

## BACKGROUND INFORMATION

November 2013

### **Nord Stream's Environmental Monitoring in the Estonian EEZ**

Nord Stream is conducting environmental monitoring in the Estonian Exclusive Economic Zone (EEZ) related to the construction activities in Finnish waters according to the **provisions of the consent granted** by the Estonian Ministry of Foreign Affairs.

The monitoring programme of transboundary impacts has been developed based on the results of the Finnish Environmental Impact Assessment. Also the proposal made by the Estonian Ministry of the Environment has been taken into account in formulating the programme.

The Estonian Ministry of Foreign Affairs has given its consent to Nord Stream to monitor transboundary environmental impacts in the Estonian EEZ according to the programme:

***Transboundary Monitoring Programme Finland, Suostumus Nro 71, Viron Ulkoministeriö, annettu 7.6.2010***

The environmental monitoring conducted in the Estonian EEZ is closely linked to the monitoring conducted in the Finnish EEZ and implemented according to the same principles.

#### **1 Overview**

Nord Stream's monitoring in the Estonian EEZ is being conducted at monitoring stations close to the rock placement and munitions clearance locations in Finnish waters. The objective was also to place the monitoring stations in locations which can provide a geographically comprehensive overview of the potential transboundary impacts. Water quality in Finnish waters close to selected monitoring stations was monitored during rock placement and munitions clearance activities. The following table provides an overview to the parameters being monitored in the Gulf of Finland:

Monitoring target	Activity and parameters being monitored			
	Munitions clearance	Rock placement	Pipe-laying	Operation
<b>Seabed morphology</b>	<ul style="list-style-type: none"> <li>- Crater dimensions</li> <li>- Amount of sediment released</li> </ul>	<ul style="list-style-type: none"> <li>- Bathymetry</li> <li>- Rock berm footprint</li> <li>- Shape and condition of rock berms</li> </ul>	<ul style="list-style-type: none"> <li>- Position and condition of pipelines</li> <li>- Structural entity of pipelines and rock berms</li> </ul>	<ul style="list-style-type: none"> <li>- Position and condition of pipelines and rock berms</li> <li>- Sedimentation and erosion conditions near the pipelines</li> </ul>
<b>Water quality and sediments</b>	<ul style="list-style-type: none"> <li>- Current speed and direction</li> <li>- Turbidity caused by sediment spreading</li> <li>- Oxygen, metal and nutrient concentrations in water samples</li> <li>- Contaminant concentrations in sediments (dioxins, organic tin compounds and metals)</li> </ul>	<ul style="list-style-type: none"> <li>- Current speed and direction</li> <li>- Turbidity caused by sediment spreading</li> <li>- Oxygen, metal and nutrient concentrations in water samples</li> <li>- Contaminant concentrations in sediments (dioxins, organic tin compounds and metals)</li> </ul>	<ul style="list-style-type: none"> <li>- Turbidity caused by sediment spreading</li> <li>- Oxygen, metal and nutrient concentrations in water samples</li> </ul>	<ul style="list-style-type: none"> <li>- Bottom-close current speed and direction near the pipeline</li> <li>- Zinc concentration in water samples and sediment near sacrificial anode</li> </ul>
<b>Benthic fauna</b>	<ul style="list-style-type: none"> <li>- Abundance of benthic fauna species and individuals</li> </ul>	<ul style="list-style-type: none"> <li>- Abundance of benthic fauna species and individuals</li> </ul>		<ul style="list-style-type: none"> <li>- Abundance of benthic fauna species and individuals in munitions clearance and rock placement locations and near a sacrificial anode</li> </ul>
<b>HELCOM stations</b>	<ul style="list-style-type: none"> <li>- Turbidity caused by sediment spreading</li> </ul>	<ul style="list-style-type: none"> <li>- Turbidity caused by sediment spreading</li> </ul>		<ul style="list-style-type: none"> <li>- Abundance and biomass of benthic fauna species and</li> </ul>

				individuals
<b>Monitoring of marine mammals, seabirds and fish</b>	<ul style="list-style-type: none"> <li>- Pressure waves</li> <li>- Presence of marine mammals, seabirds and shoals of fish</li> <li>- Injuries of marine mammals or seabirds</li> <li>- Fish mortality</li> </ul>			
<b>Cultural heritage, barrels and cables</b>	<ul style="list-style-type: none"> <li>- Pressure waves</li> <li>- Integrity of cultural heritage</li> <li>- Integrity of barrels</li> <li>- Integrity of cables</li> </ul>	<ul style="list-style-type: none"> <li>- Presence of new unknown objects</li> </ul>	<ul style="list-style-type: none"> <li>- Presence of new unknown objects</li> <li>- Integrity of cultural heritage</li> <li>- Integrity of barrels</li> <li>- Position and condition of cable crossings</li> </ul>	<ul style="list-style-type: none"> <li>- Presence of new unknown objects adjacent to pipelines</li> <li>- Position and condition of known objects adjacent to pipelines</li> </ul>
<b>Fishery, social impacts</b>				<ul style="list-style-type: none"> <li>- Impacts on fishery and citizens</li> <li>- Changes in fishing routes</li> </ul>
<b>Colour codes</b>	Planning phase	In progress	Completed	
Table updated 12/2013				

## Monitored parameters in the Estonian EEZ

### Sediment quality

Monitoring of sediment quality in the Estonian EEZ is closely connected to the monitoring of water quality and currents in Finnish waters. Its objective has been to show whether sediment quality changes due to the potential release and spreading of sediment, nutrients and contaminants during construction activities. Sediment quality was monitored in the Estonian EEZ in connection with rock placement and munitions clearance activities in the Finnish waters. The monitoring was conducted by taking sediment samples.

Spreading of sediment, nutrients and contaminants caused by munitions clearance was monitored at one monitoring site. This site was close to a munitions clearance site, where a target containing a large amount of explosive was detonated on soft seabed relatively close to the Estonian EEZ border.

Spreading of sediment, nutrients and contaminants caused by rock placement was monitored at two monitoring sites. The monitoring was concentrated on sites where relatively large amounts of rock material were placed on soft or sandy seabed close to the Estonian EEZ border before pipe-laying.

Sediment samples has been taken from all the monitoring sites before and immediately after the construction activity being monitored. Samples were also taken after completion of each of the two pipelines

### **Benthic fauna**

Possible changes and recovery of invertebrate benthic communities on soft seabed are being monitored at three monitoring sites after construction activities in Finnish waters. One of these sites was for monitoring the recovery of the benthic environment after munitions clearance and two sites are for monitoring the recovery of the benthic environment after rock placement. Samples of benthic fauna were taken from all monitoring sites before and right after the construction activities. Additionally, samples will be taken once a year during the first three years of operation of the pipeline until 2015. The samples will be taken with a Van Veen grab according to the HELCOM COMBINE guidelines.

### **Reporting**

The results of the Estonian monitoring will be included to the annual overall monitoring report, which are compiled in Finland. The reports are submitted by the Finnish Ministry of the Environment to the Estonian authorities in English according to the agreed procedure. Results of the monitoring of water quality compiled in Finland will be taken into account when reviewing the results.

Nord Stream's partners in Estonian environmental monitoring are Luode Consulting Oy, and Kala- ja Vesitutkimus Oy, which have been supported by Marine Systems Institute of the Technology University of Tallinn in the implementation of the monitoring programme. Ramboll is responsible for compiling the monitoring reports.

More information at [www.nord-stream.com](http://www.nord-stream.com)

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