

Nord-Stream gaasijuhe ja võimalikud mõjud kalastikule ning kalapüügile



Ahto Järvik

1222 km

Vyborg -
Greifswaldi

Päritoluriigid:

Venemaa,
Soome, Rootsi,
Taani ja
Saksamaa

Valmis: 2011. a.

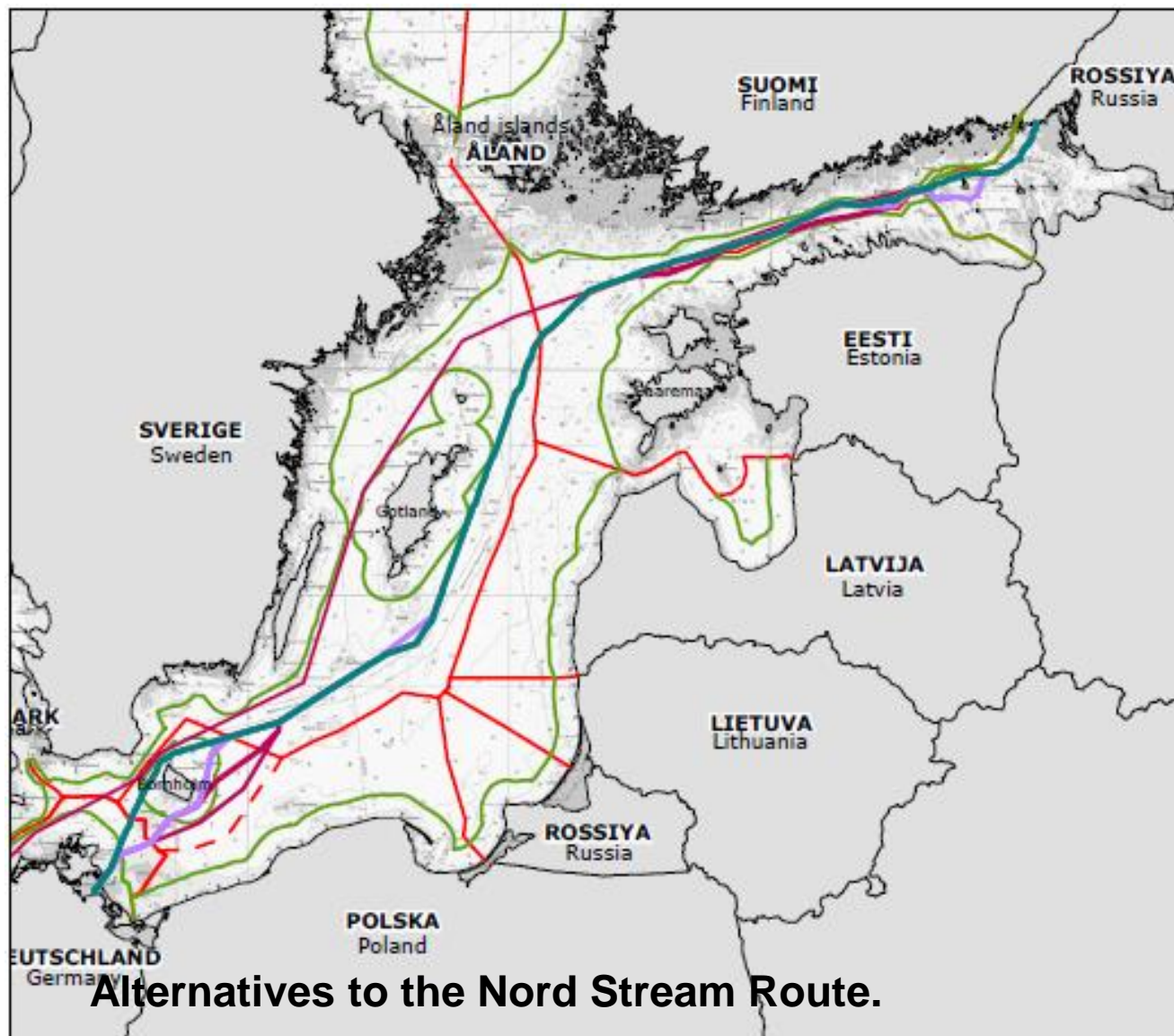
27,5 miljardit m³

Dsis = 1153 mm

Seina paksus:
26,8 mm ja 41,0
mm

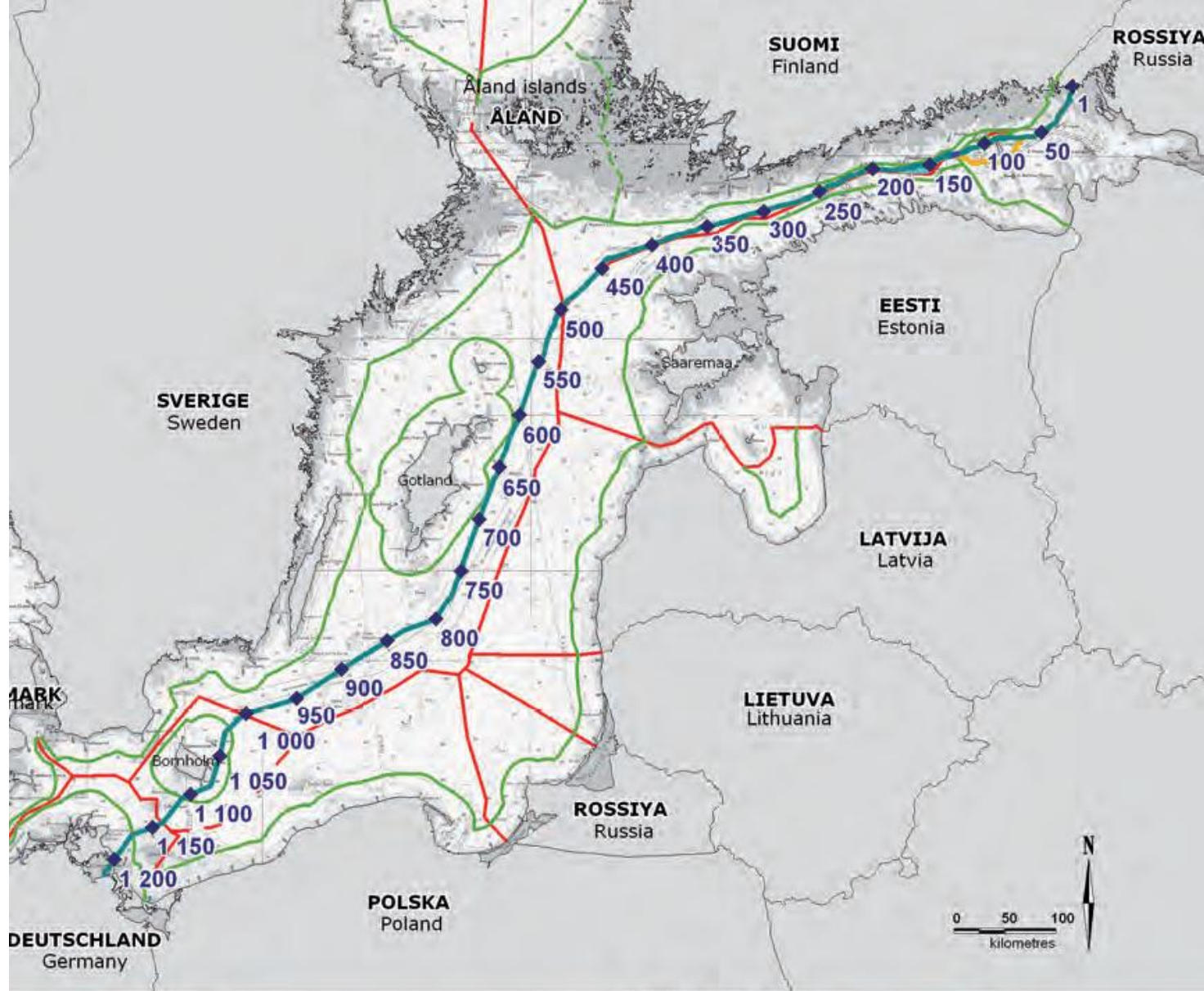
Korrosioonivas-
tase katte ja
betoonkattega
(60 kuni 110mm

Rõhk: üle 300
BAR'i (Vyborg)



Alternatives to the Nord Stream Route.





— Alternative 1 (C14)

— Alternative 2 (C16)

— Sub-alternative 1a/2a
(South of Gotland in Finnish section)

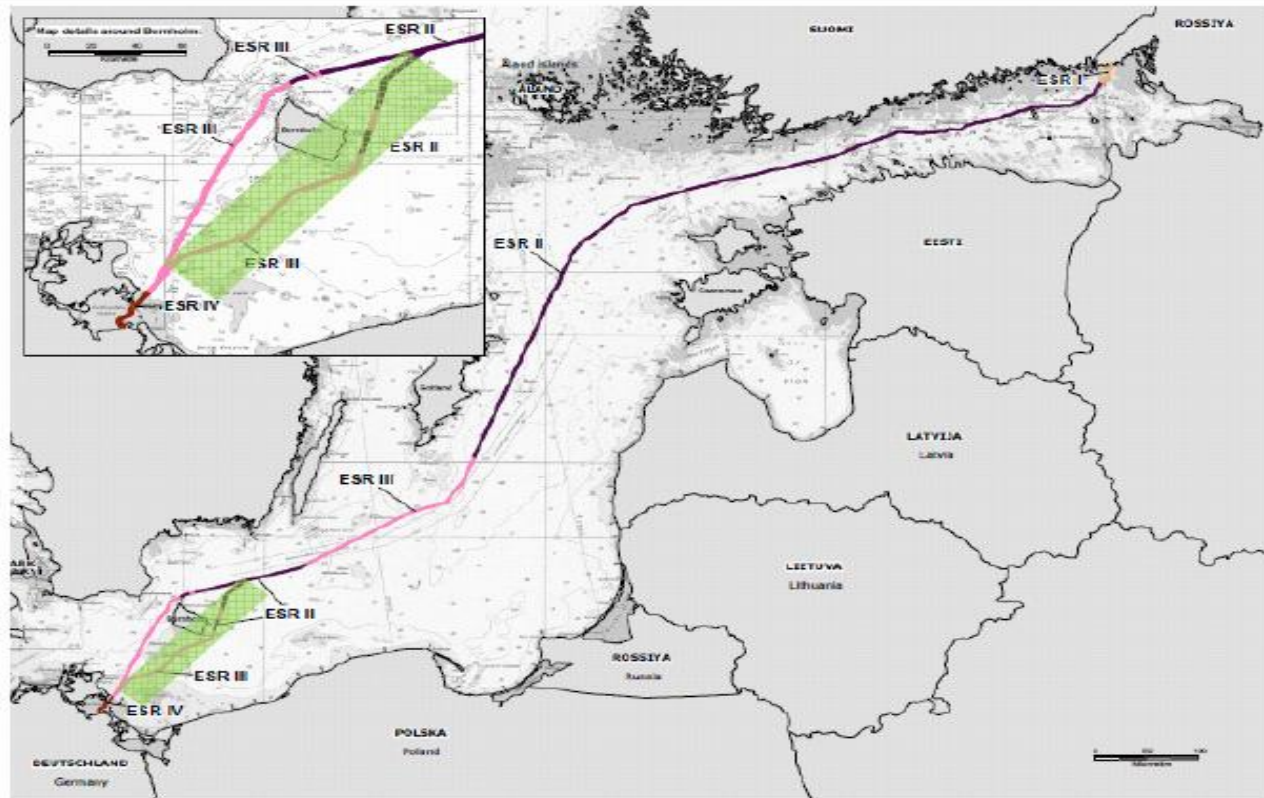
— South of Gotland in
Russian section

— Territorial border

--- Åland border

— EEZ border

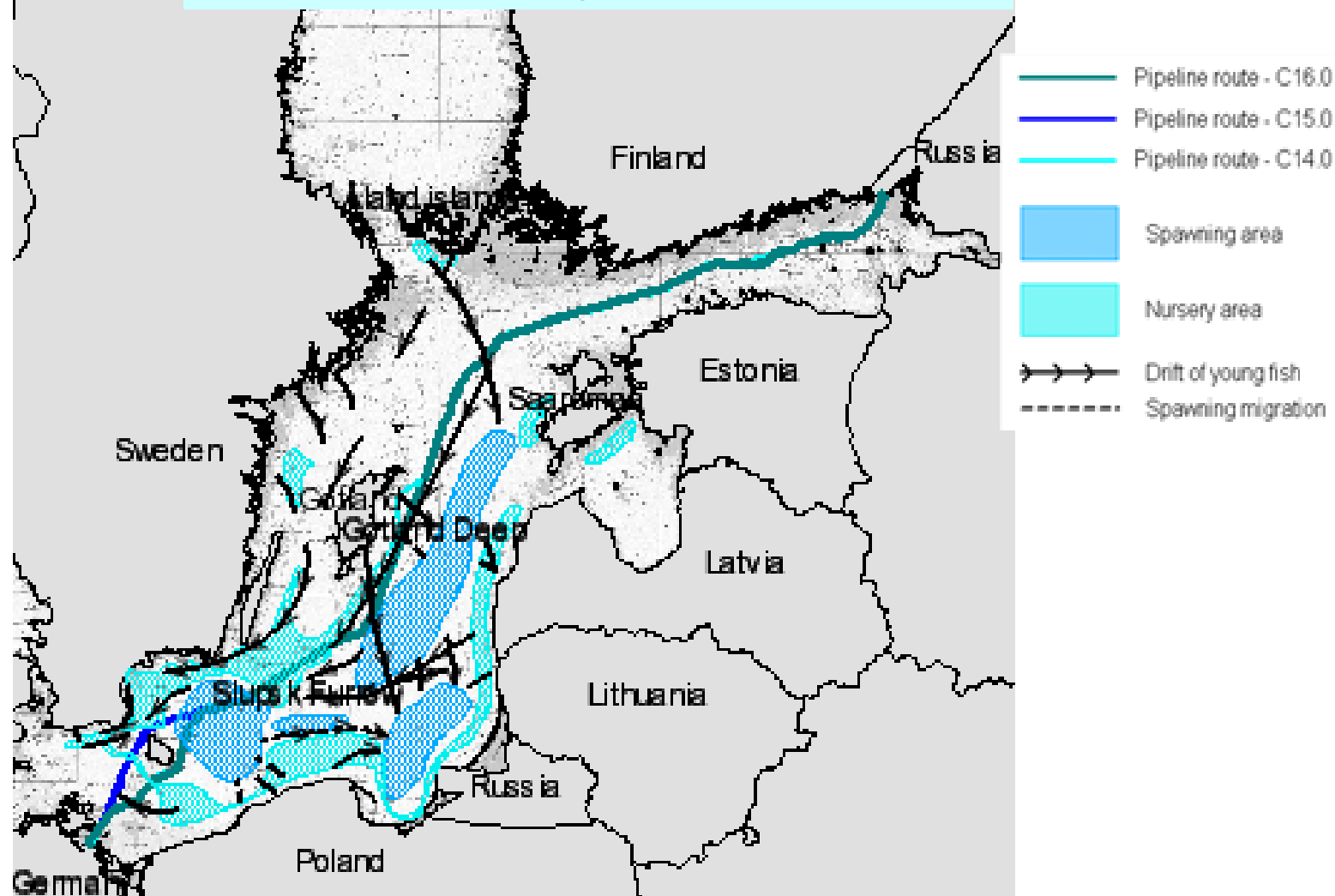
◆ Kilometre point, C14



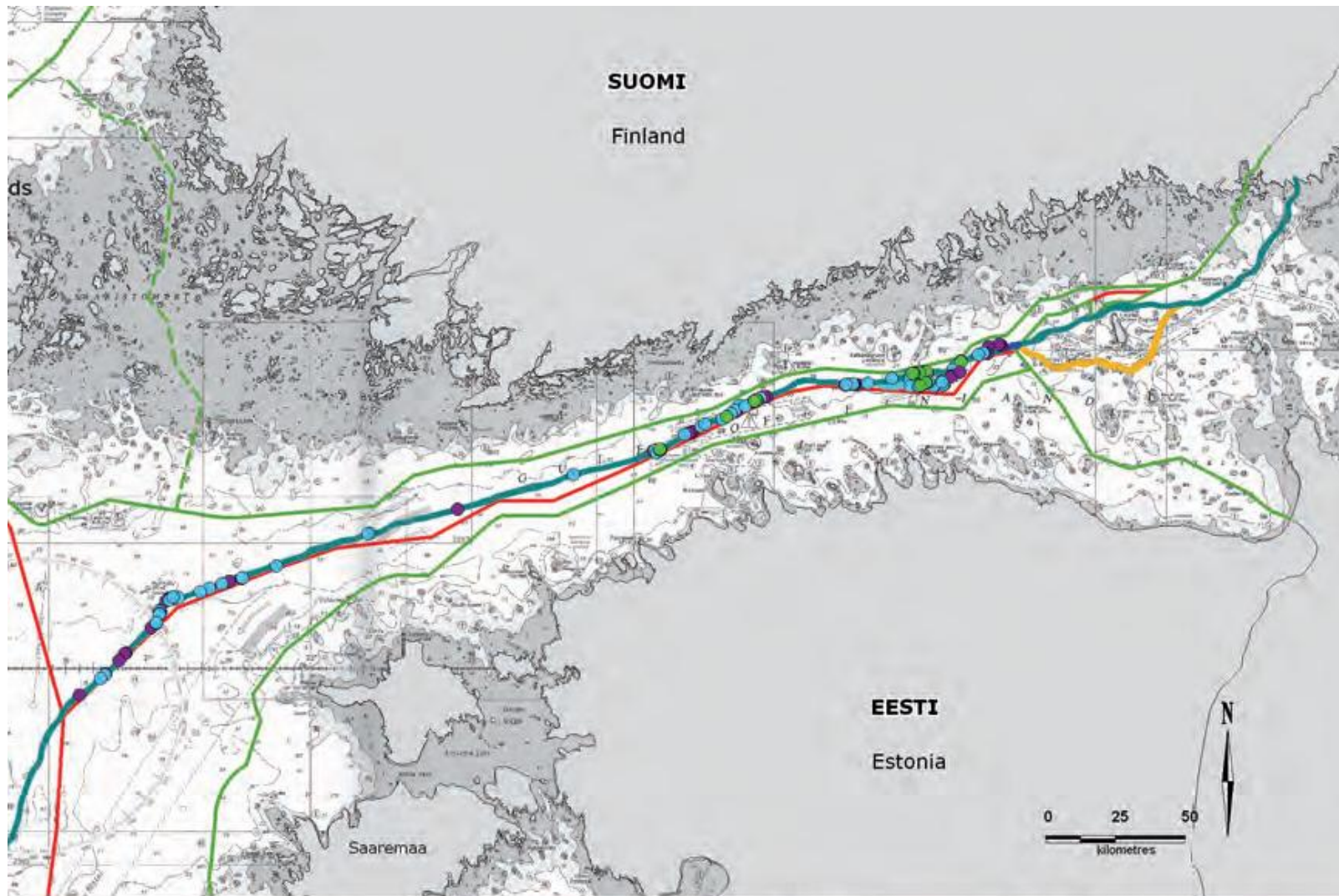
 Alternative Route of Bornholm (S-Route)

Ecological Sub-regions		Bottom Salinity	Dissolved Oxygen	Depth	Substrate
ESR I	The Gulf of Finland	Very low	Enough for biological activity	Shallow water	Less exposed bed
ESR II	Zones with temporary anoxia on the sea-bottom	High	Predominant Anoxia	Deep water	Mud
ESR III	The southern sandbanks	Medium	Enough for biological activity	Shallow water	Exposed mineral bed
ESR IV	Greifswalder Bodden	Low	Enough for biological activity	Shallow water	Less exposed bed

Võimalik mõju kalastikule



Based on final data (2009-02-03)

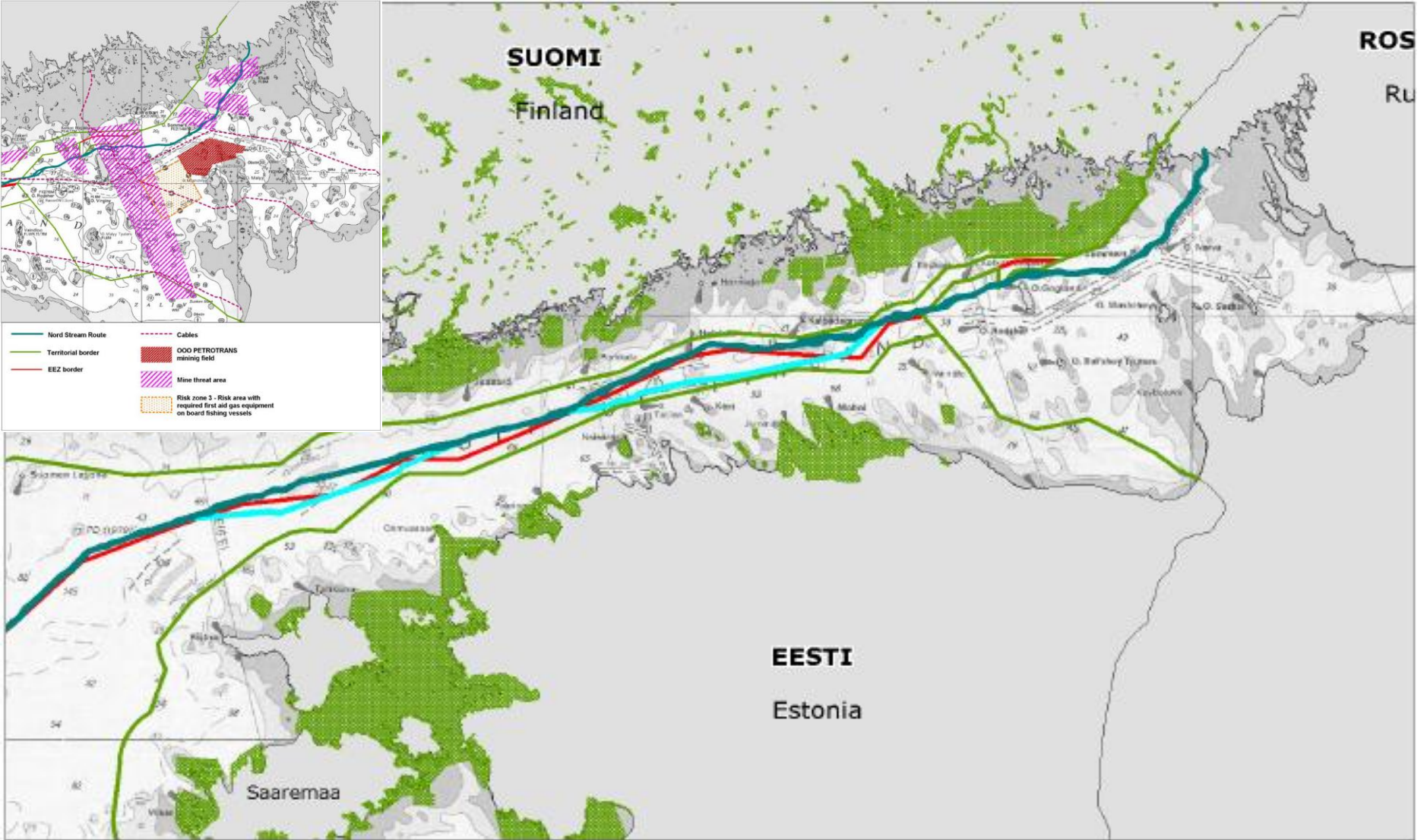


- Alternative 1 (C14)
- Alternative 2 (C16)
- Sub-alternative 1a/2a
(South of Gogland in Finnish section)
- South of Gogland in Russian section

- Territorial border
- - - Åland border
- EEZ border

- Rock placement - Pre-lay
- Rock placement - 2nd phase
- Rock placement - 3rd phase

Soome KMH



Nord Stream Route

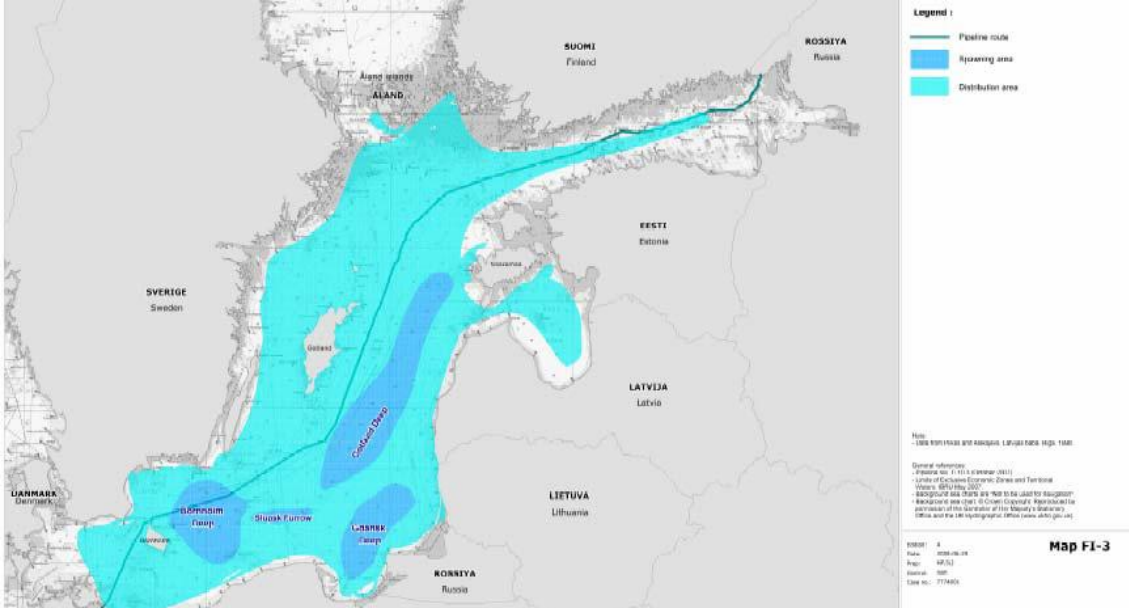
Possible optimisation

Territorial border

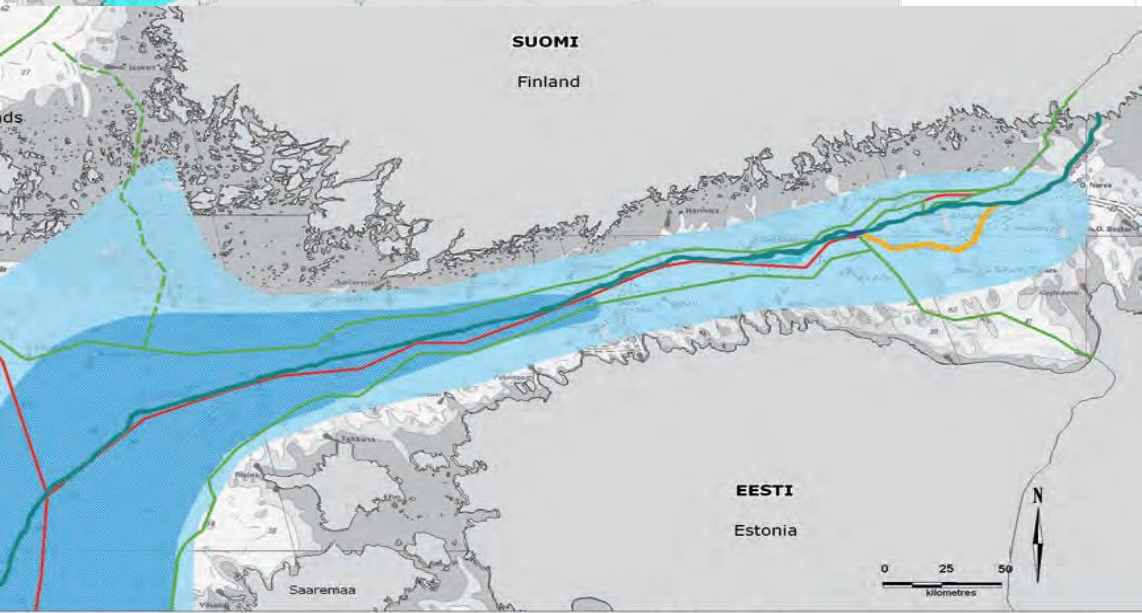
EEZ border

Natura 2000

Route alternative in the Estonian EEZ.

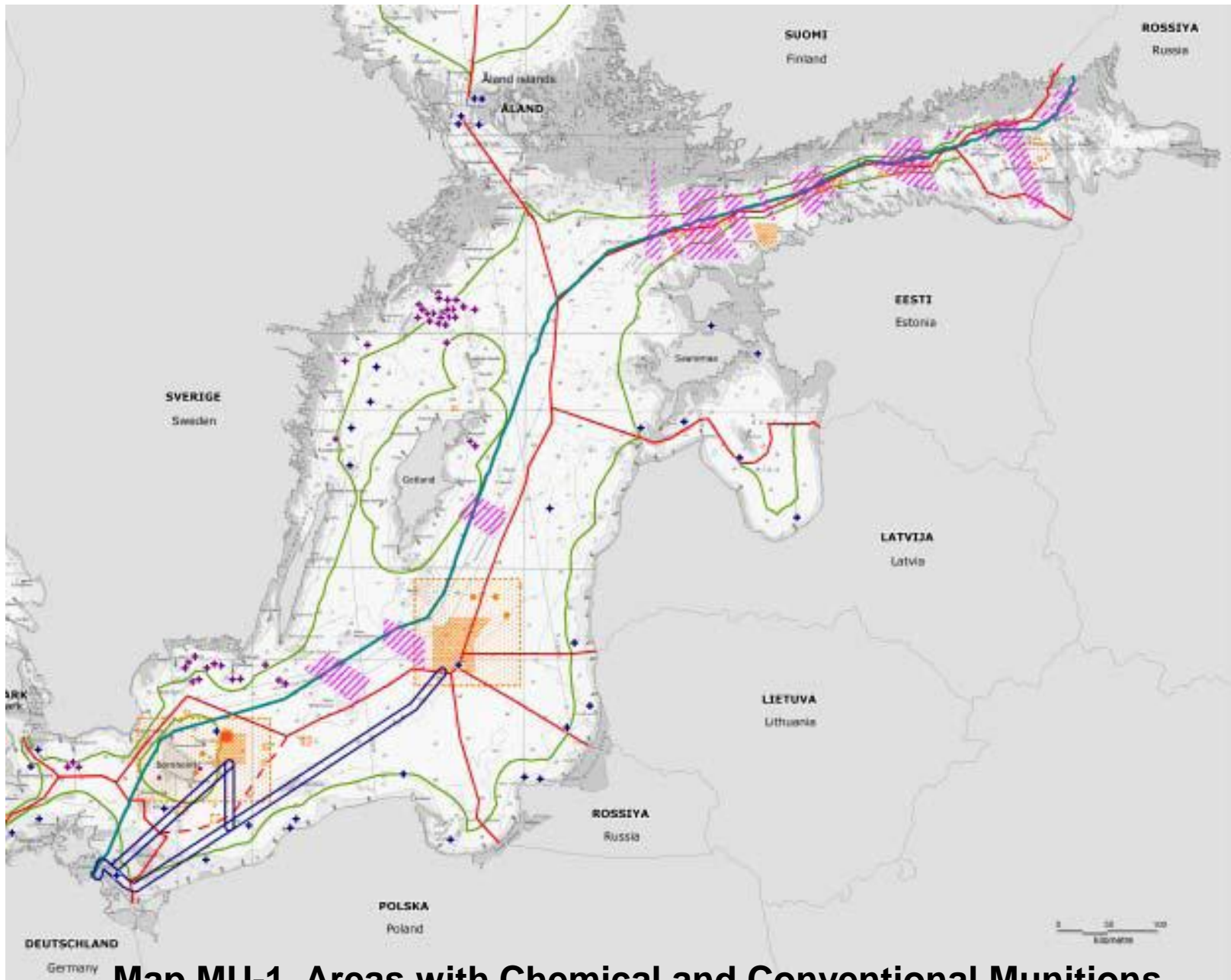


Kilu kudealad ESPOO KMH aruandes



Kilu kudealad Soome KMH aruandes

- Alternative 1 (C14)
- South of Gogland in Russian section
- EEZ border
- Alternative 2 (C16)
- Territorial border
- Sub-alternative 1a/2a (South of Gogland in Finnish section)
- Åland border
- Potential sprat spawning area
- Sprat distribution



Map MU-1, Areas with Chemical and Conventional Munitions.

Miinide lõhkamise mõju kaladele

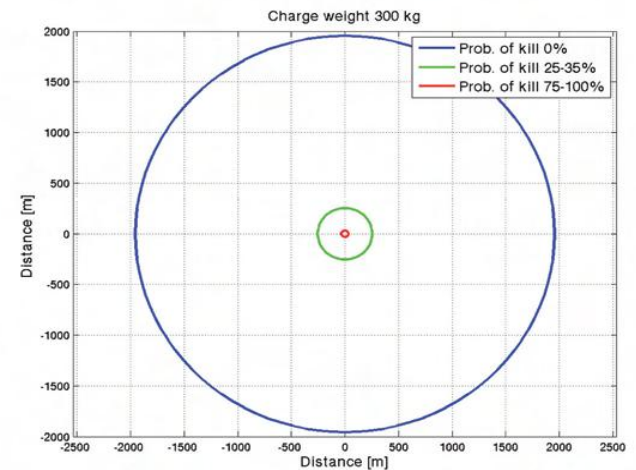
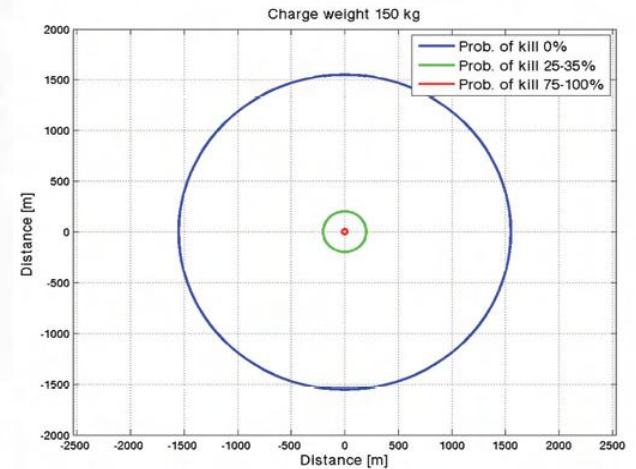
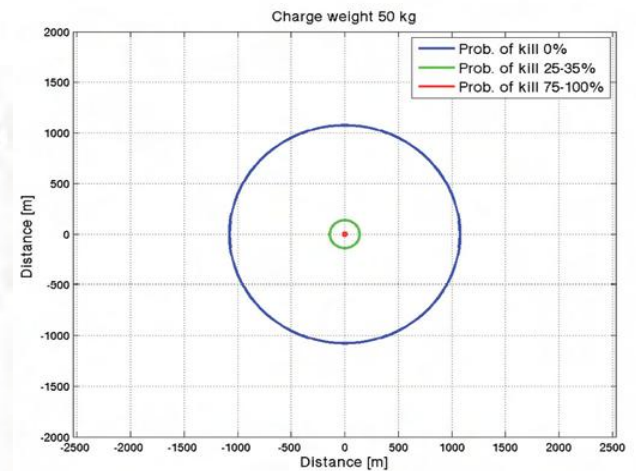
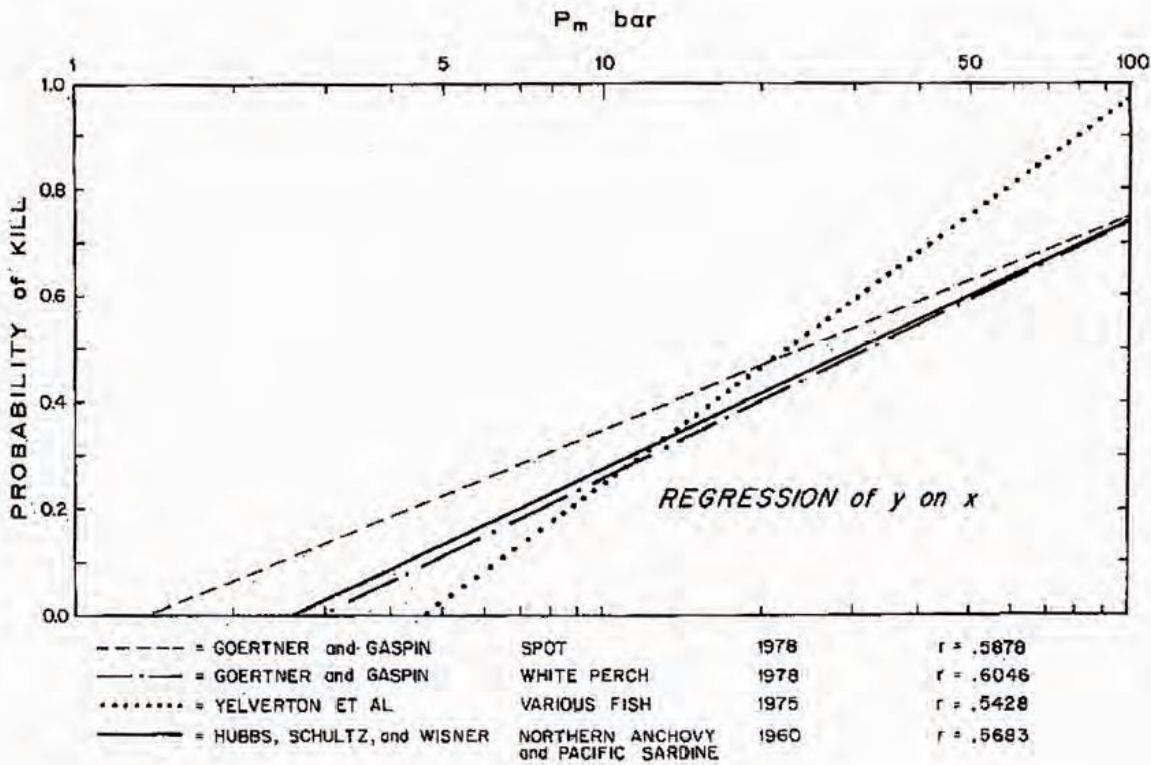


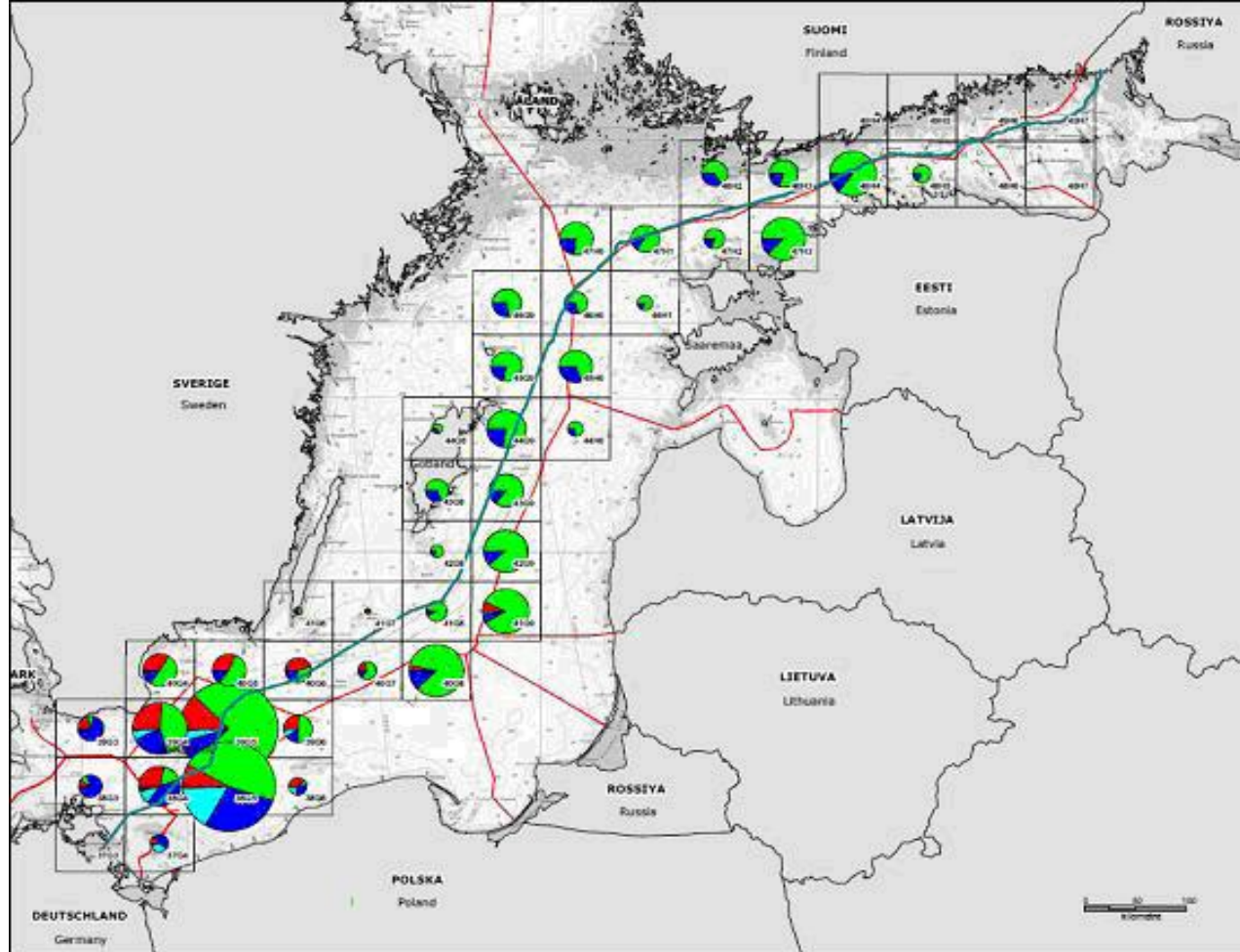
Figure 8.26. Regression lines of probability of mortality of different fish species on log $P_m / 385$. Soome KMH.

It can be seen, for example, that the probability of mortality is 25 - 35 % at a horizontal distance of approximately 200 m for a charge weight of 150 kg. These numbers are mean values based on several studies with different types of fish /385/. Soome KMH

Võimalikud mõjud kalapüügile

Table 8.47. Identified potential impacts as an interaction between the planned activities and the impact target. The impacts are divided into possible impacts during construction and operation. Soome KMH.

Impact target	Project phase	Impact	Activity	
Fishery	Construction	Safety zone preventing fishing activities	Munitions clearance	
			Rock placement	
			Pipe supply	
			Offshore pipe-laying	
			Hyperbaric tie-in	
		Avoidance reactions by fish	Munitions clearance	
			Rock placement	
			Offshore pipe-laying	
	Operation	Hampering bottom trawling	Damage to fishing gear	Pipelines on seabed and gas flowing
				Monitoring and surveying
		Safety zone preventing fishing activities	Restriction zone	
			Maintenance rock placement as required	



Legend:

- Kilu
- Tursk
- Raim
- Lest
- Muud liigid

Graafikul on toodud liikide kogupüük koguseliselt piki torujuhtme trassi.

Pipeline in Freespan Areas with Bottom Trawling Activities (Soome KMH)

In areas of freespans where bottom trawling is conducted, there is a potential for the trawl equipment to become hooked on the pipeline. This may lead to damage to the trawling

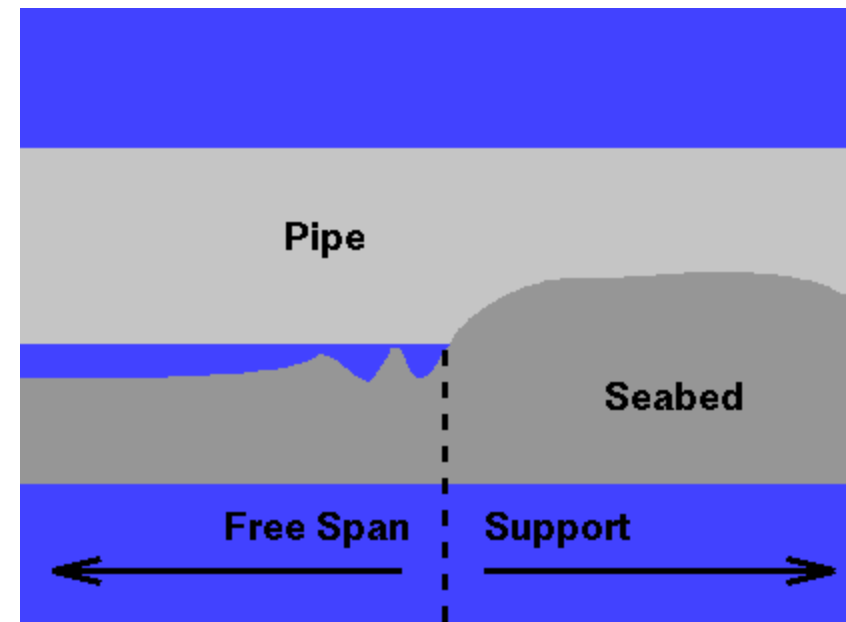
equipment or high forces being exerted on the trawl wire which could result in the wire breaking and subsequent loss of the gear.

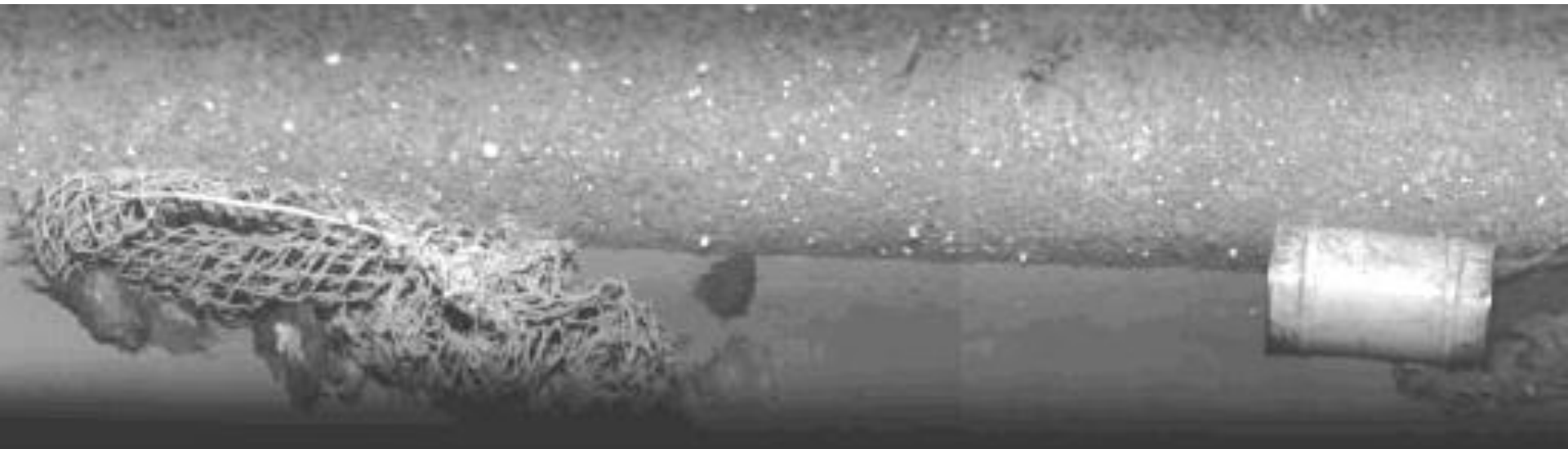
In extreme cases of incorrect handling hooking may even lead to capsizing of the fishing vessel. This occurred in UK waters in 1997 when a fishing vessel and its crew were lost.

However, the final capsizing of the vessel occurred during the recovery of the hooked gear and not as a result of the actual hooking. This emphasizes the importance of providing information and training to the fishermen about what to do and not to do in case of snagging or hooking of the trawling gear.

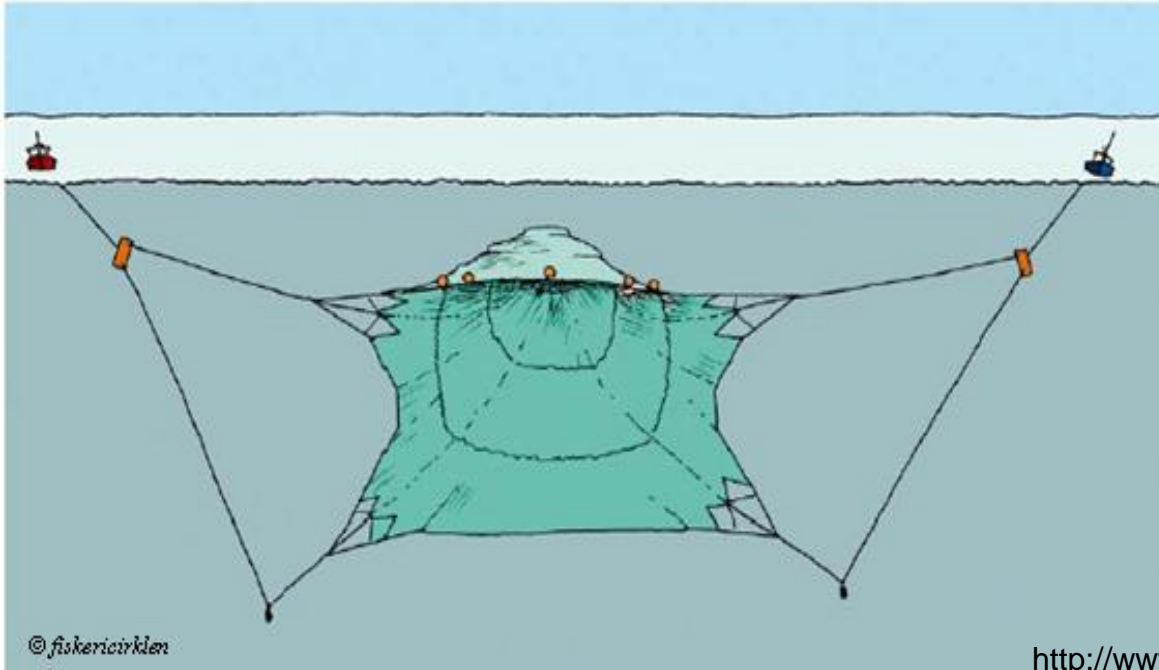
Restriction zones might be necessary in some specific areas where there are freespans and bottom trawling activities. Therefore an impact will occur at those locations within the pipelines' corridors, where trawling vessels sweeping across the pipelines will need to avoid interaction with the pipeline. Vessels sweeping in a traverse pattern across the pipeline corridors may need to lift their gear.

http://www.neo.no/img/freespan_fig.gif

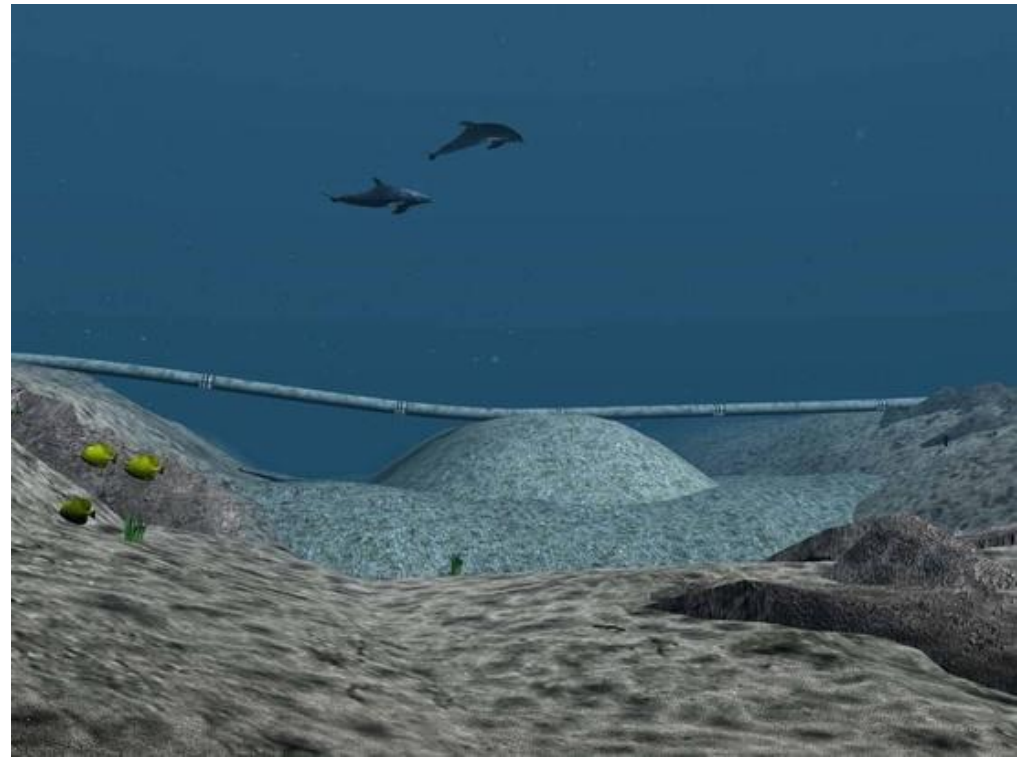




This image shows debris: a fish net and a barrel.



http://www.nordnes.nl/rockinstallation/freespan_correction.jpg



Conclusion

Most transboundary impacts resulting from planned activities during the construction phase occur in the Gulf of Finland and affect resources/receptors in the Estonian EEZ. The exception is the emission of pollutant gases from vessel movement during the construction phase as well as the restrictions on navigation of fishing and shipping vessels due to exclusion zones, which will affect the PoO countries as well as the OAP countries. The transboundary impacts associated with planned events during construction have all been assessed to be of **minor** significance with the exception of munitions clearance where the impact is expected to be of **moderate** significance and the restriction on navigation of fishing and shipping vessels in the Gulf of Finland, which is expected to be of **minor** to **moderate** significance. All PoO countries will experience some back-to-back impacts during construction where the pipelines cross EEZ boundaries. These impacts are generally of **minor** significance on the seabed, marine benthos, fish and sea birds with **moderate** impacts only expected between Denmark and Germany.

The main significant transboundary impact during the operational phase of the pipelines is the impact on fisheries.

The current uncertainty regarding the ability of the Baltic Sea fleet, particularly bottom trawlers in the open seas of the Baltic Sea, to adapt their approaches and patterns to accommodate the presence of the pipelines requires a precautionary approach to be taken in assessing the significance of this impact. For this reason it has been assessed to be of

minor to moderate significance.

The impact will originate from the presence of the pipelines, and mainly pipeline free spans, in Russia, Finland, Sweden and Denmark and will be experienced by each of the nine Baltic States. All PoO countries will experience some back-to-back impacts during operations where the pipelines cross EEZ boundaries. These impacts are generally of

minor significance on fish with **moderate** impacts only expected between Denmark and Germany.

Eesti seisukohad, mustand (TÜ Eesti Mereinstituut)

No.	Review question	Relevant ?	Adequately Addressed ?	What further information is needed?
1.	Are the fish species diversity, and stocks reproduction areas described an adequate level (Chapter 9, Key Issues: Fish and Fishery)	Yes	C	The impact on Baltic cod and sprat spawning process is not completely assessed and should be upgraded. The periods with higher salinity of Baltic Sea at the time following strong saline water influxes should be assessed, also. During the high abundance periods spawning of cod and sprat is recorded in the Western Gulf of Finland (Bagge, 1981; Grauman, G. B. 1981; Lablaika, 1985; Ojaveer <i>et al.</i> , 2003,)

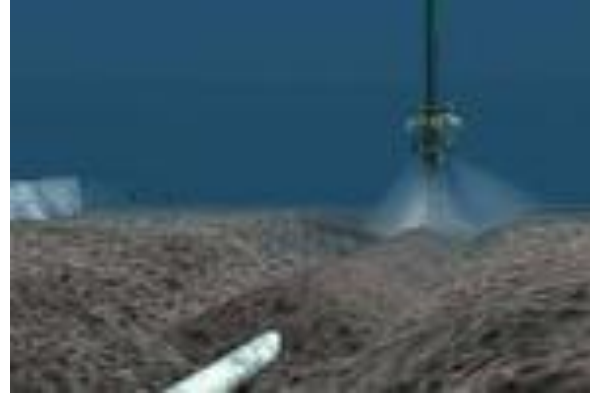
FISH

No.	Review question	Relevant?	Adequately Addressed?	What further information is needed?
2.	Are the fish feeding areas described an adequate level (Chapter 9, Key Issues: Fish and Fishery)	Yes	B	The impact on cod, sprat and flounder distribution in the Gulf of Finland during the periods of the high abundance of stocks is not assessed and should be addressed. For example the cod remarkably expanded into the Gulf of Finland when abundance is high (Ojaveer <i>et al.</i> , 2003)

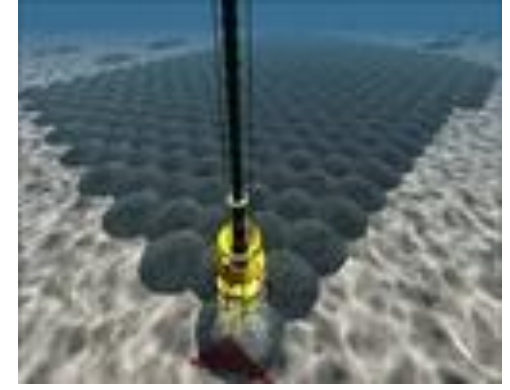
FISHERY

No.	Review question	Relevant ?	Adequately Addressed?	What further information is needed?
1	Are the fish catches amounts by Baltic Are the sea areas and the importance of every separate area for fishery described sufficiently (Key Issues: Fish and Fishery)	Yes	C	The description and Evaluation of impact of separate Nord Stream sections on fishery is based on too short time period. Impact assessment should cover the period at least 50 years to be equal e.g. to Nord Stream operation planned period in order to take into account the important dependences of fish stock and fishery dynamics on the long term Baltic salinity variations (Ojaveer et. al, 2003; Lablaika, 1985, Dreves, Järvi, 2002)

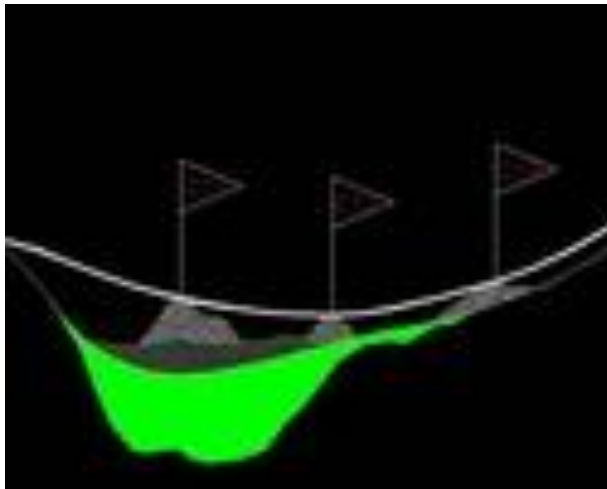
No.	Review question	Relevant?	Adequately Addressed?	What further information is needed?
2	Are the potential impacts on fishing pattern and technique described completely and adequately (Key Issues: Fish and Fishery)	Yes	C	<p>The free-span pipeline sections over-trawling safety for bottom trawl gear and on pelagic trawl gear towed in near-bottom position (day-time fishing for herring and sprat) is not estimated and should be addressed (Järvik <i>et al.</i>, 2005). If the satisfactory solution for the over trawling safety will not be demonstrated in practice then the sea areas closed for trawling and other restrictions for trawling should be established and the corresponding compensation paid to fishing industry of all Baltic countries should be guaranteed.</p>



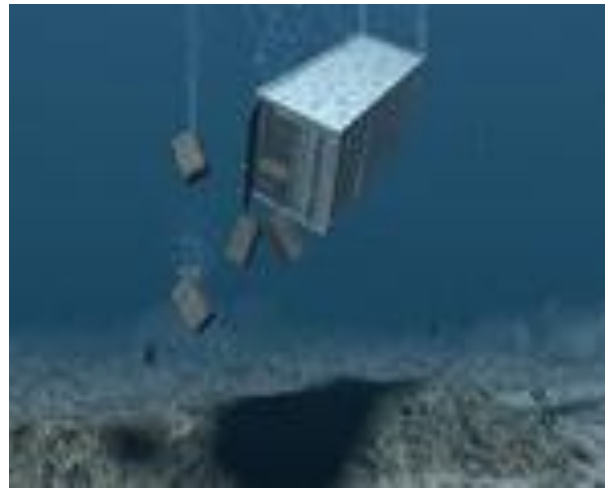
Seabed preparation



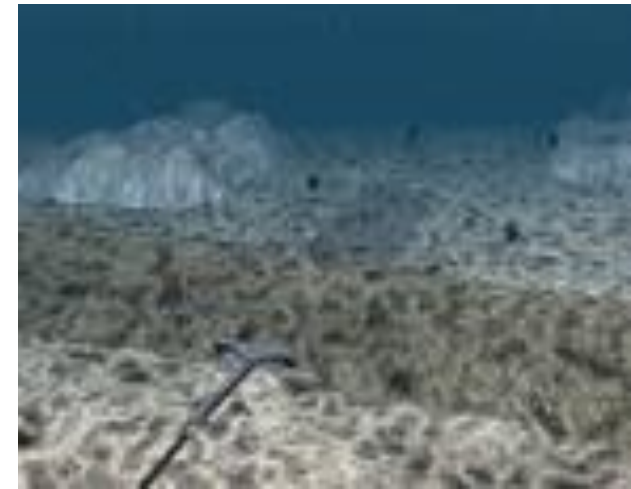
Trench backfilling



Pipeline supports



Dropped objects



Trawl boards and anchors



Täna tähelepanu eest!

