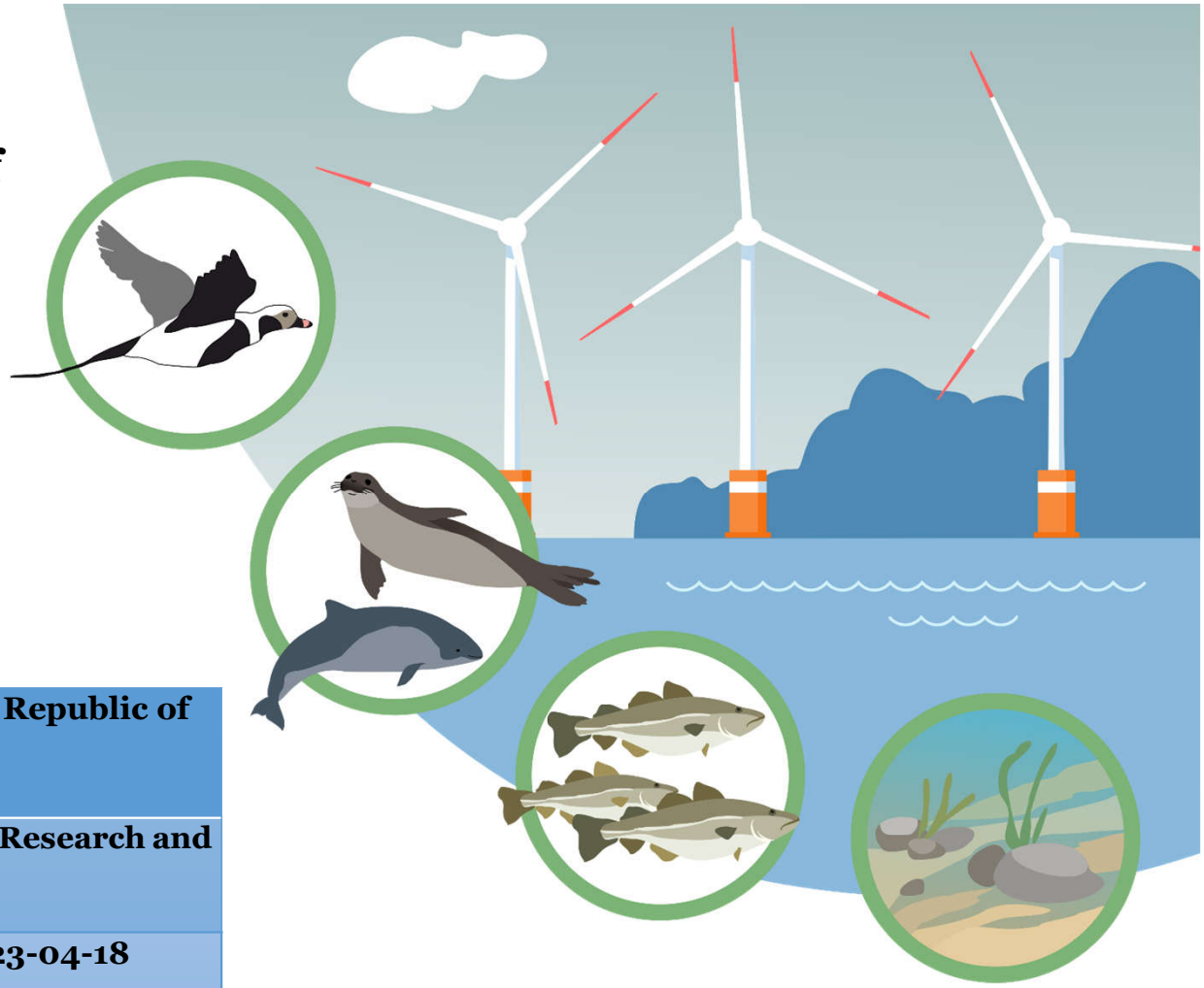
Environmental Impact Assessment of

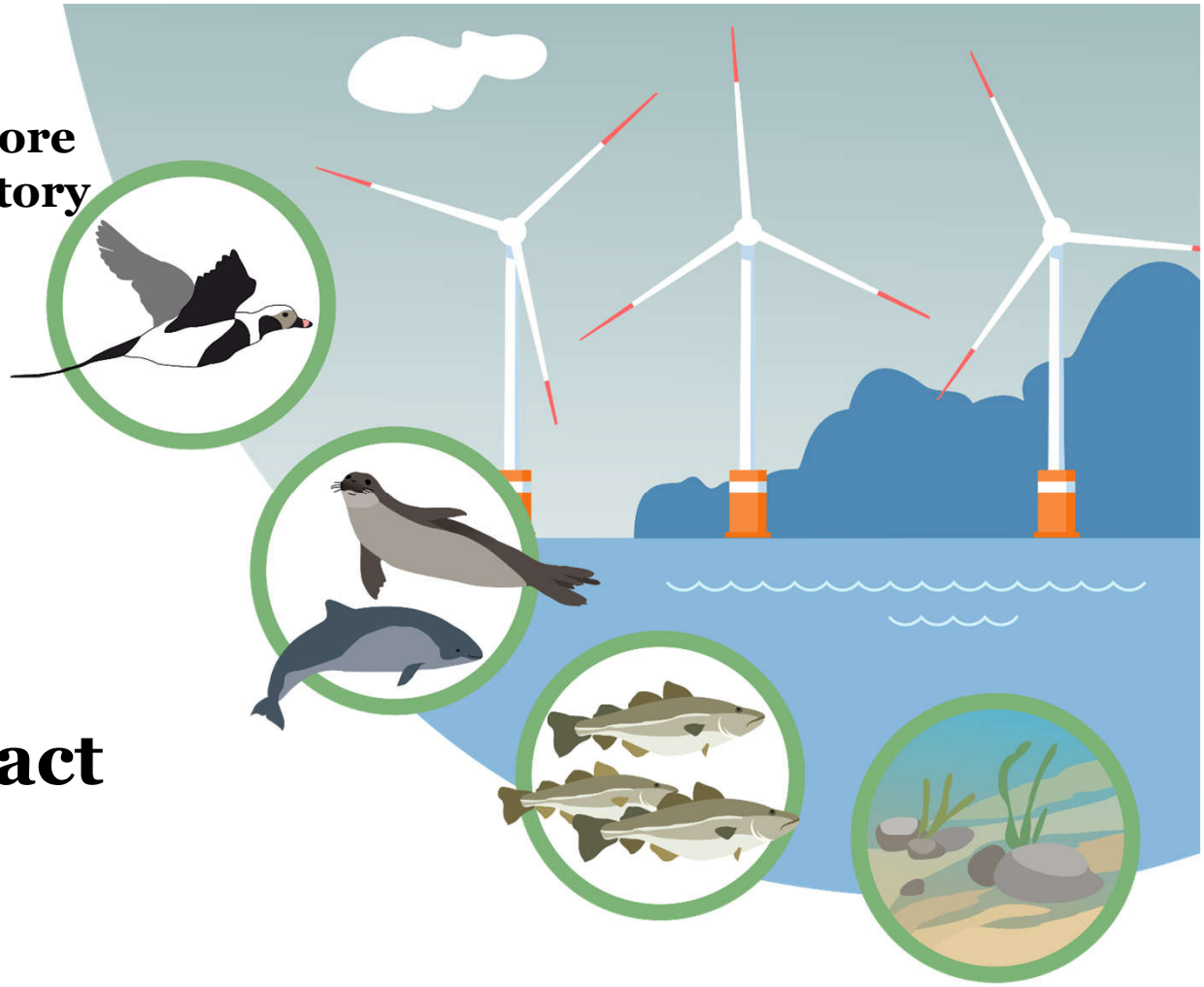
Installation and Operation of the Offshore Wind Farm in Lithuania's Marine Territory



Organizer of the proposed economic activity:	**Ministry of Energy of the Republic of Lithuania**
Developer of the Environmental Impact Assessment:	**Public Institution Coastal Research and Planning Institute**
Presentation for transboundary consultation, 2023-04-18	

corpi

Installation and Operation of the Offshore Wind Farm in Lithuania's Marine Territory



Environmental Impact Assessment

corpi

Stages of environmental impact assessment

According to the Espoo Convention, transboundary EIA shall be carried out when a PEA is included in Annex I.

Large installations using WTs for energy production are included in the Annex I to the Convention (second amendment to the Espoo Convention, Decision III/7 of 4 June 2004)

The Ministry of the Environment at the stage of preparation of the EIA program, notified Poland, Latvia, Estonia, Finland, Sweden, Denmark and Germany of the installation and operation of the offshore wind energy park.

Main stages of EIA :

EIA program – provides the scope of assessment, methods, EIA content, etc. Prepared. Transboundary consultations fulfilled. Program approved by Environmental Agency.

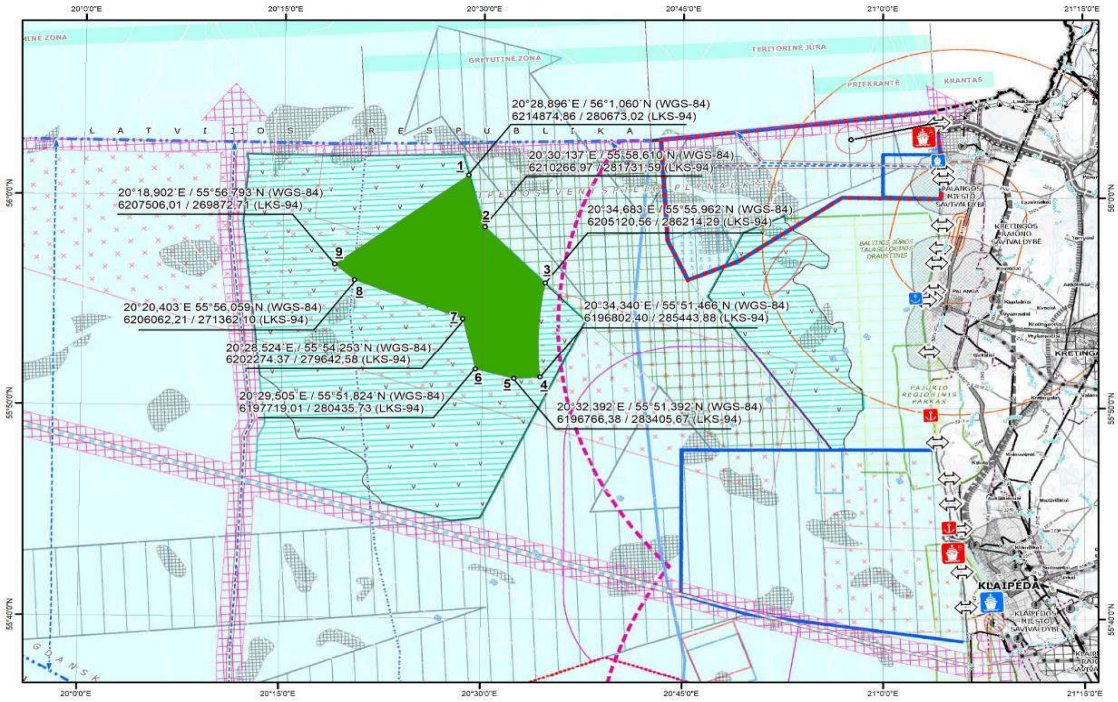
EIA report – prepared for public consultations. Will be coordinated with EIA subjects and the responsible institution. The decision will be made by **Environmental Protection Agency** after tranboundary consultations.

Teritory of proposed offshore wind energy park

The WTs are proposed to be installed in the marine territory of the Baltic Sea approved by the LRV Resolution No. 697 where a tender (tenders) for the development and operation of power plants using renewable energy sources is (are) expedient by 2030.

Area – 137.5 km^2

Closest distance form the shore– 29.5 km



Geographical and Administrative Situation of the Territory

The PEA territory is situated in the Lithuania's Exclusive Economic Zone, Baltic Sea, on the Klaipeda-Ventspils plateau and the slope.

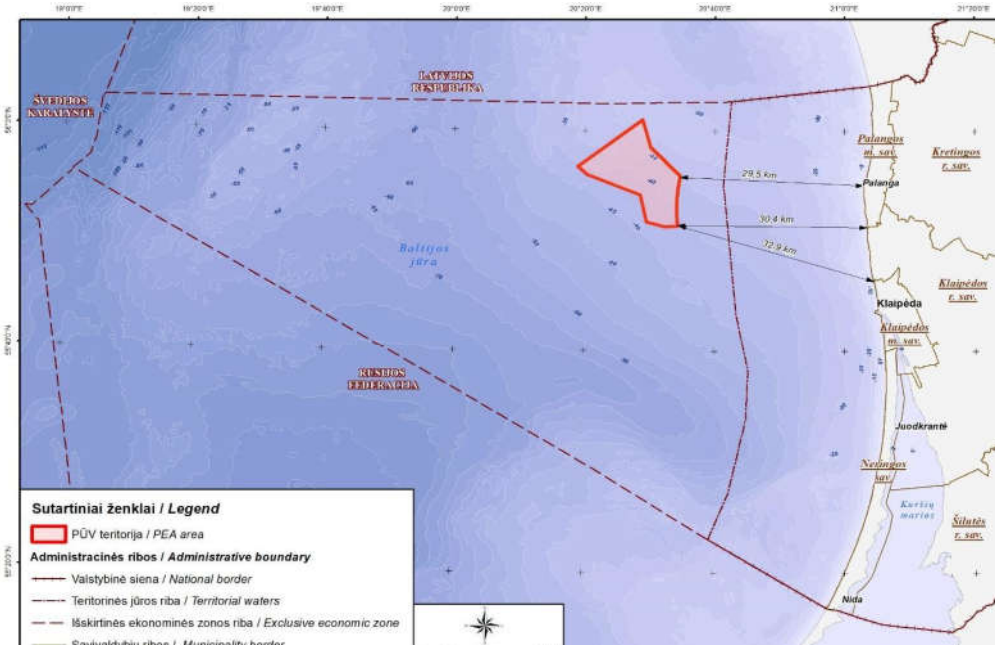
The shortest distance to Palanga city is approx. 29.5 km. The shortest distance to Klaipeda city is approx. 33 km

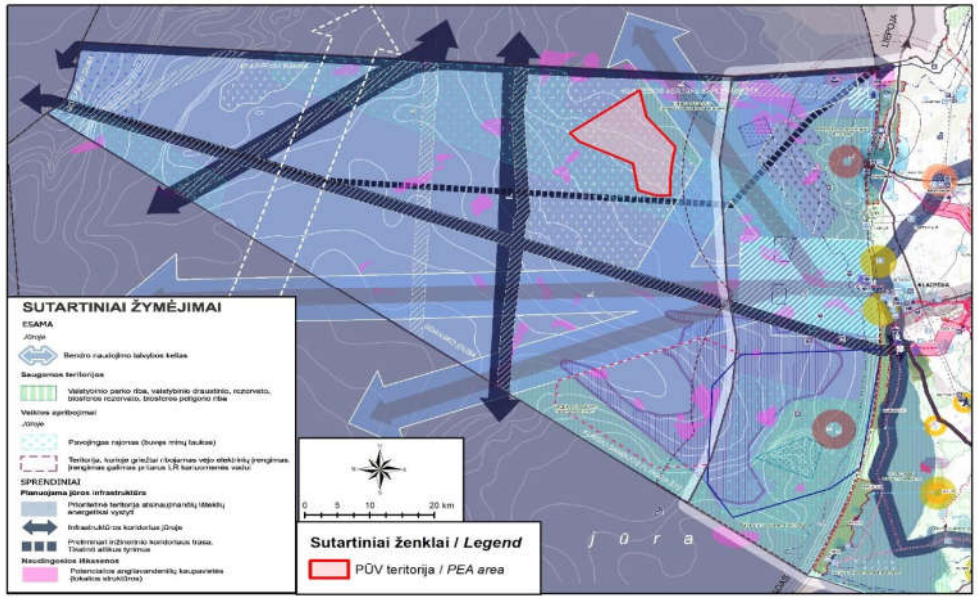
The shortest distance to the Latvian EEZ is about 2.8 km,

to the Swedish EEZ – about 77 km,

to the Russian EEZ – about 40 km.

Compliance with Comprehensive (Master) plan

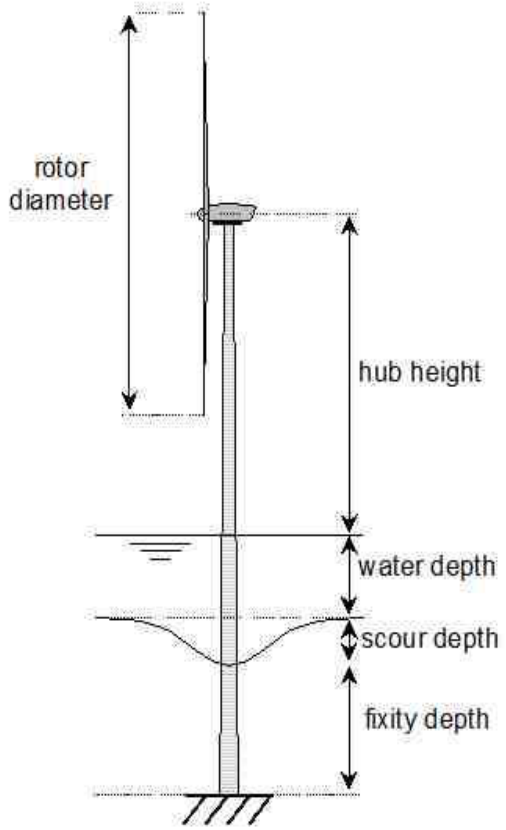




Technical information for Alternatives to be developed

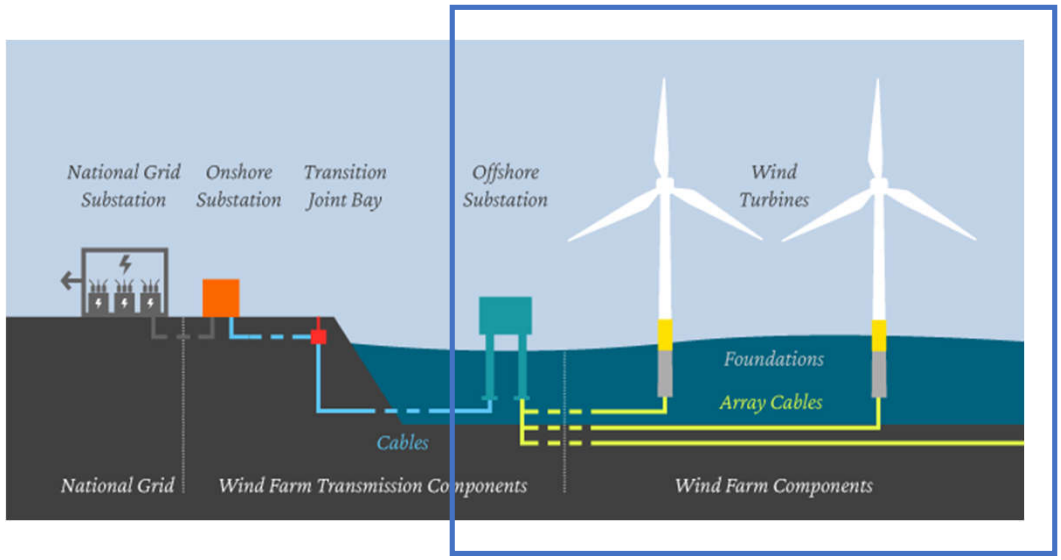
General installed capacity of OWF – not less than 700 MW.

Parameters	Maximum values
Preliminary capacity, MW	20+
Maximum number of WTs installed under the alternative	Up to 90
Maximum height up to the highest blade point	350
Maximum rotor diameter	320



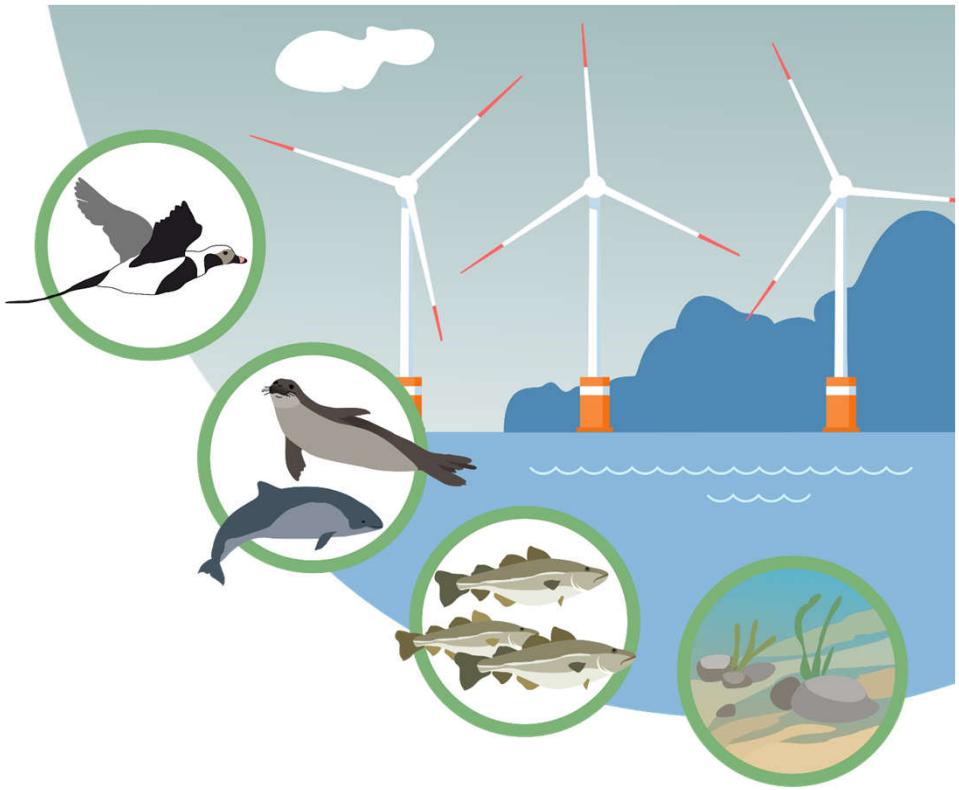
Impact assessment during different Wind Farm development stages:

- Installation of OWE
- Operation of OWE
- Decommissioning of OWE



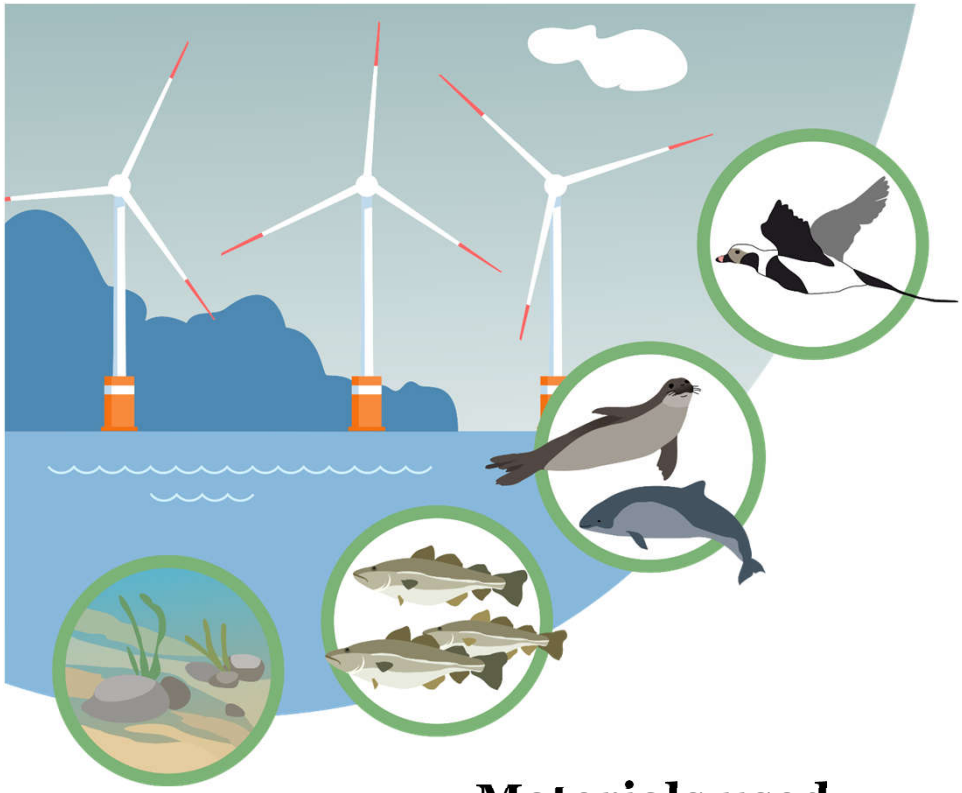
Schematic presentation of offshore wind farm (source: https://www.northfallsoffshore.com/facts-Fig.s/).

Components of the Environment and effects assessed in EIA



- Water
- Ambient air and climate
- Underwater noise
- Earth: Seabed and Deeps
- Landscape
- Biodiversity:
    - State protected and „Natura 2000“ areas
    - Seabed habitats
    - Fish
    - Birds and bats
    - Marine mammals
- Cultural hearitage
- Public health
- Material valuables
- Risk analysis

Field tests → **Expert based analysis** → **Modelling** → **Mitigation measures** → **Analysis of the alternatives**



Investigations carried out

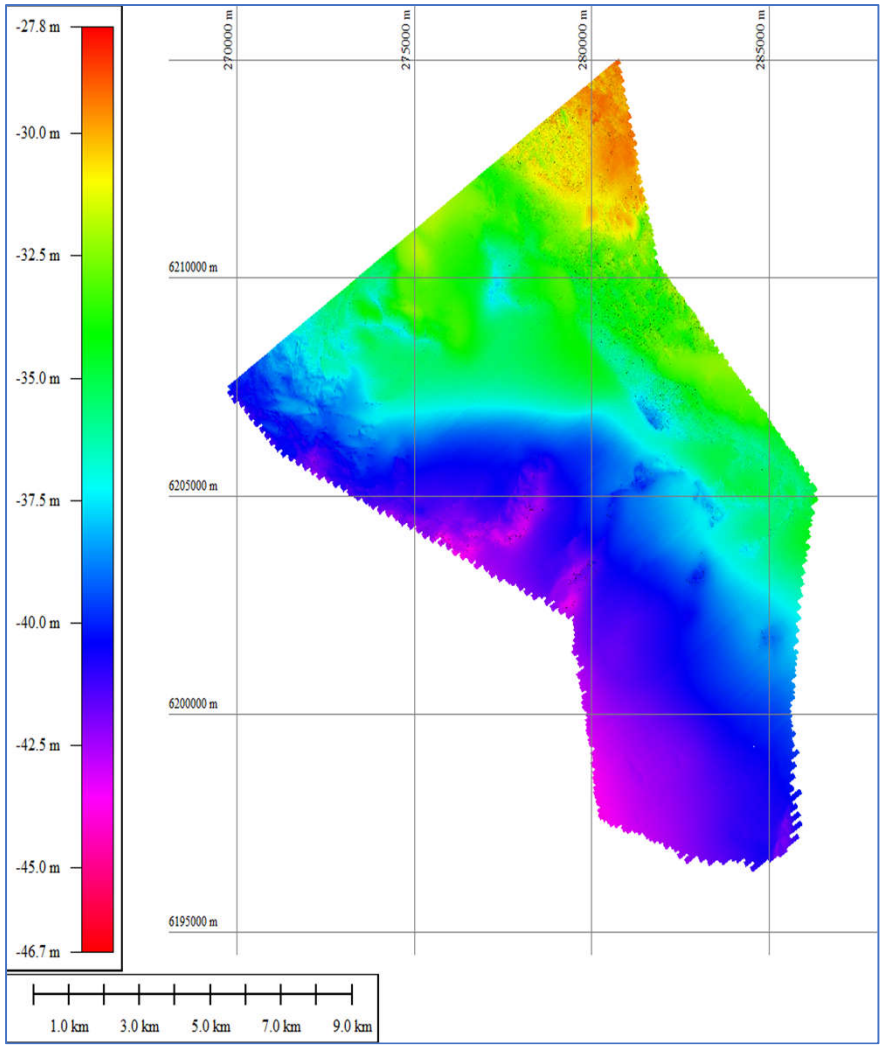
- Sea bottom and underwater cultural heritage
- Birds and bats
- Marine mammals
- Fish
- Bottom habitats
- Underwater noise
- Visual impact

Materials used:

- Geological and geophysical investigations: Garant Diving/Geobaltic
- Metocean: Eolos (Spain)
- International fish trawling programme
- National monitoring of protected areas: EPA

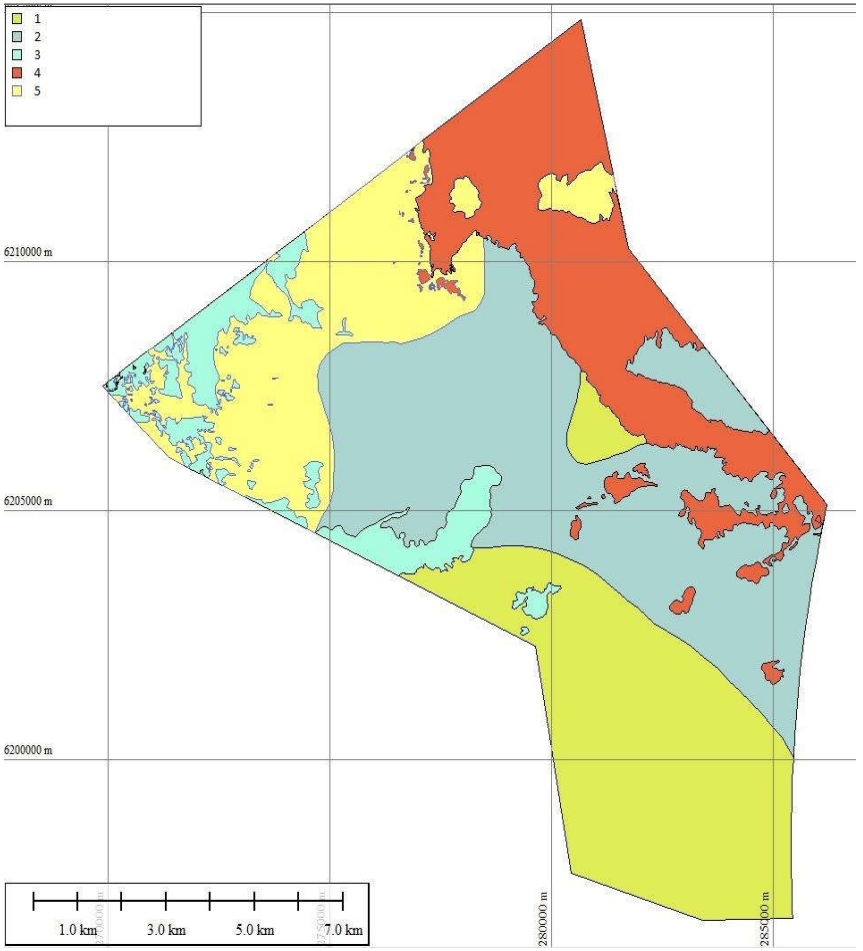
Sea bottom

Seabed morphology



Prevailing depths 38–43 m

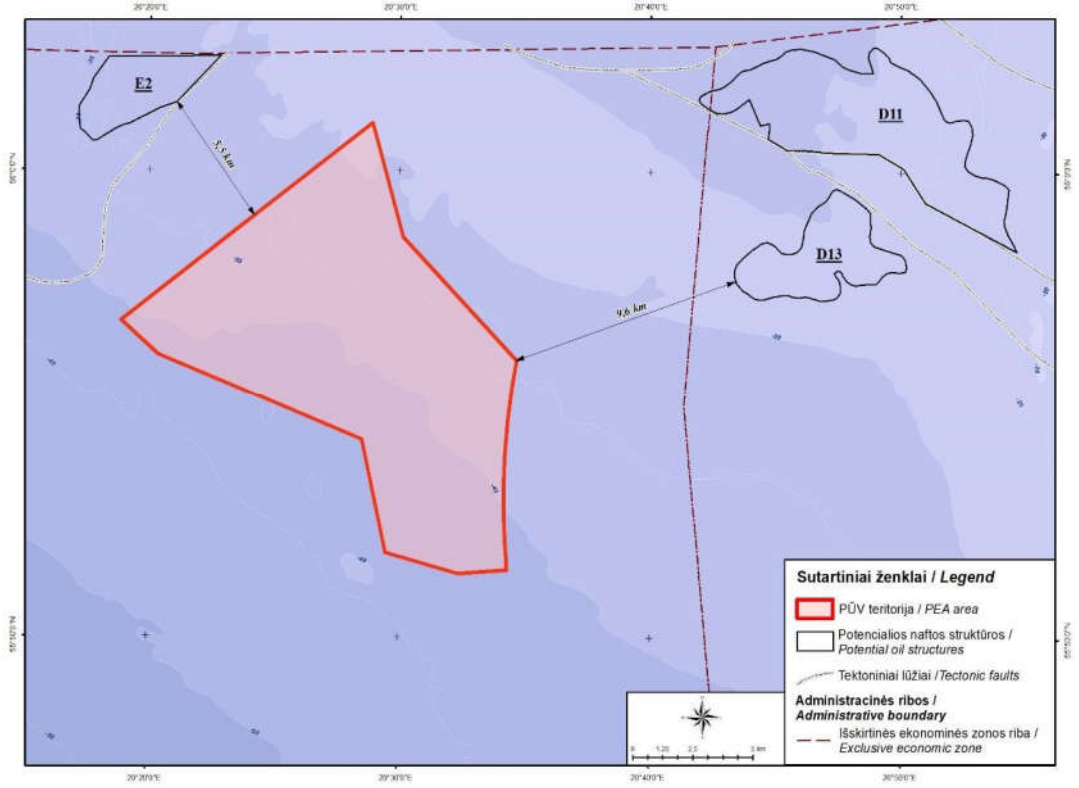
Distribution of seabed sediments



Legend: 1-silty sand; 2-silty, clayey sand; 3-clay, clayey sand; 4-boulders, gravel, gravely sand; 5-evenly sorted sand. .

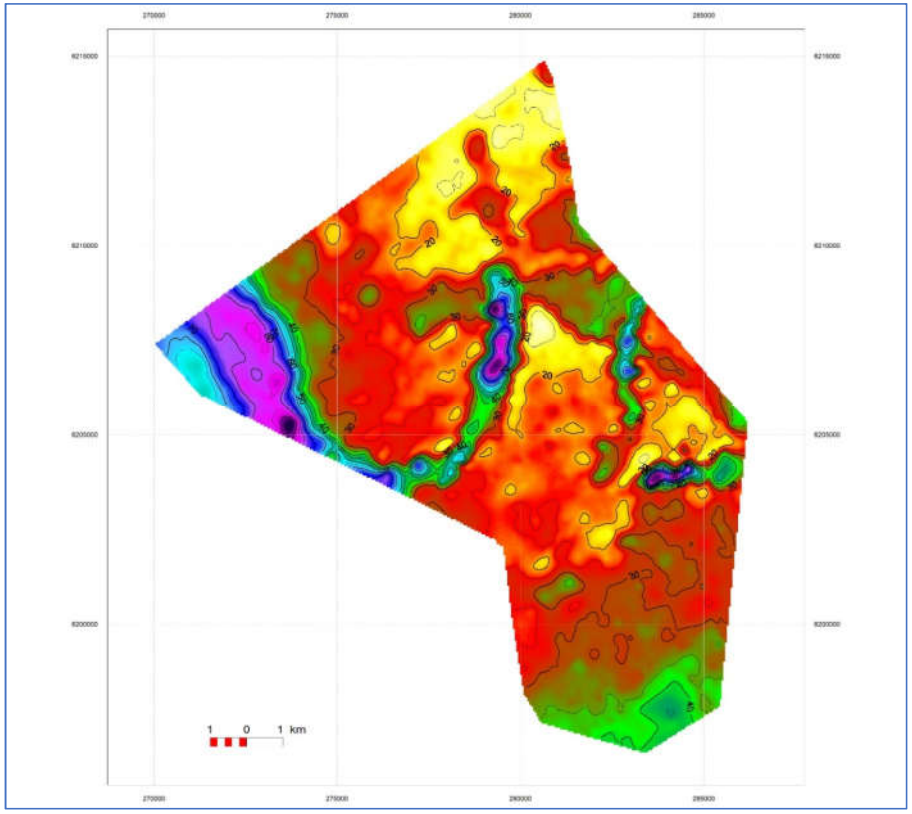
Deeps

Potential oil structures



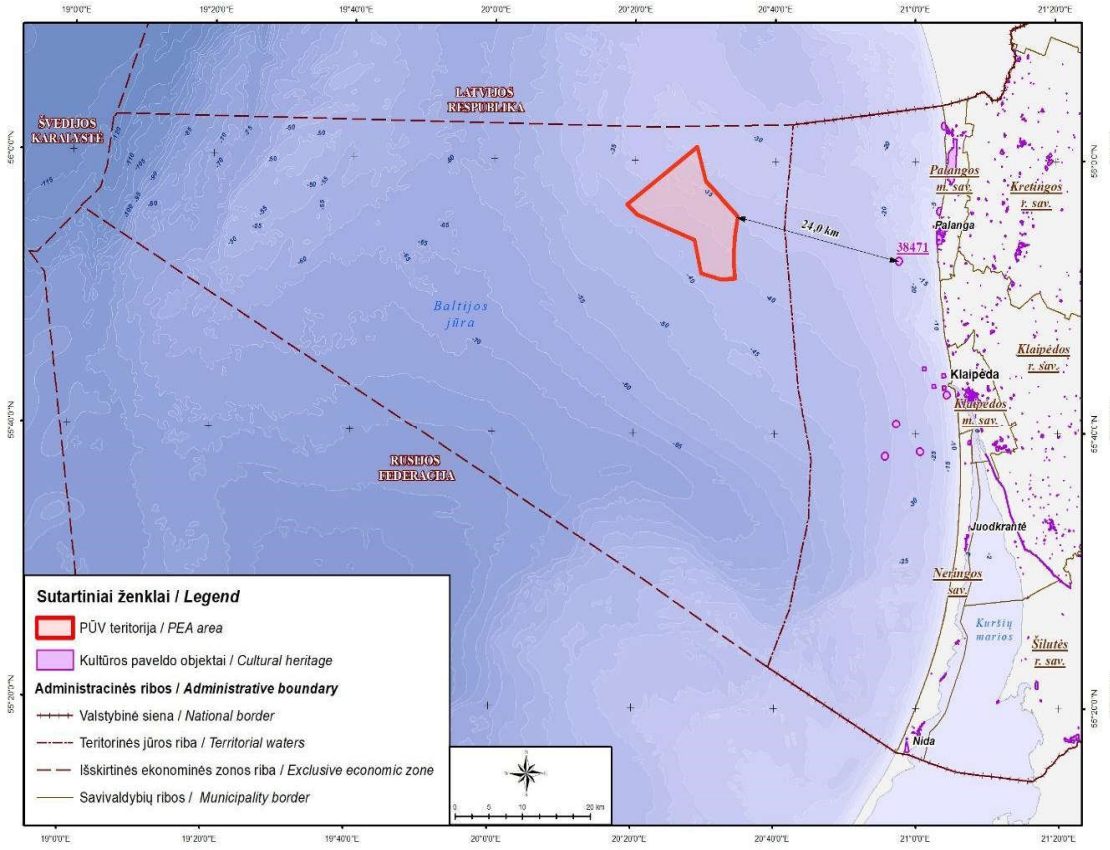
Closest distance (to E2) – 5.5 km

Prie-quaternary surface



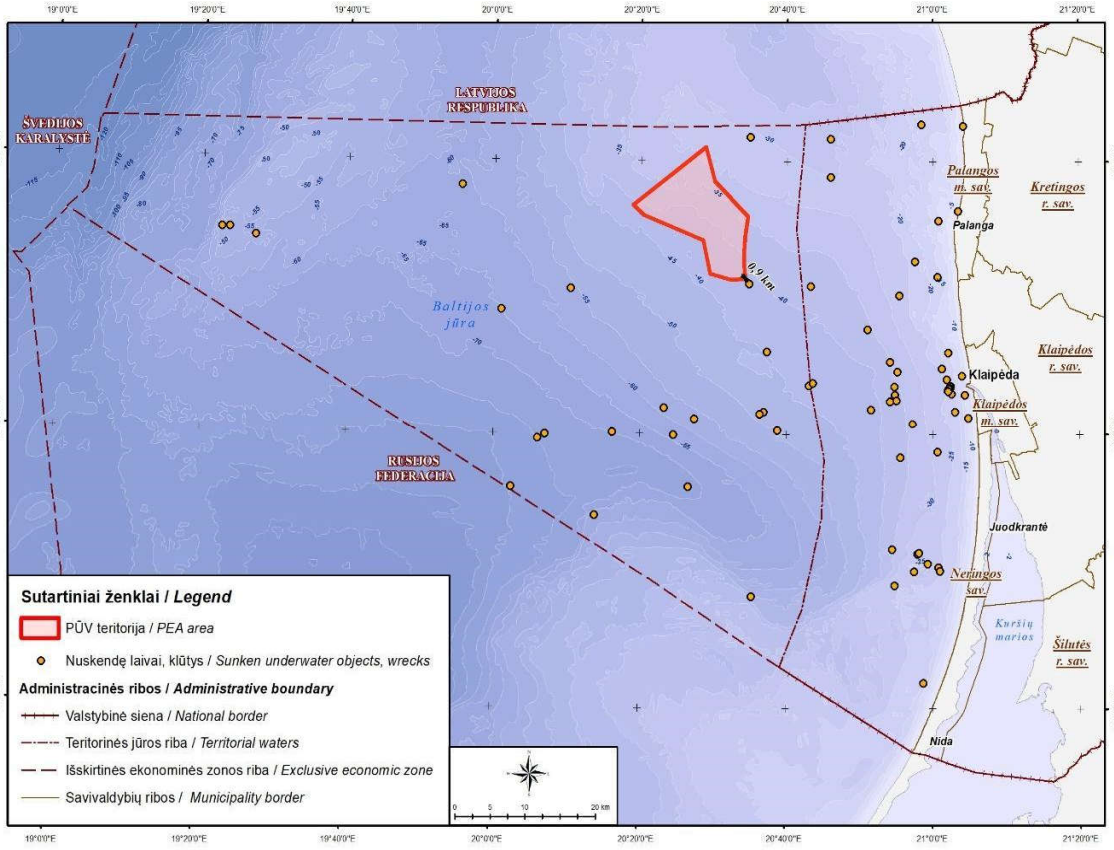
Underwater cultural heritage and obstacles

UCW registered



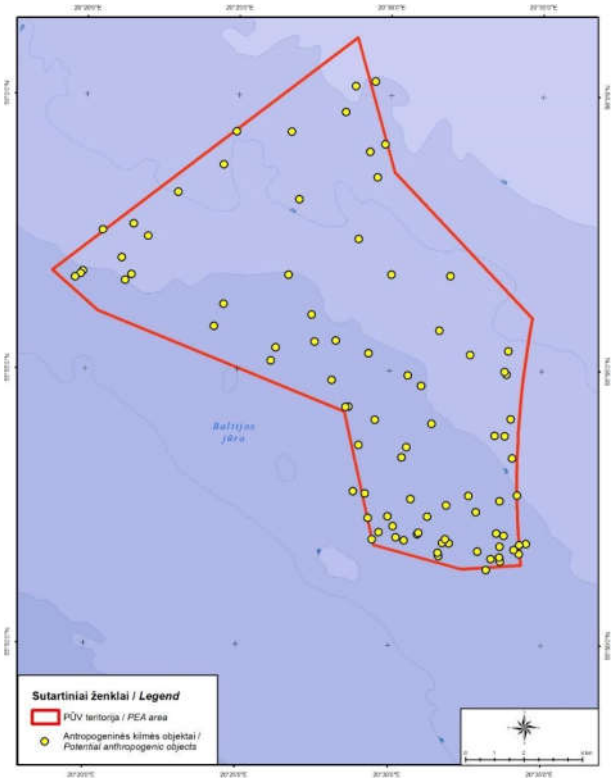
Closest object - 24 km

Wrecks



Closest wreck ~9 km

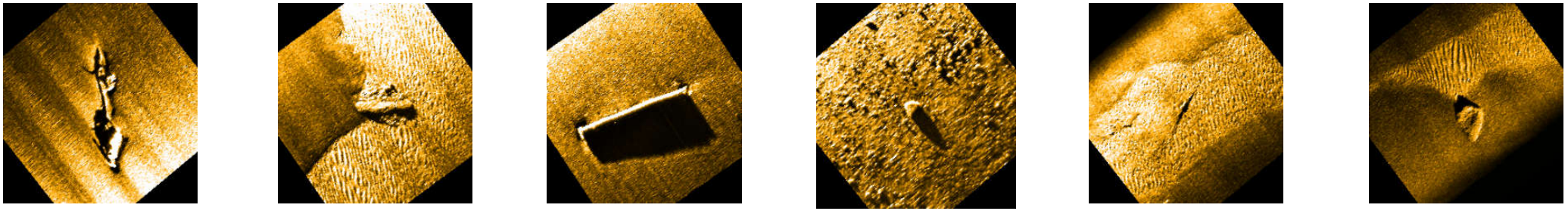
Underwater cultural heritage and obstacles



183 objects identified:
8 – possible relicts of trees/remains
58 – possibly anthropogenic,
2 – very likely anthropogenic
24 – linear objects

Other – natural features, boulders etc.

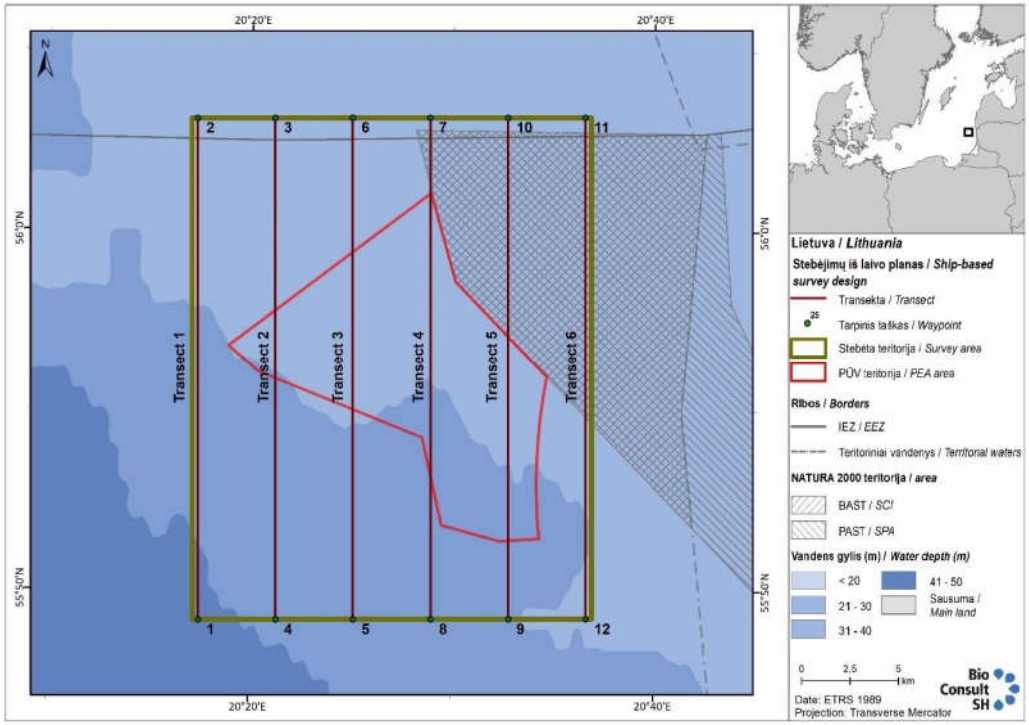
Conclusion: There are no archeologic/historic/cultural heritage registered in the Cultural Heritage Register in the PEA are. However, potential remains of anthropogenic objects and old tree trunk relicts probably representing historical coastline, which are of potential importance for the exploration of seascape, were identified



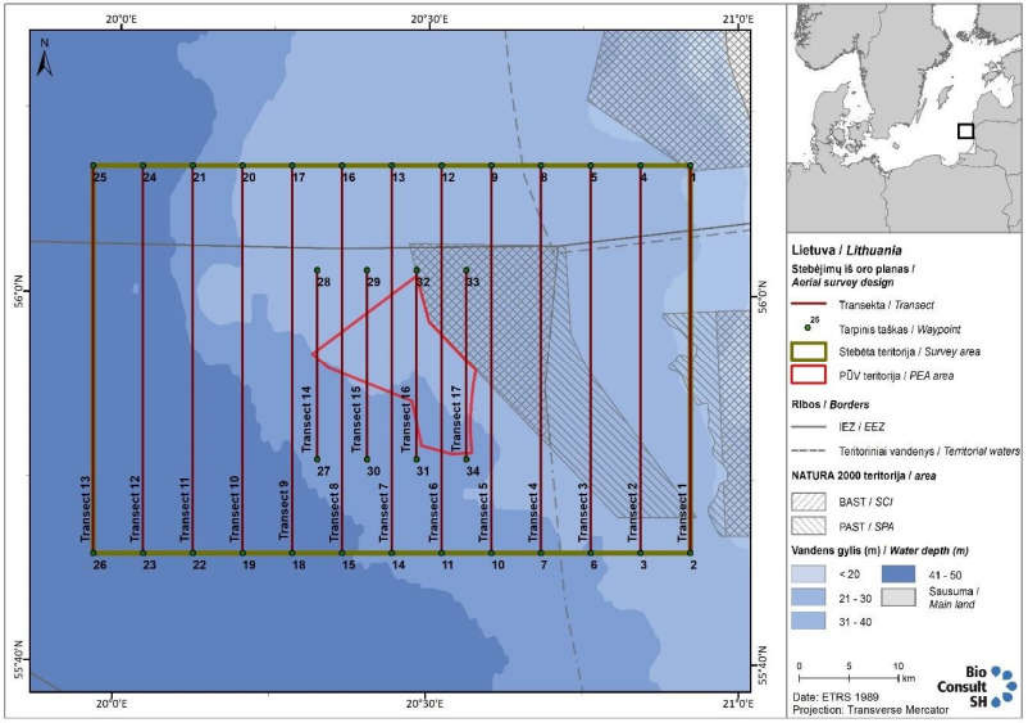
Possible mitigation measures: conduct additional archeologic studies of identified objects using underwater robots and/or divers; or to 'isolate' the marked objects and plan for no seabed excavation in the site of the marked objects, including 10 m diameter safety zone

Birds

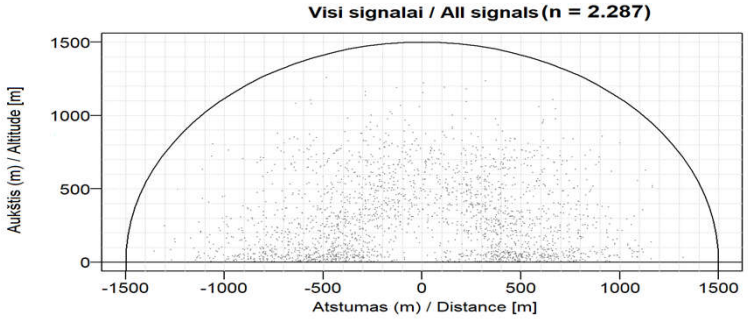
Vessel transects



HiDEF/survey from aircraft

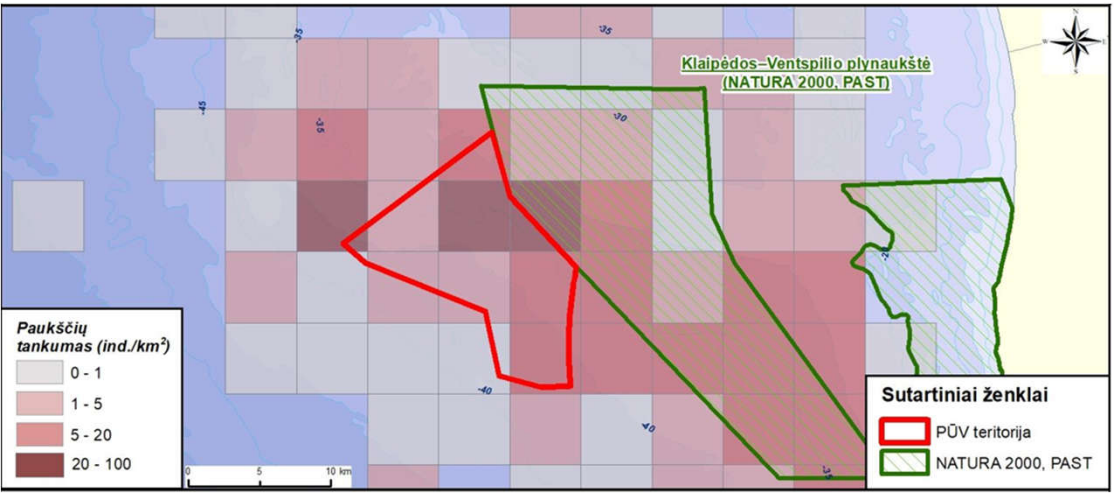


Radar observations

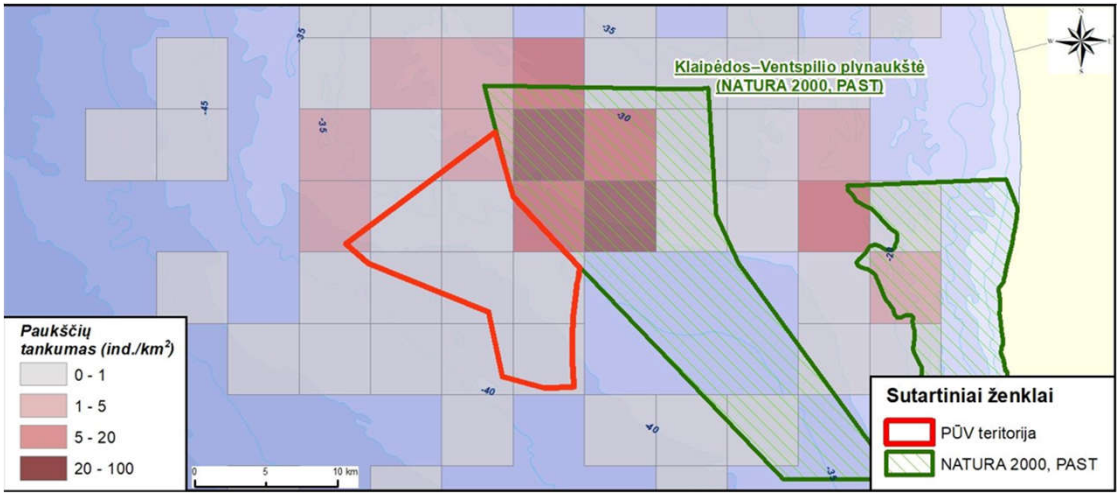


Wintering birds

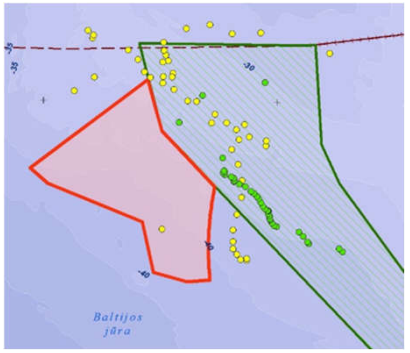
Velvet Scooter



Long-tailed Duck

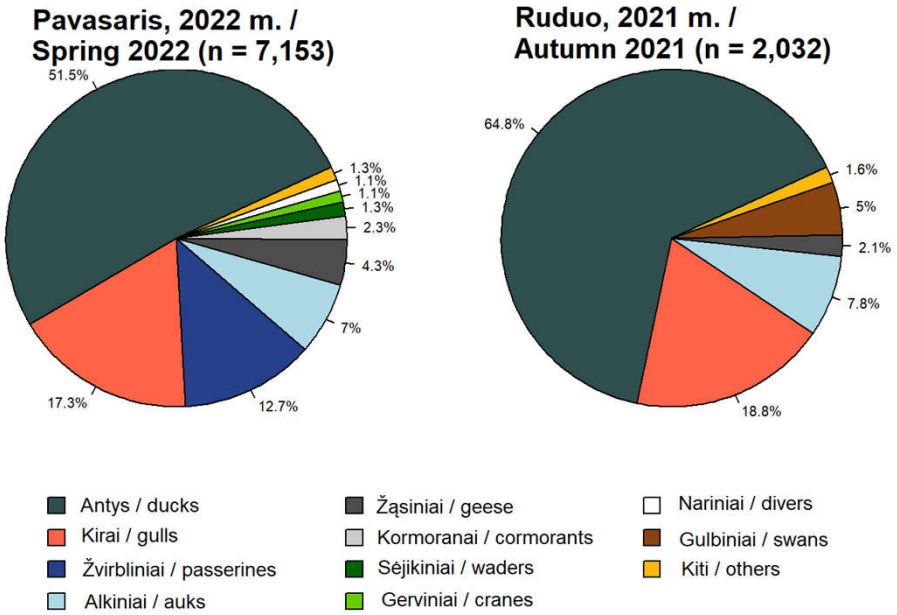


Telemetry data of Long-tailed ducks



Possible mitigation measures: WT installation should avoid wintering season (April-October) and/or use noise mitigation measures around piledriving; avoid most valuable feeding grounds and move WTs in a distance from IBPA

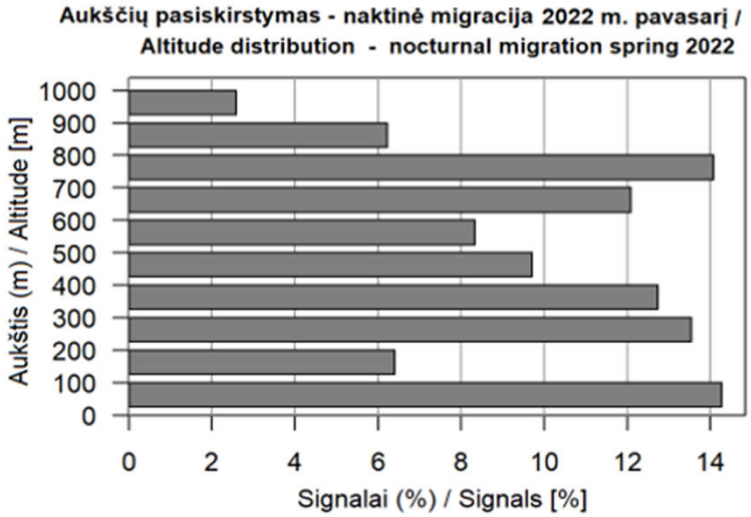
Migrating birds



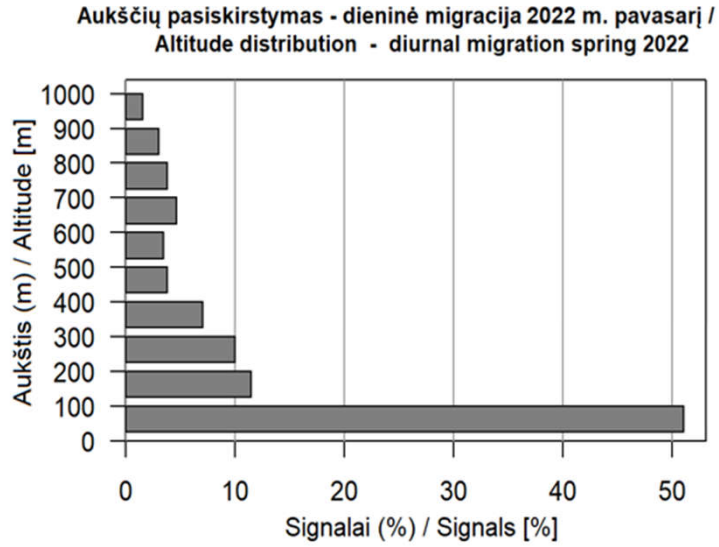
During Spring and Autumn migrations birds mainly flies up to 400 m high.

Possible mitigation measures : using green lights for WTs – this reduces attraction and number of potential injuries

Night migration

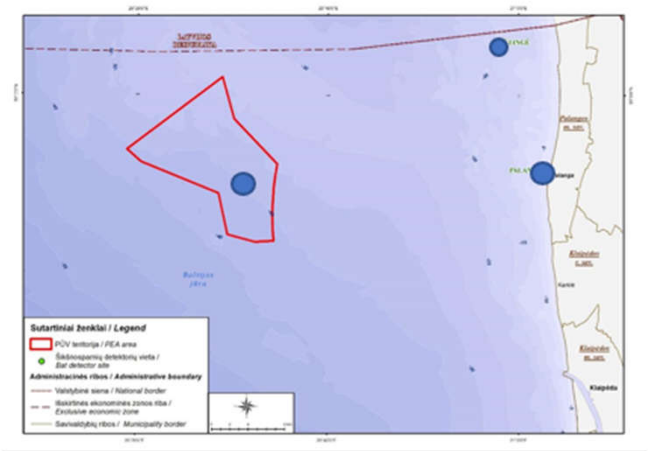


Day migration

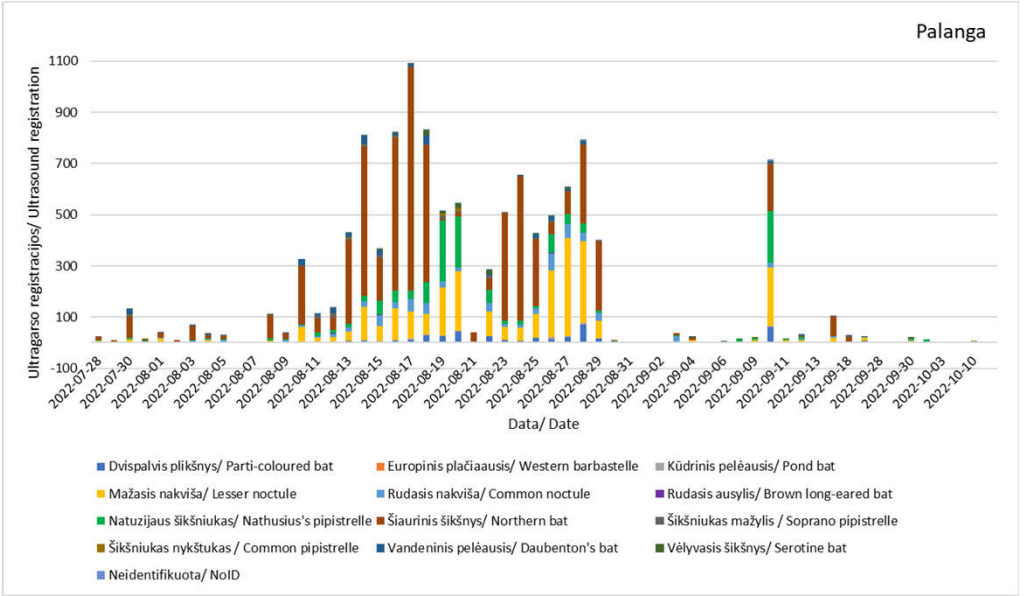


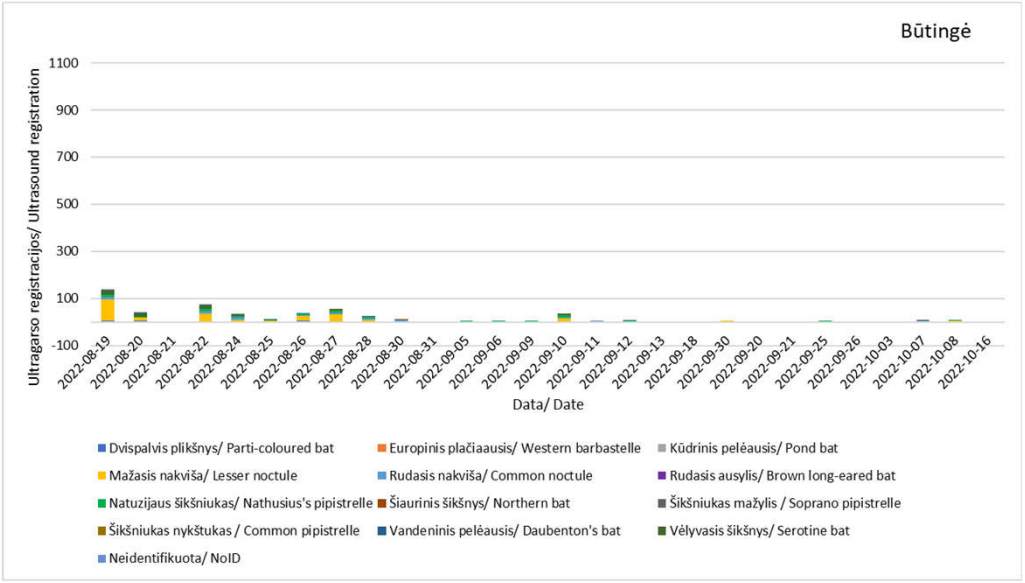
Bats

Observation stations



Migration peak: August 10 – August 29



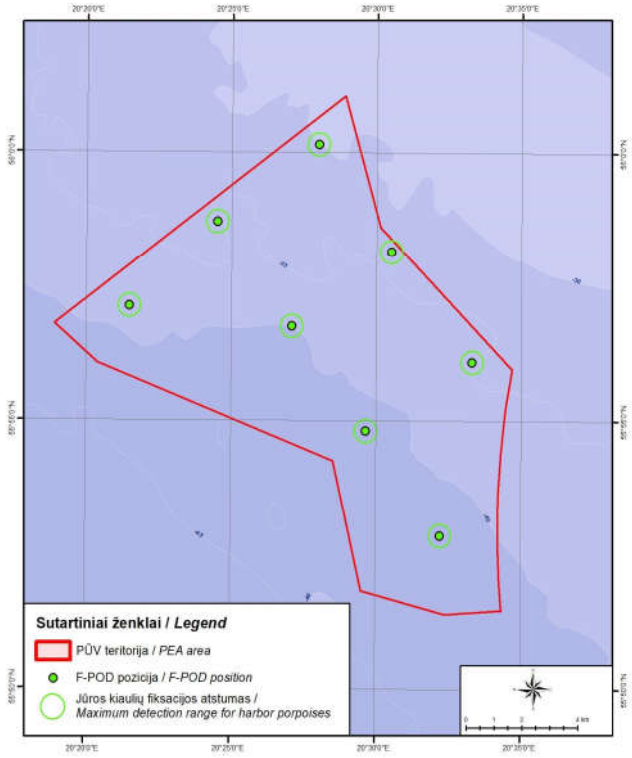


Impact on bats is not expected

Migration is observed in 300 m distance from the shore

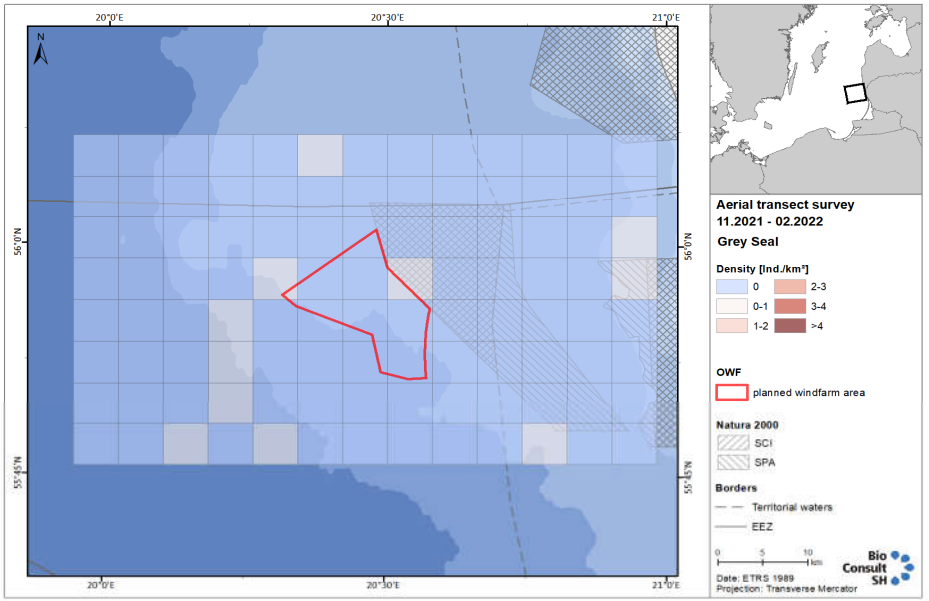
Sea mammals

F-Pods



Harbour porpoise was not observed in the area

Species	Latin name of the species	Aerial surveys	
		Number of individuals	%
Grey seal	*Halichoerus grypus*	13	76.5
Seal	*Pinnipedia*	4	23.5



Possible mitigation measures : using noise reduction/absorption, soft start and acoustic deterrence measures

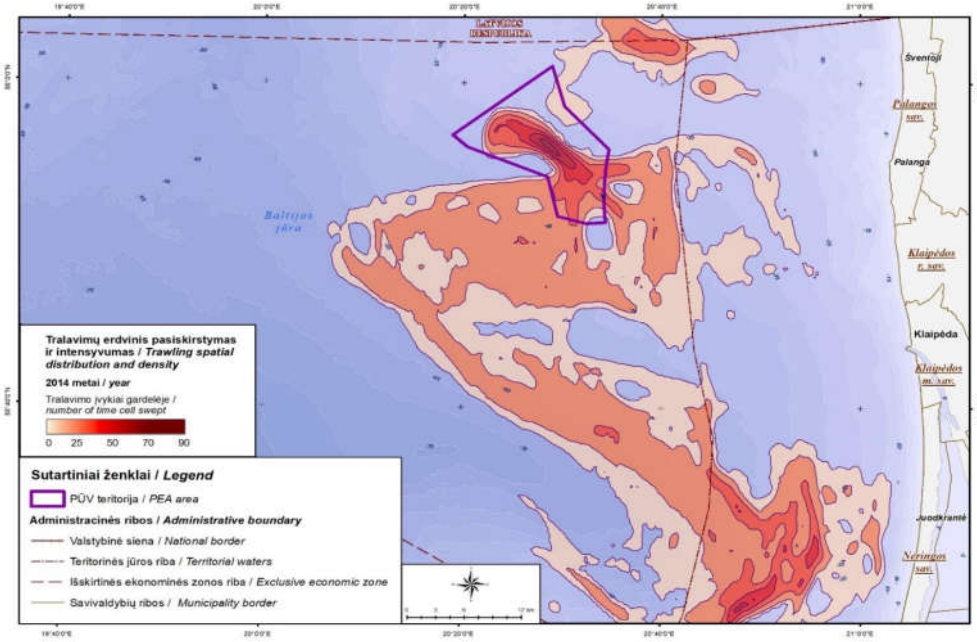
Fish

Species	
Baltic herring	★ Main commercial species
Baltic cod	★
European flounder	
Shorthorn sculpin	
European smelt	★
Great sand eel	
European plaice	
Viviparous eelpout	
Three-spined stickleback	
Turbot	
European sprat	★
Twait shad	★

Possible mitigation measures : using noise reduction/absorption, soft start and acoustic deterrence measures

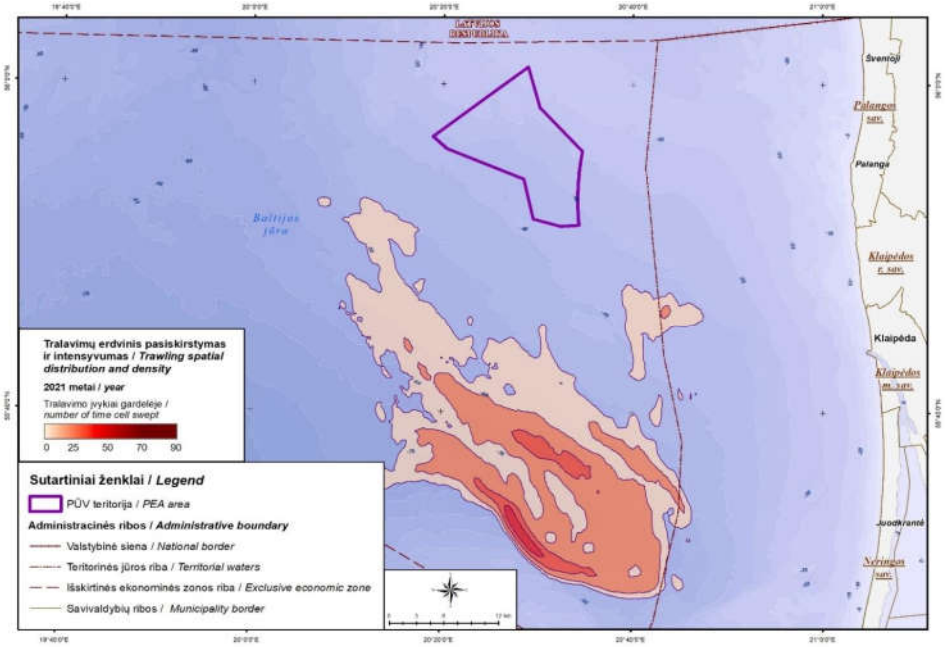
Fishing

Trawling intensity before suspension **(2014 m)**



Area used	Hours of trawling	Catches
50.7%	510	Cod– 4,840 kg **Flounder– 59,220 kg** Herring– 12,860 kg

Trawling intensity after suspension**(2021 m)**

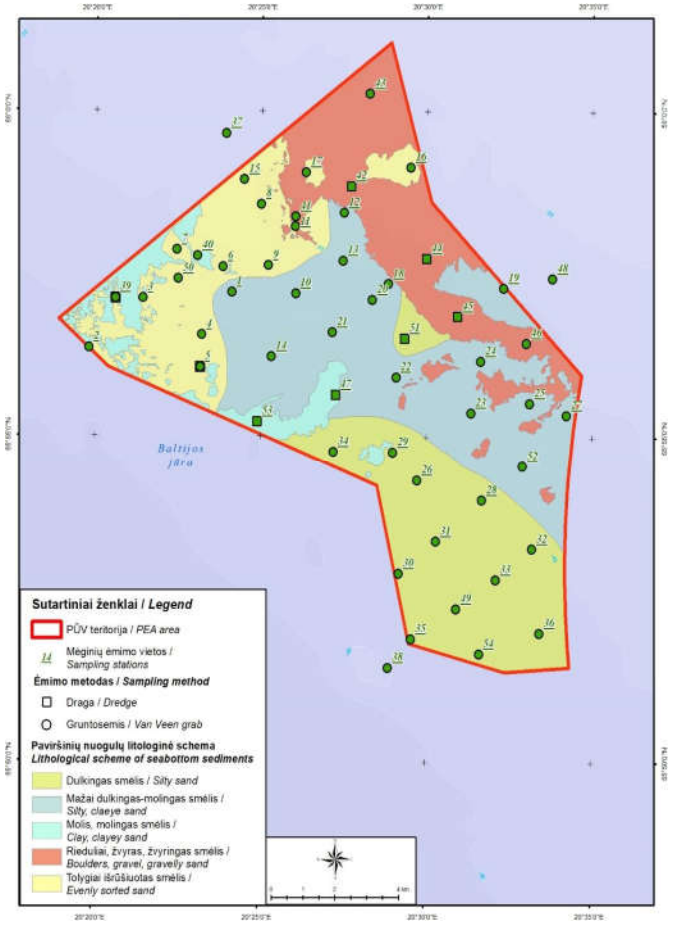


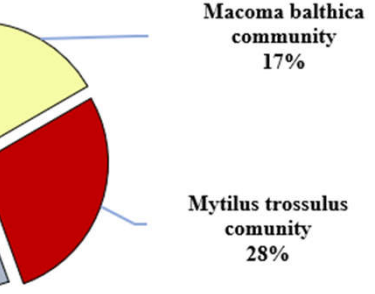
Area used	Hours of trawling	Catches
<1%	2,5	**Herring – 640 kg** Sprat – 7 kg

Bottom habitats

Circalittoral sand (soft bottom) habitat

Circalittoral boulders and biogenic reef

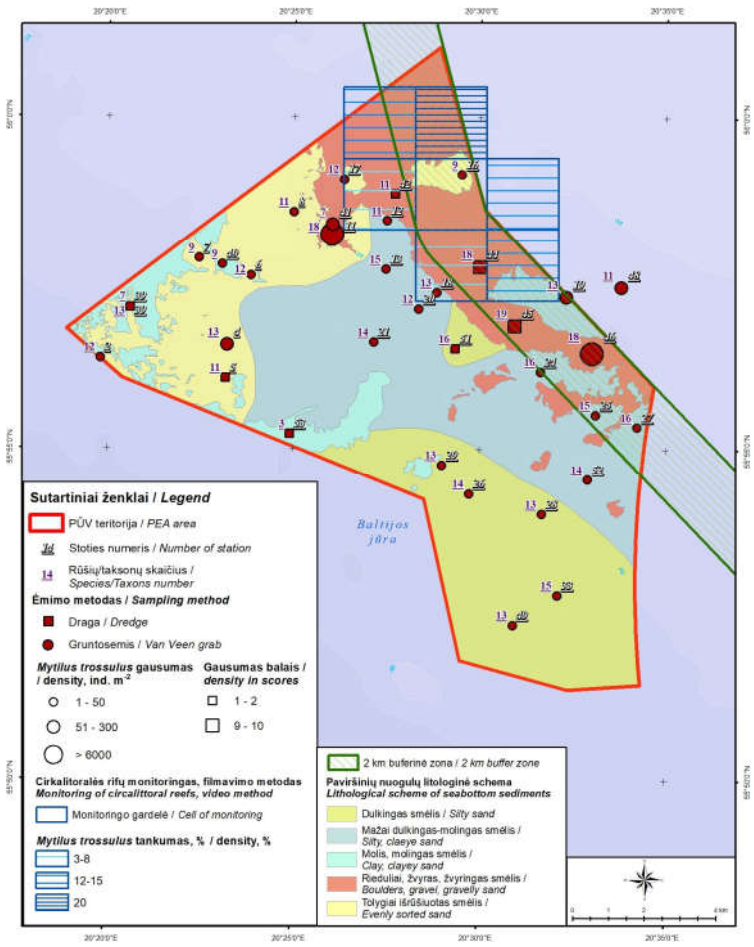


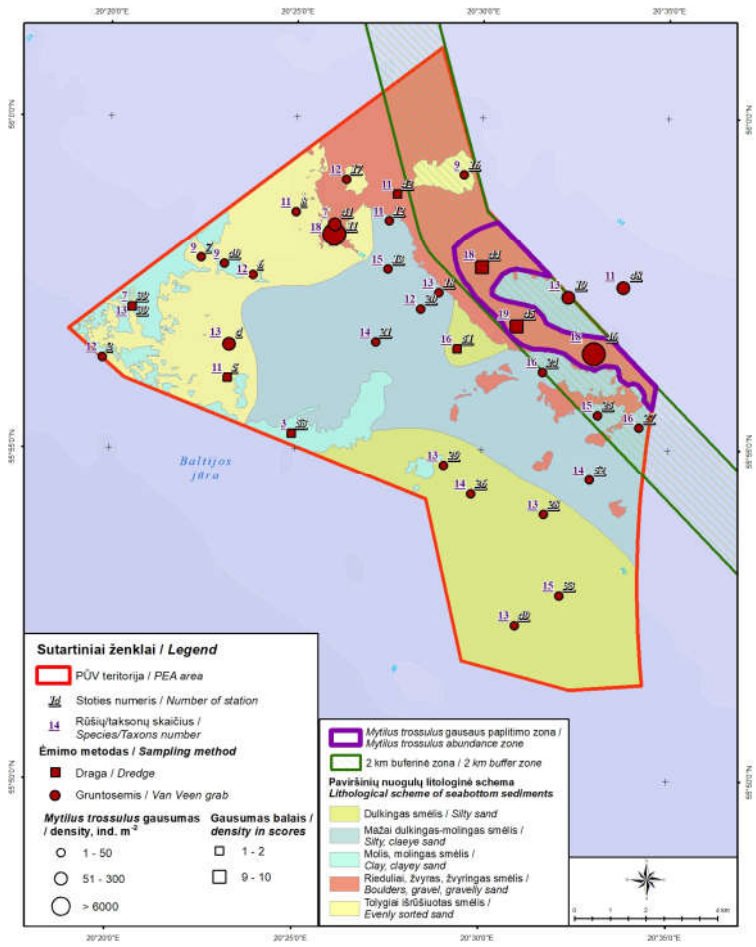


Invertebrate :
36 species/taxa
Soft bottom: 26 (6 unique).
Hard bottom: 30 (10 unique).

Bottom habitats

Biogenic reef/*Mytilus trossulus*

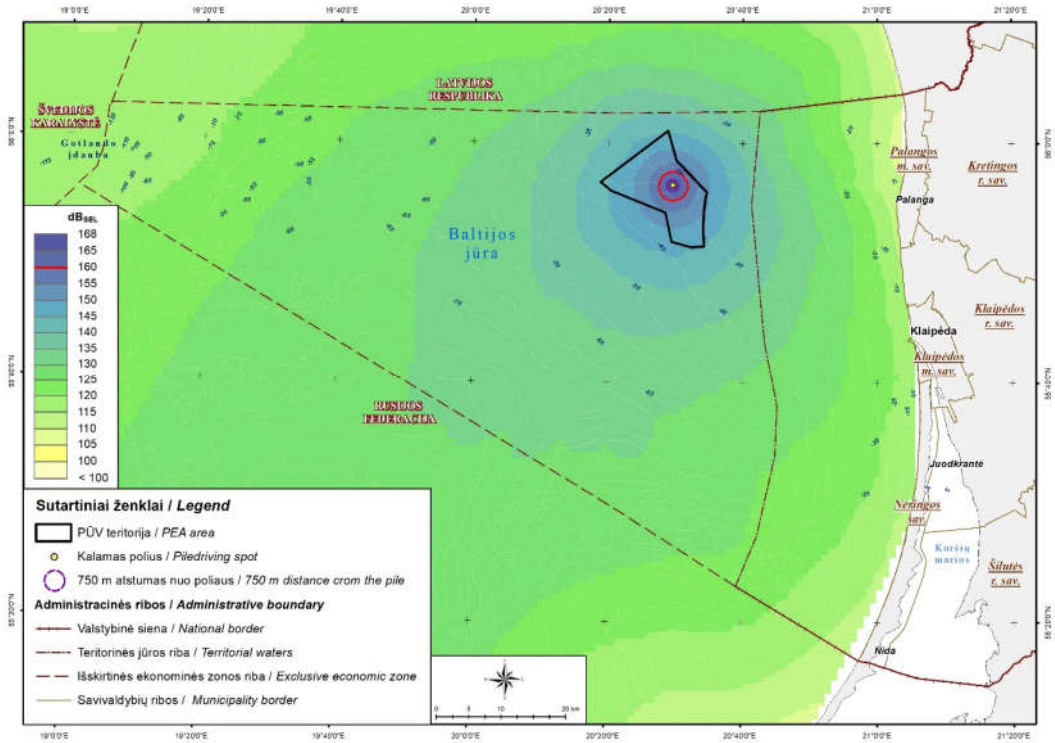




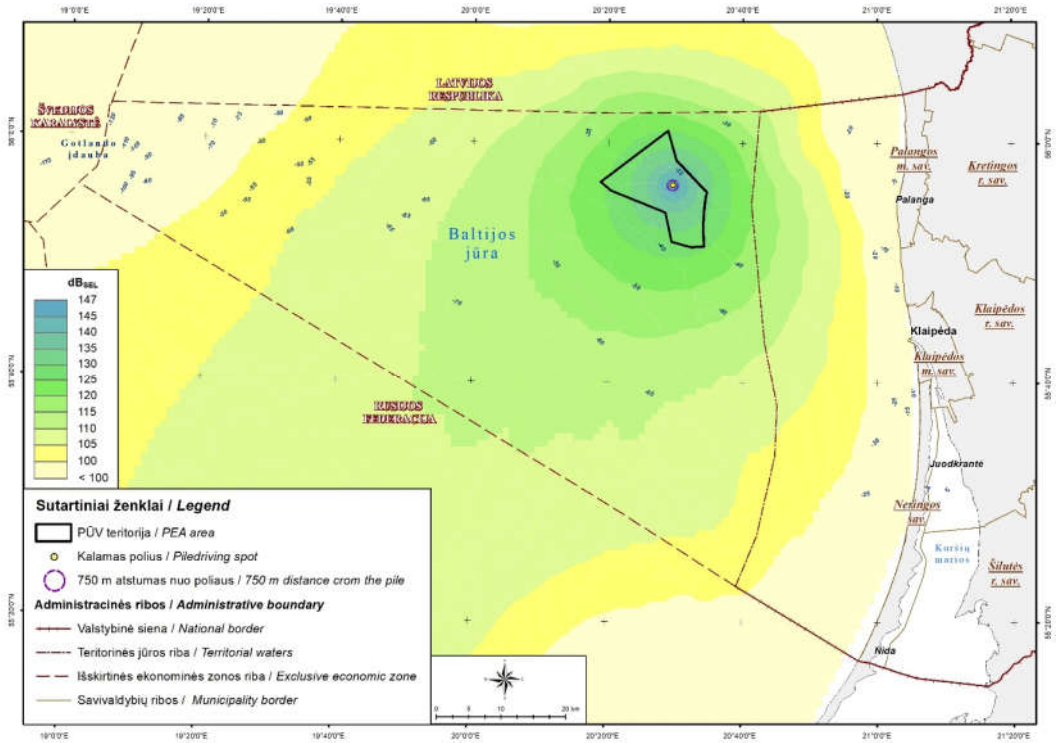
AREA – 6,6 sq.km
7 WT area - 0,008 sq.km / 0,012 %

Possible mitigation measures : avoiding WT foundations installation and cabling in the most valuable reef and high abundance of protected species zones

Underwater noise



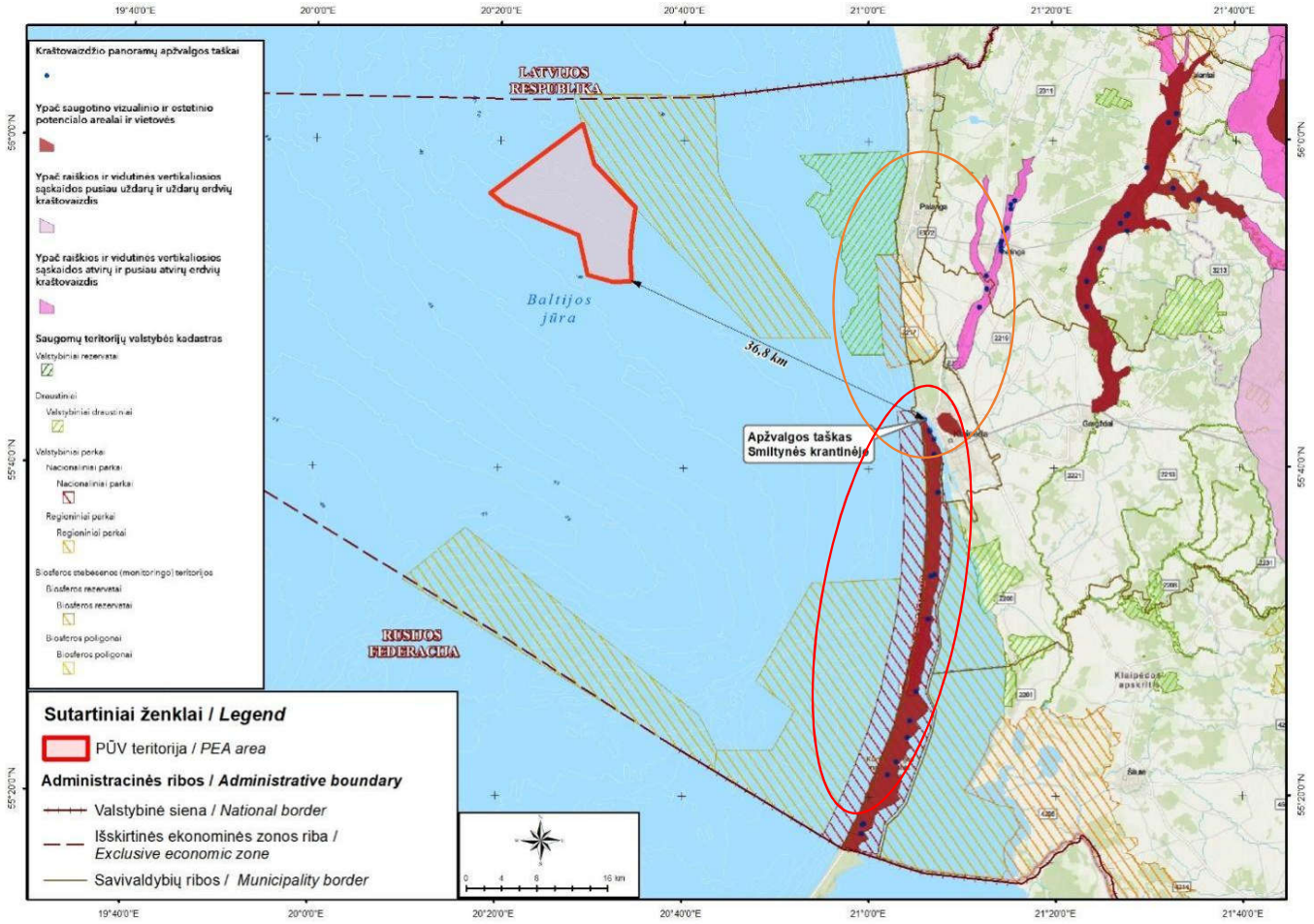
Underwater noise/pile driving



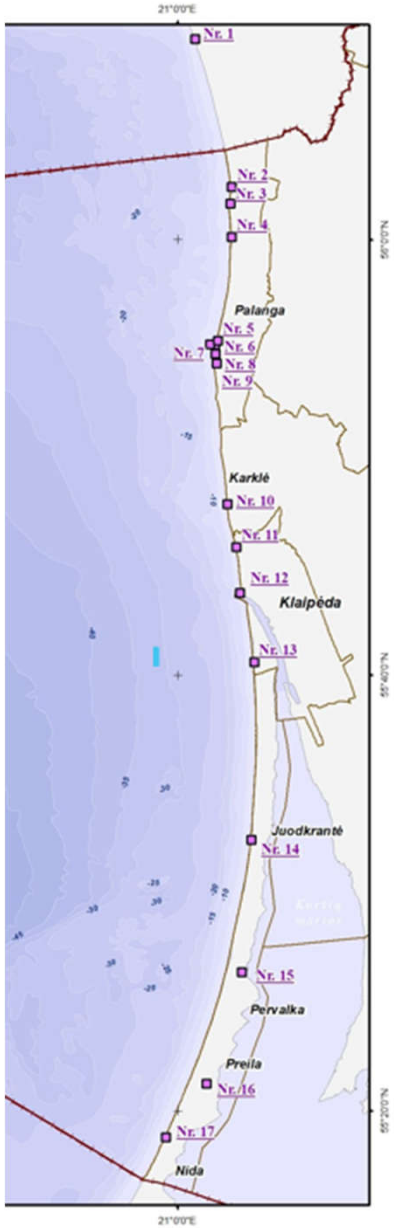
Underwater noise after double boule curtain applied

Possible mitigation measures : using noise reduction/absorption, soft start and acoustic deterrence measures

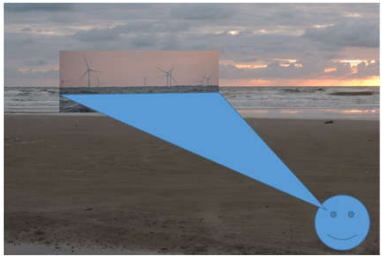
Landscape

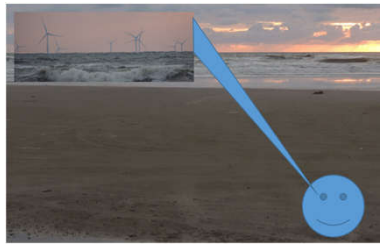


OWE position in respect to valuable landscape zones



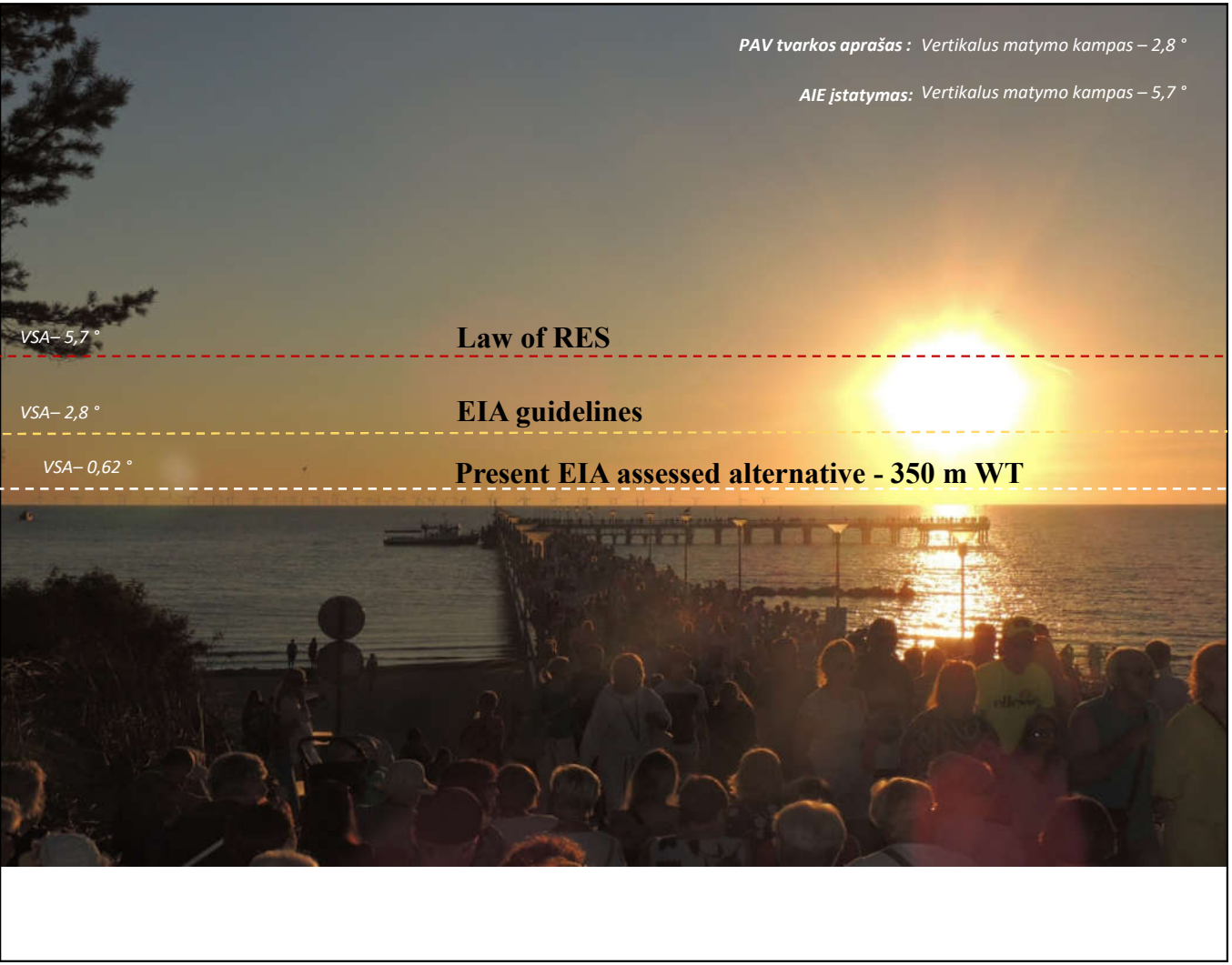
Observation sites





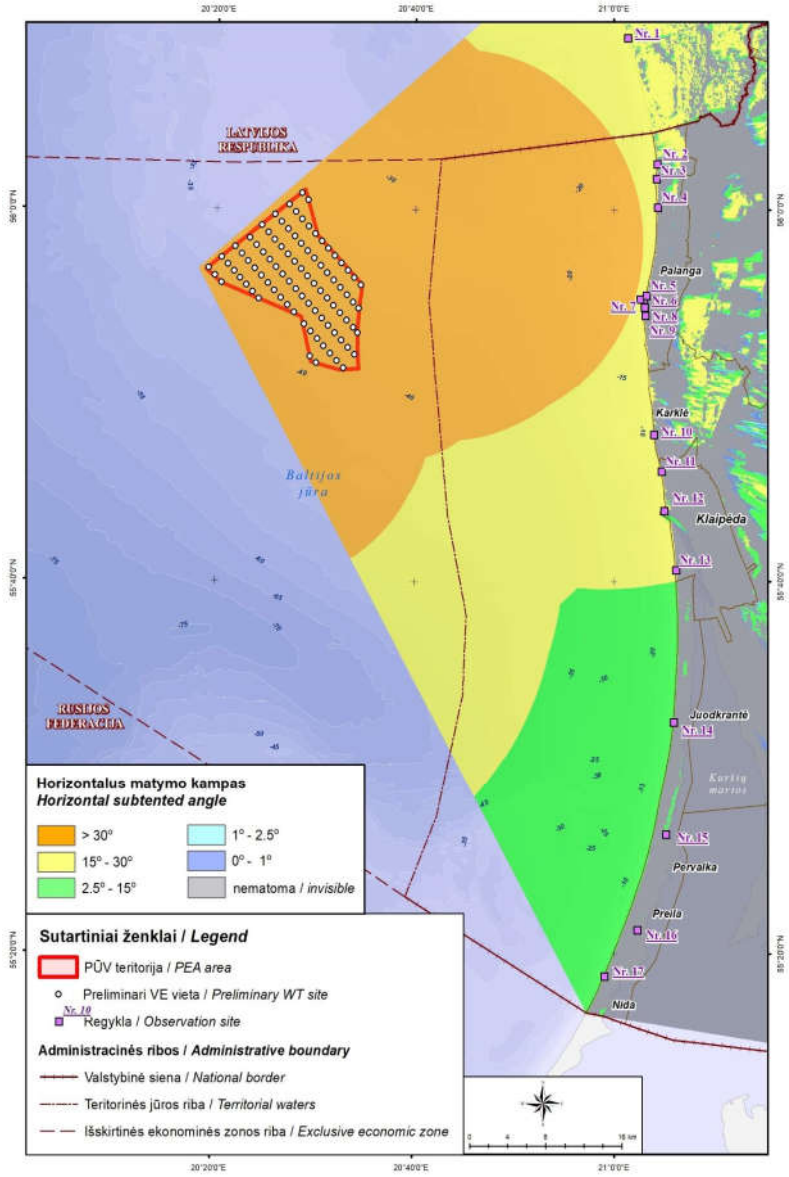
Vertical subtended angle

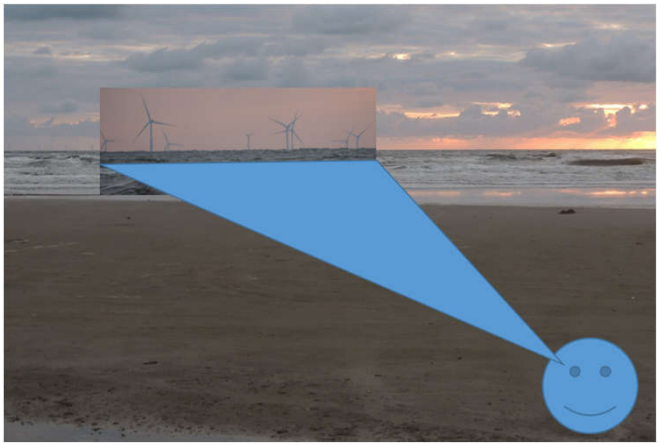
Allowed/planned thresholds



Horizontal subtended angle /
Sunset disturbance

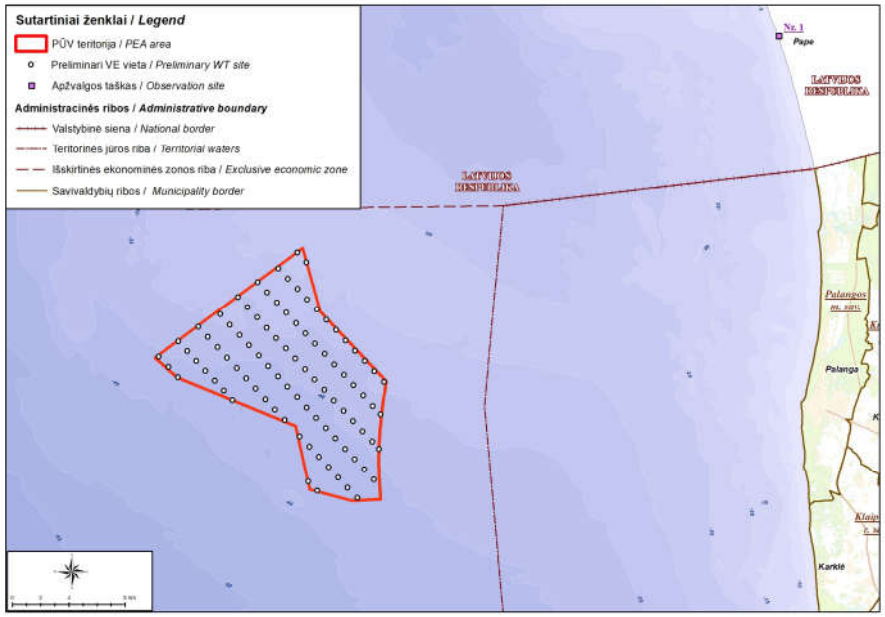
Palanga pier	08.30–10.13	02.28–04.12	89





Visibility from Pape Beach (Latvia)

No.	Observation site	Minimum distance to WT, km
1	**Pape Beach (Latvia)**	**37,0**

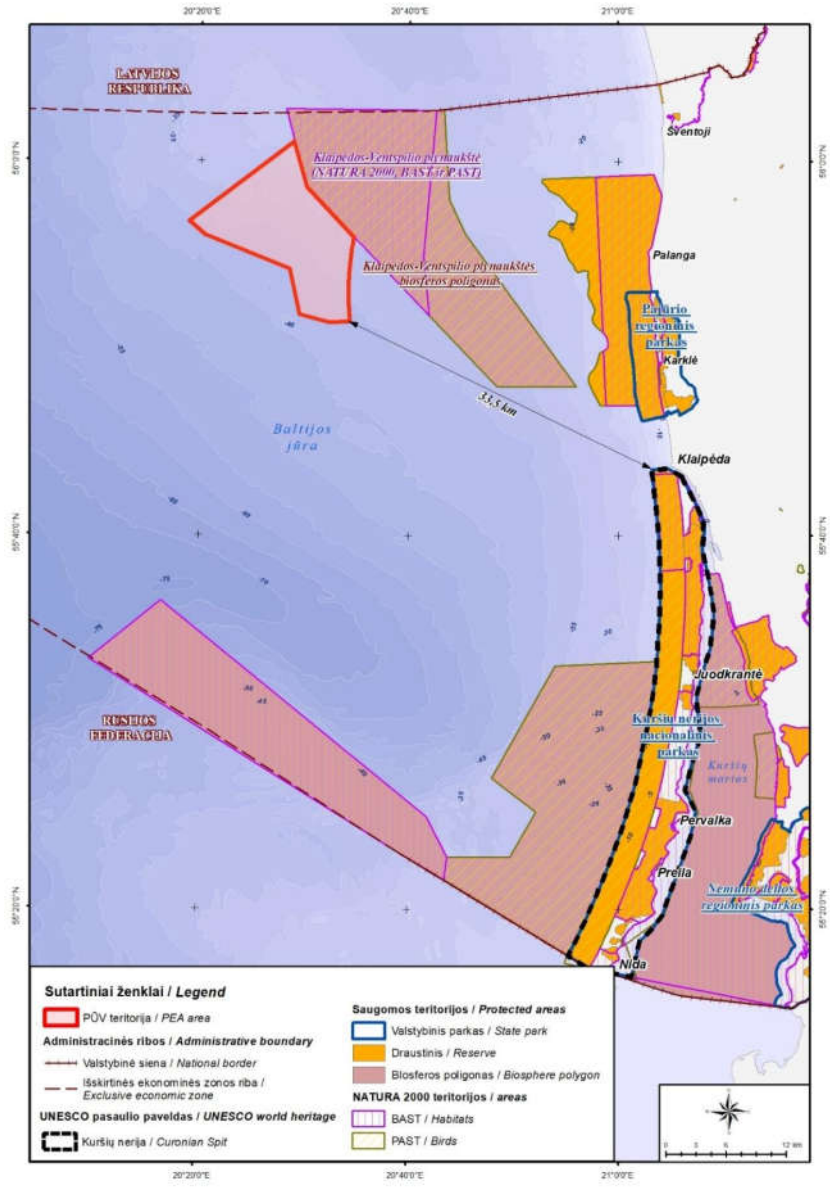


Possible mitigation measures:
Use light colors to minimize color contrast, avoiding white;
Use a special paint composition absorbing and preventing reflections;
Apply (if possible) least visible pattern of WT placement;
Limit the WT height until technically/energetically reasonable;

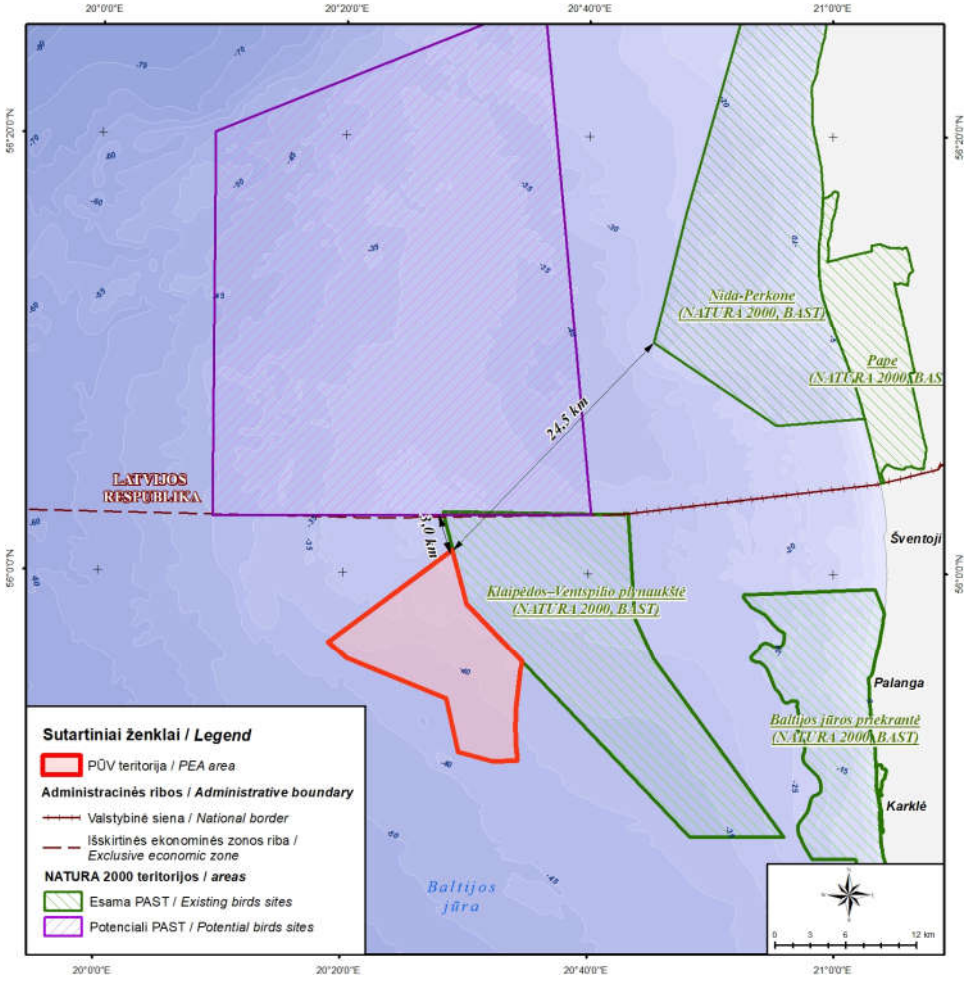
Pape beach	10.30–02.15	0,45 dgr VSA	

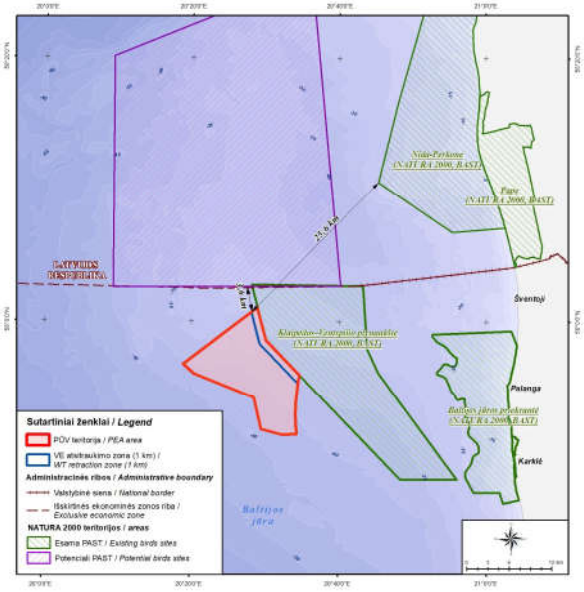
Protected and Natura 2000 areas

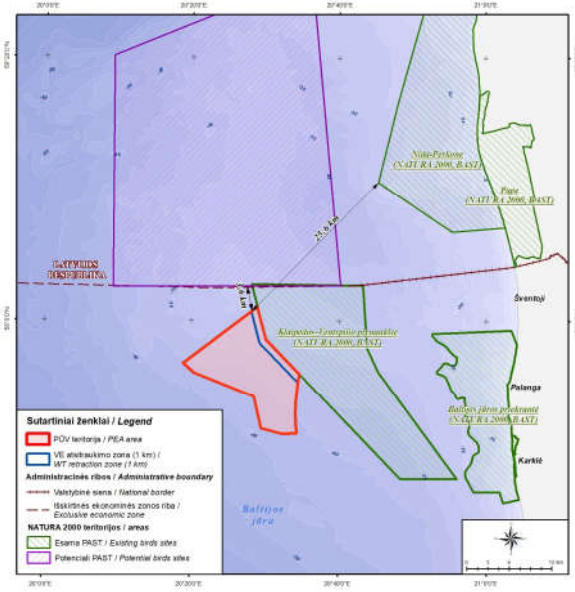
Protected area	Protected value
Klaipėda – Ventspils plateau biosphere reserve	1170 **reefs** **Velvet scooter** (*Melanitta fusca*), **razorbill** (*Alca torda*), **long-tailed duck** (*Clangula hyemalis*),
„Natura 2000“ IBPA Klaipėda – Ventspils plateau	Vintering **velvet scooter**
„Natura 2000“ IHPA Klaipėda–Ventspils plateau	1170 **reefs**



Protected and Natura 2000 areas on Latvia side







Possible mitigation measures:

Planning stage

• Moving the north-eastern edge of the planned park (*i.e.* not to plan the WT foundations and cable routes) from the protected and Natura 2000 IBPA site Klaipeda-Ventspils Plateau at a distance of 2 km

Construction stage

• Avoid pile driving during the wintering of birds (in December-March), routes of vessels installing the OWE park should avoid Natura 2000 IHPA areas.

Operating stage

According to the impacts identified during operational monitoring, the mitigation measures proposed at the time are applied.

The impact (scaring away of the protected area) is to be considered significant when the abundance of birds protected in the "Natura 2000" IBPA area, i.e. the number and/or density of protected bird species individuals in the monitored area, reduces by more than 20% from the natural long-term (10 year) population fluctuation.

Risk assessment

Analyzed threts/risks:

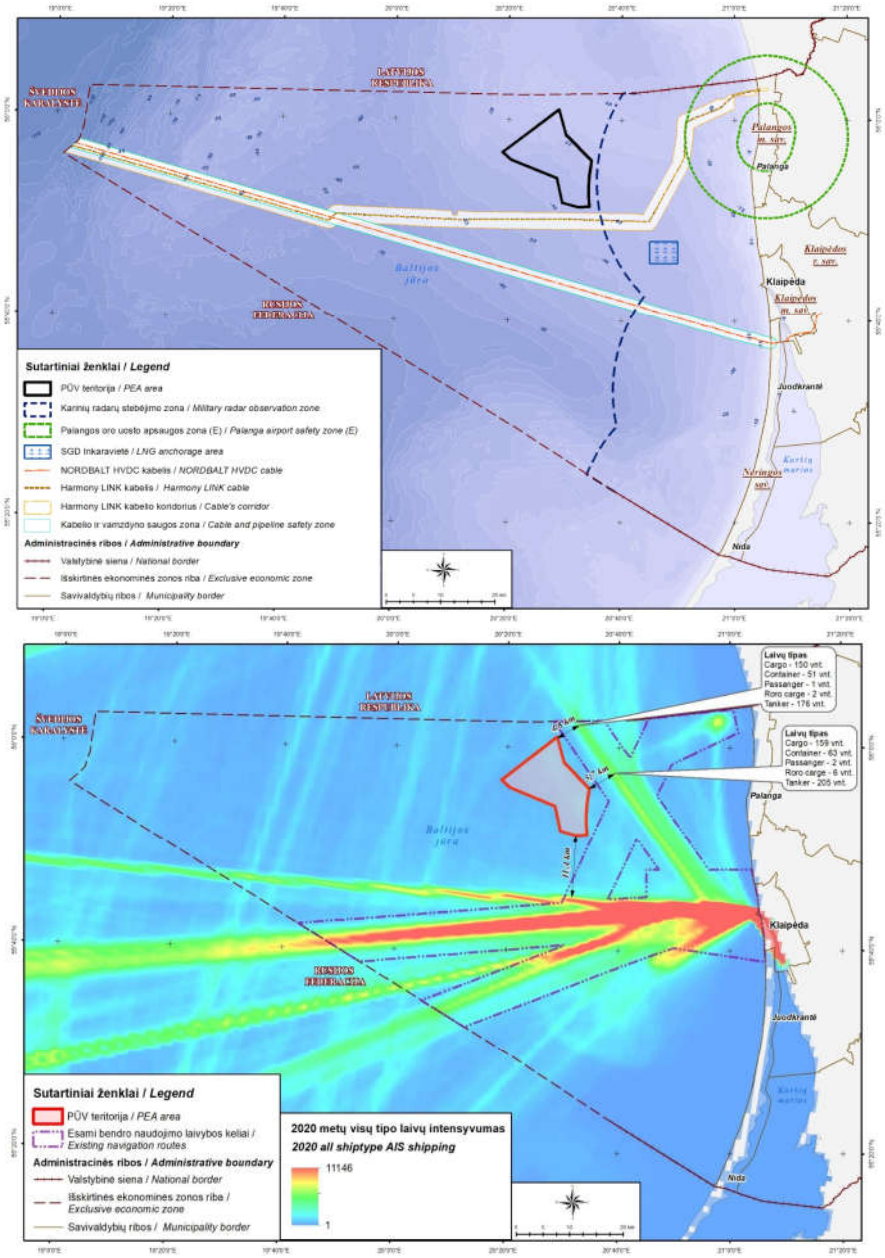
1. Risk objects where an accident may occur;
2. Risk sources in risk objects;
3. The nature of accidents;
4. Potential vulnerable objects;
5. The consequences of an accident;
6. The estimated probability of an accident;
7. Factors that increase risk.

Summary: significant (unavoided risks) are not identified.

Medium scale risks to be managed by applying ALARP measures

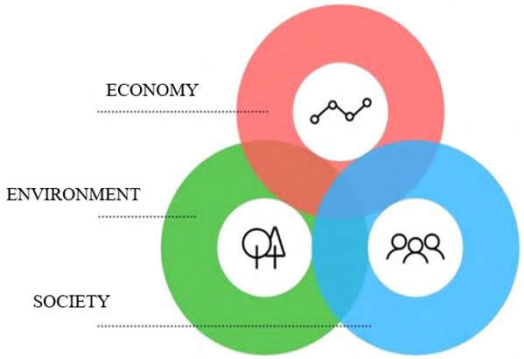
Emergency response, fire-fighting measures and procedures will be provided for in the preparation of the technical design .

The plan for response to pollution incidents at sea, if required, should be developed before the construction stage



Alternatives of development scenarious

- **Alternative I (technical):** WTs are installed in the entire area approved by the Resolution no. 697 of LRV using WT models with total height of up to 350 m;
- **Alternative II (balanced):** WT installation sites are located 1 km further away from the border of the protected area using up to 350 m high WT models (without limiting the installation of other infrastructure elements in this area);
- **Alternative III (environment-friendly):** WT installation sites are located 2 km further away from the border of the protected area using up to 350 m high WT models (without limiting the installation of other infrastructure elements in this area).



	I alternative	II alternative	III alternative
Natural environment	-1.15	**-0.15***	-0.15
Social environment and society	0.90	0.90	0.90
Economic environment	3.00	**2.70***	2.70
Total value	**0.92**	**1.15***	**1.15**

*** If additional measures (bottom habitats investigations and temporal, during bird wintering shut dawn of WTs) are applied**

Further steps of the EIA process

Submission of EIA report for approval to EIA entities

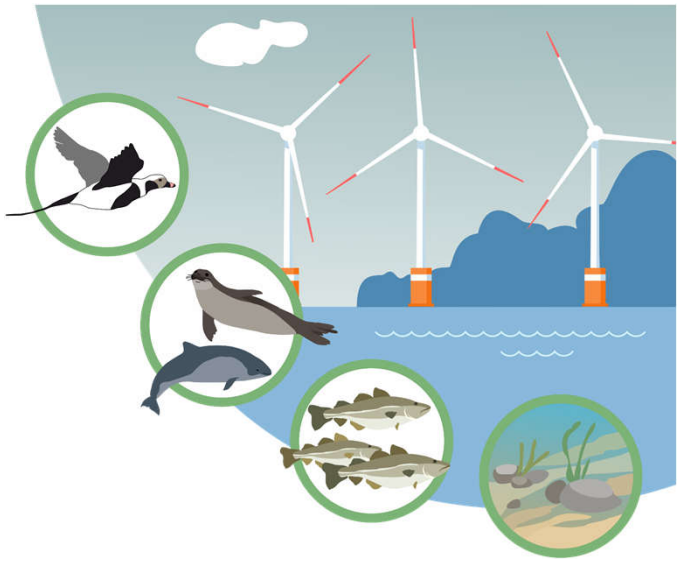
- Palanga City Municipality Administration;
- Klaipėda District Municipality Administration;
- Klaipėda City Municipality Administration;
- Klaipėda Department of National Public Health Centre under the Ministry of Health;
- Klaipėda County Fire and Rescue Department;
- Department of Cultural Heritage under the Ministry of Culture, Klaipėda Division
- State Service for Protected Areas under the Ministry of Environment;
- SE Klaipėda State Seaport Authority;
- Lithuanian Geological Survey;
- Fisheries Service under the Ministry of Agriculture

Transboundary consultations continue in parallel

- Coordinated by Environmental ministry .
- Participants: Latvia, Estonia, Finland, Sweden, Denmark, Poland.

Approval of EIA report by

- **Environmental Agency.**



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Discussion, questions, answers

Please name yourself and your county before speaking