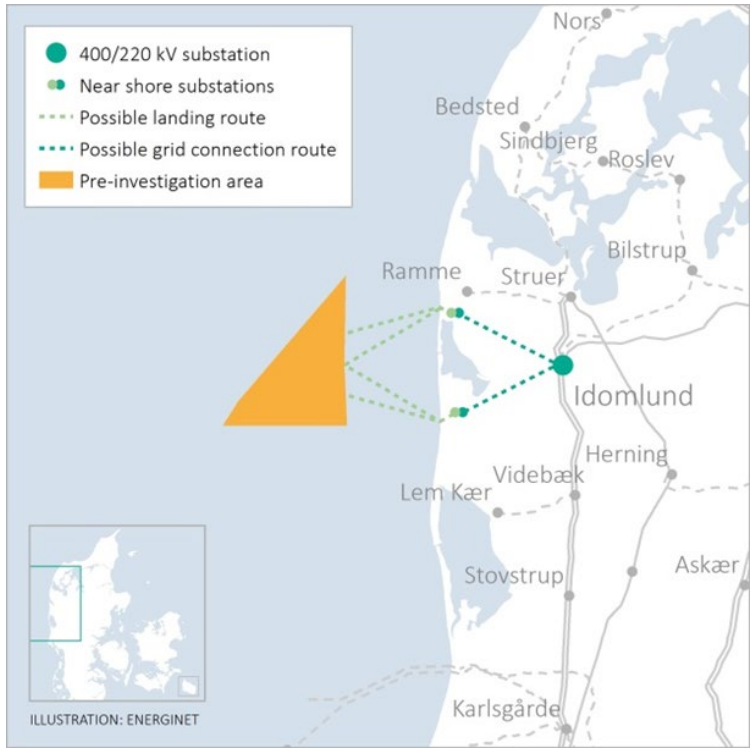
- Strategic environmental assessment (SEA) of the plan for Thor OWF
- Environmental impact assessment (EIA) for all land-based facilities, including:
  - The concessionaire's part of the facilities
  - Energinet's part of the facilities
- Planning documents for sub-stations:
  - Concessionaire's nearshore sub-station
  - Energinet's nearshore sub-station
  - Energinet's enlargement of the existing Idomlund sub-station
- Pre-investigations on the current environment (a.o. for use in the future EIA of the offshore facilities):
  - Technical reports

EIA OF THE LAND-BASED PART OF THE PROJECT

Alternatives and criteria for choice of alternative

- Two alternatives will be investigated:
  - Alternative A: Landing north of Nissum Fjord
  - Alternative B: Landing south of Nissum Fjord

- A combined evaluation of environmental, technical and financial issues for the entire OWF will be decisive for which of the landing sites, and thereby which of the alternatives that will be included in the call for tender



EIA OF THE LAND-BASED PART OF THE PROJECT

- Two alternatives will be investigated:
  - Alternative A: Landing north of Nissum Fjord
  - Alternative B: Landing south of Nissum Fjord
- Concessionaire's part:
  - In total 2-5 km cables (2 x 220 kV)
  - A nearshore sub-station 2-5 km from the landing
- Energinet's part:
  - 25-30 km cables (2 x 220 kV)
  - A nearshore sub-station km from the landing
  - Enlargement of the existing Idomlund sub-station

EIA OF THE LAND-BASED PART OF THE PROJECT

EIA proces

Competent authority:

The Danish Environmental Protection Agency

Activity/milestone	When
EIA application	Q4 2019
Draft scoping of EIA study First public consultation (4 weeks) Final scoping of EIA study	Q1 2020
EIA study	Q1 – Q4 2020
EIA report	Q4 2020
Public consultation of the EIA report (8 weeks)	Q1 2021
Summary Statement for the EIA, including separate draft permits to Energinet and the concession winner, respectively (3 years of validity) Issuance of EIA permit to Energinet	Q2 2021
Issuance of EIA permit to concession winner	Possibly by Q3 2023

PLANNING CONSENTS FOR SUB-STATIONS

Establishment of sub-stations and enlargement of existing sub-station requires planning consents*) from the concerned municipalities in terms of:

- An approved amendment of the municipal plan (an overall land-use consent – one for each alternative)
- A local plan (consent to erect the planned infrastructure and buildings etc. – one for each alternative)

A planning consent from the concerned municipality is a prerequisite for achieving an EIA permit (It is also a prerequisite for getting a building permit)

A planning consent for the concessionaire's sub-station will be applied for (for both alternatives) aiming at providing the relevant planning consent prior no later than Q2 2021

*) According to the Danish Planning Act, planning permits or licences are not issued to the builder. A planning consent (an approved plan) for a site is incorporated into the overall municipal planning framework. Hence, a planning consent is independent of land-ownership.

TECHNICAL DOCUMENTS – DELIVERABLES AND MILESTONES

DELIVERABLE	MILESTONE
SEABED INVESTIGATIONS	
Geophysical survey: • Geophysical survey report, wind farm site • Export cables routes survey report • Hydrographical report, wind farm site • Hydrographical report, export cable routes	 2020-June 2020-June 2020-June 2020-June
Marine archaeology	2020-Nov
UXO risk assessment report	2020-Feb
Geotechnical investigations • Geotechnical desk study • Geotechnical investigation report • 3D geological model report	 2020-Jan 2021-March 2021-April
METOCEAN	
Lidar measurements	Medium 2021
Oceanic data (Hindcast)	2021-March
Wind resource report (mesoscale)	2021-March

DELIVERABLE	MILESTONE
ENVIRONMENTAL INVESTIGATIONS	
Visibility analysis and assessment	Q4 2020
Seabirds • Investigation of bird distribution and abundance • Number and distribution of birds • Supplementary bird investigations	 Available Available Q2 2020
Benthic flora and fauna	2021-April
Marine mammals	2021-April
Fish and fisheries	2021-April
Underwater noise	2021-April
Radar and radio interference	2021-April
Maritime traffic and safety of navigation (HAZID)	2021-April

WIND FARM SITE

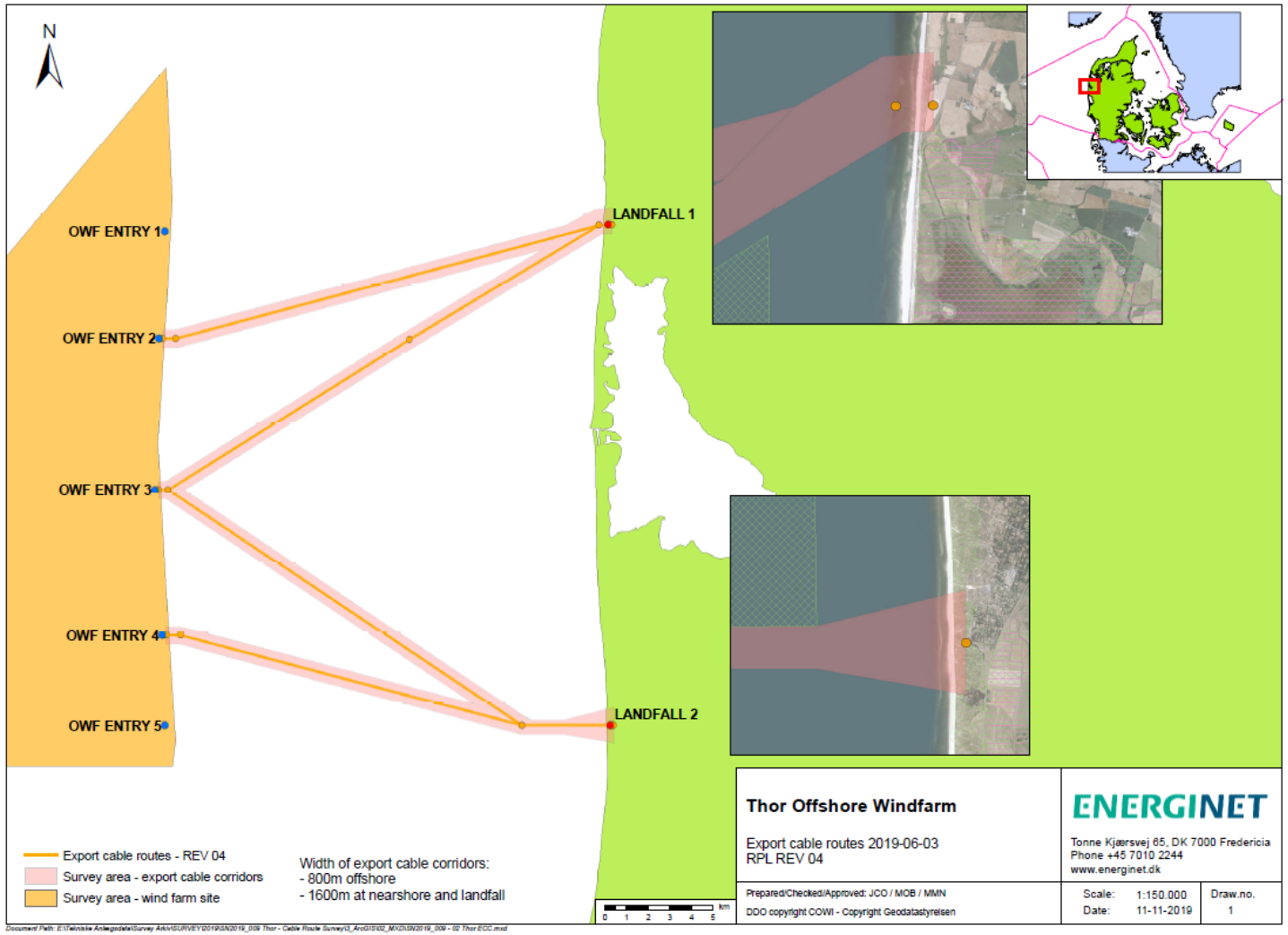
Investigation sites

- 440 km^2 OWF pre-investigation site
- Min. 20 km from the coast off Thorsminde
- Same as for the geoscience investigations

CABLE ROUTES

Investigation site

- Investigations of four possible cable routes (as for the geoscience investigations)
- 800 m wide corridors
- Approx. 1500 m wide corridors near the landing site



VISIBILITY ANALYSIS AND ASSESSMENT

MAIN PURPOSE: Provide input to the SEA report

ELEMENTS:

- A generic and project-neutral visibility analysis
- Land-use analysis of coastal areas with mapping of recreational and cultural interests
- Assessment of potential impacts
- Assessment of potential cumulative impacts
- Identification of possible measures to mitigate adverse impacts on the basis of park layout optimisation and light marking
- Illustration of potential impacts, e.g. through examples from comparable OWFs and/or from example-visualisations based on scenarios on possible turbine sizes, park layouts and light markings.

DELIVERABLES:

- A technical report
- An example-visualisation report
- High-resolution images of example visualisations, as relevant

SEABIRDS

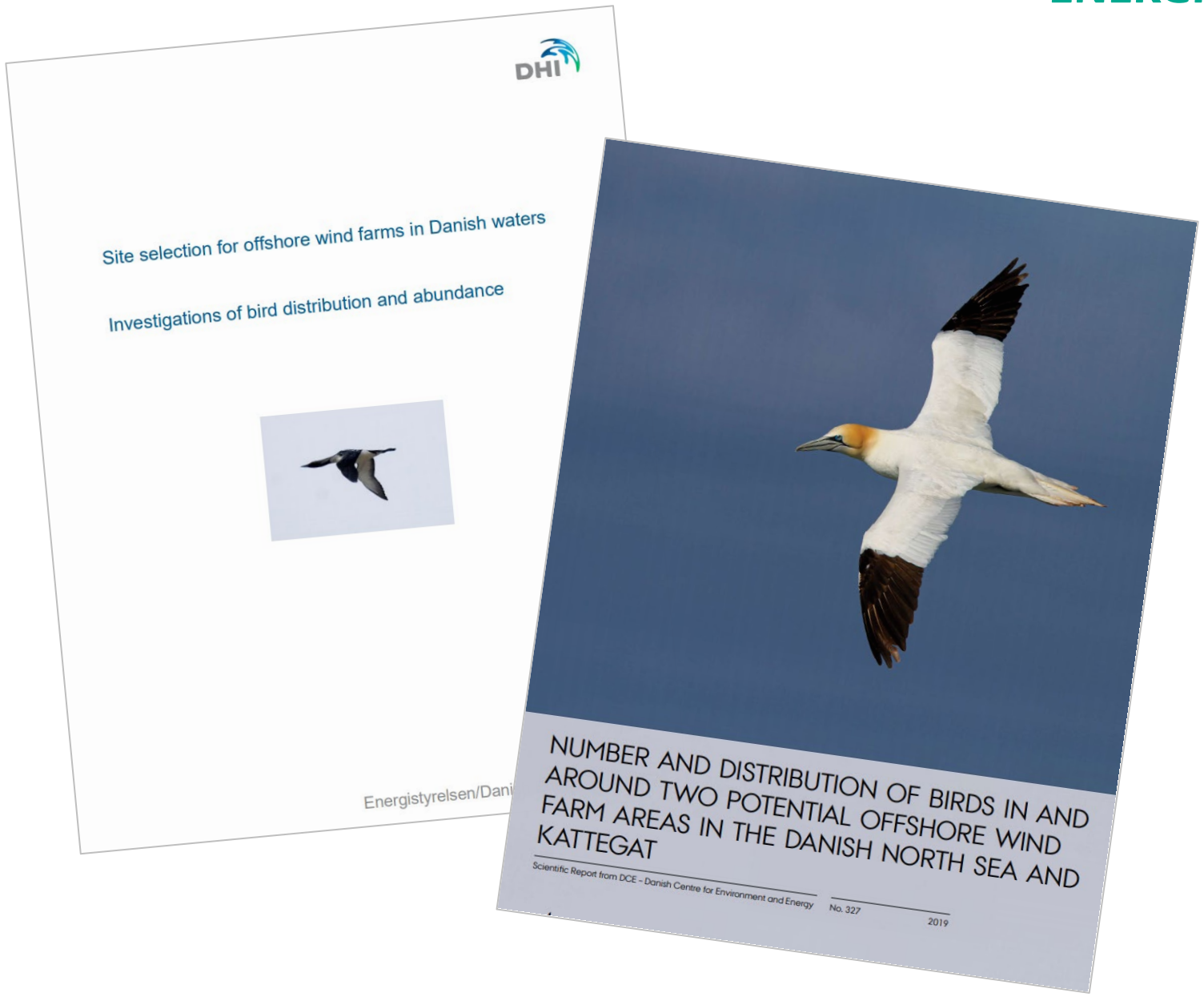
MAIN PURPOSE:

Generate baseline data and information for the EIA

DELIVERABLES:

Two main reports are available on the DEA's home page

A supplementary report will be made available by the DEA in Q2 2020



BENTHIC FLORA AND FAUNA

MAIN PURPOSE:

- Generate baseline data and information for the EIA

ELEMENTS:

- Gather available data and information on benthic flora and fauna
- Visual seabed inspection
- Benthic field survey, approx. 160 stations:
  All stations: Epifauna, epiflora, infauna, particle size distribution, LOI, TOC
  Additionally at cable route stations: Sediment analyses of hydrocarbons, PAH, EOX and heavy metals
- Sensitivity analysis

NOT INCLUDED:

- Assessment of project-specific potential impacts

DELIVERABLES:

- A technical report with data, information and sensitivity analysis
- Videos and images from seabed inspection
- Data files (raw data from benthic field surveys)

MARINE MAMMALS

MAIN PURPOSE:

- Generate baseline data and information for the EIA

ELEMENTS:

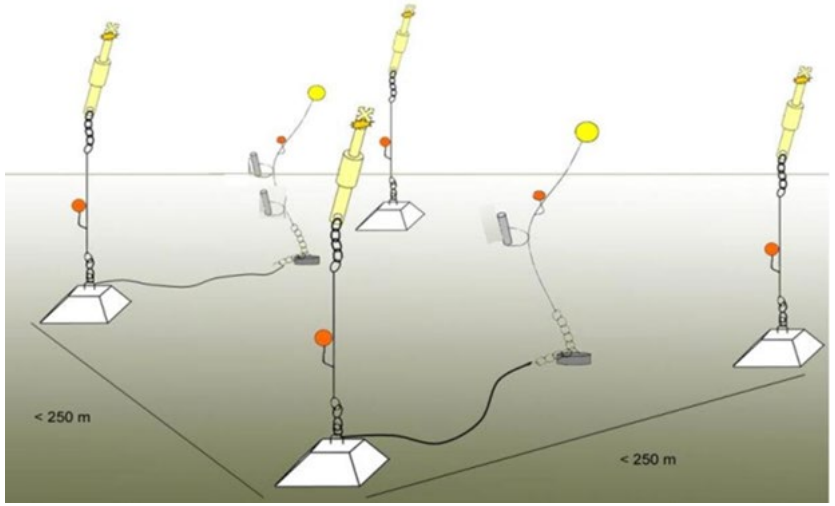
- Gather available data and information on marine mammals
- C-pod investigations within the wind farm site, covering one ear with at least one month's data within a three-months period
- Three flight surveys covering the wind farm area and export cable area
- Sensitivity analysis

NOT INCLUDED:

- Assessment of project-specific potential impacts

DELIVERABLES:

- A technical report with data, information and sensitivity analysis
- Data files (raw data C-pod investigations and flight surveys)



FISH AND FISHERIES

MAIN PURPOSE:

- Generate baseline data and information for the EIA

ELEMENTS:

- Gather available data and information on fish and fisheries through e.g. ICES, VMS and AIS and interviews with fishermen
- A fish survey
- Baseline analysis of fish populations, their feeding resources, seasonal migration patterns, possible breeding and nursery grounds
- Sensitivity analysis

NOT INCLUDED:

- Assessment of project-specific potential impacts

DELIVERABLES:

- A technical report with data, information and sensitivity analysis
- Data files (raw data from the fish survey)

UNDERWATER NOISE

MAIN PURPOSE:

- Provide generic inputs to SEA report and EIA process

ELEMENTS:

- Identify potential impacts of underwater noise caused by construction, operation and decommissioning of the wind farm
- Model calculation of noise emissions and noise propagation taking into account the actual soil conditions and bathymetry
- Generic assessment of project-neutral potential noise impacts and cumulative noise impacts, compared with applicable guidelines regarding underwater noise *)
- Identification of possible (generic) measures to mitigate adverse impacts

QUESTIONS:

- Do you prefer to receive model calculations of noise emissions and noise propagation for a series of potential options?
- If yes, what options should be included with respect to:
  - Pile diameters
  - Blow energy
  - Piling sequence
  - Spectrum of pile-driving noise

NOT INCLUDED:

- Assessment of project-specific potential impacts

DELIVERABLES:

- A technical report

*) *Energistyrelsen, DEA: Guidelines for underwater noise – installation of impact-driven piles. April 2016*

RADAR AND RADIO INTERFERENCE

MAIN PURPOSE:

- To identify possible conflicts between wind farm and radar and radio systems

ELEMENTS:

- Collect data and information from relevant stakeholders, including a.o. the Danish Ministry of Defence
- Map existing radar and radio link systems
- Sensitivity analysis
- Identification of possible (generic) measures to mitigate undesired interferences

NOT INCLUDED:

- Assessment of project-specific interferences

DELIVERABLES:

- A technical report

MARITIME TRAFFIC AND SAFETY OF NAVIGATION

MAIN PURPOSE:

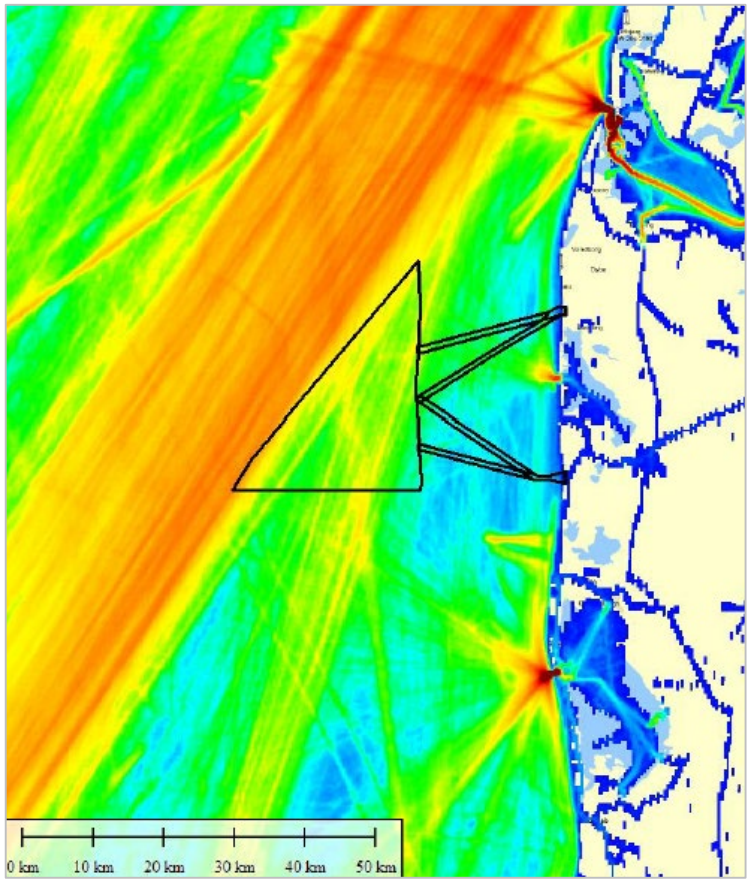
- To identify possible conflicts between wind farm and radar and radio systems

ELEMENTS:

- Identify stakeholders to be consulted regarding a project-neutral hazard identification
- Baseline study on current maritime traffic
- Preliminary HAZID analysis following IMO guidelines for safety analysis together with possible specific requirements of the Danish Maritime Agency
- Identify possible risk reducing measures

DELIVERABLES:

- A technical report
- A report on the findings and conclusions of the HAZID workshop
- Collected data on maritime traffic from AIS




QUESTIONS ?