Nord Stream
The new gas supply route for Europe

Nord Stream Environmental Impact Assessment
Documentation for Consultation under the Espoo Convention

Nord Stream Espoo Report: Key Issue Paper
Natura 2000

February 2009

English version | Key Issue Paper
Natura 2000

ENG

Please note:

The “Nord Stream environmental impact assessment documentation for consultation under the Espoo Convention” will, hereinafter and throughout the entire documentation as submitted hereunder, be referred to as the “Nord Stream Espoo Report” or the “Espoo Report”.

The English version of the Nord Stream Espoo Report has been translated into 9 relevant languages (hereinafter referred to as the "Translations") . In the event that any of the Translations and the English version conflict, the English version shall prevail.

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1 Introduction

Biodiversity – the immense variety of life on Earth – is what makes our planet not only habitable but beautiful. The need to conserve and protect biodiversity is recognised as a key policy objective at international and national level. One key way of achieving this goal is the creation of protected areas that help to conserve both natural habitats and plant and animal species.

For this purpose, the Natura 2000 network of nature protection areas across Europe was set up under the European Union's Habitats Directive in 1992. The network also includes areas conserving bird species according to the European Union's Birds Directive of 1979. Natura 2000 sites are not by strict definition nature reserves where all human activities are excluded, rather they are areas that have been identified as being important wildlife habitats and as such should be managed in a way that ensures that biodiversity is maintained. The purpose of the Natura 2000 network is to maintain habitats and species to "favourable conservation status" in their natural range. The three types of areas and sites that form the Natura 2000 network are as follows:

- **Special Protection Areas (SPAs):** areas conserving bird species listed in Annex I of the Birds Directive as well as migratory birds
- **Special Areas of Conservation (SACs):** areas conserving habitat types and animal and plant species listed under the Habitats Directive
- **Site of community interest (SCI):** areas that can contribute to conservation or restore a habitat to favourable status

Nord Stream has recognised the importance of the EU Natura 2000 network in the design and development of its project. The Nord Stream pipeline route is planned to be located in the vicinity of, and also to cross several sites within the Natura 2000 network. Therefore, these areas and the habitats and species they protect have been a key element of the surveys and research carried out by Nord Stream during the design of the pipelines route. Nord Stream's vision is to build and operate its pipeline safely and with no significant effects on biodiversity and nature conservation i.e. no irreversible losses or damage to either species or habitats.

Figure 1.1 below provides an overview of Natura 2000 sites along the route of the Nord Stream Project.

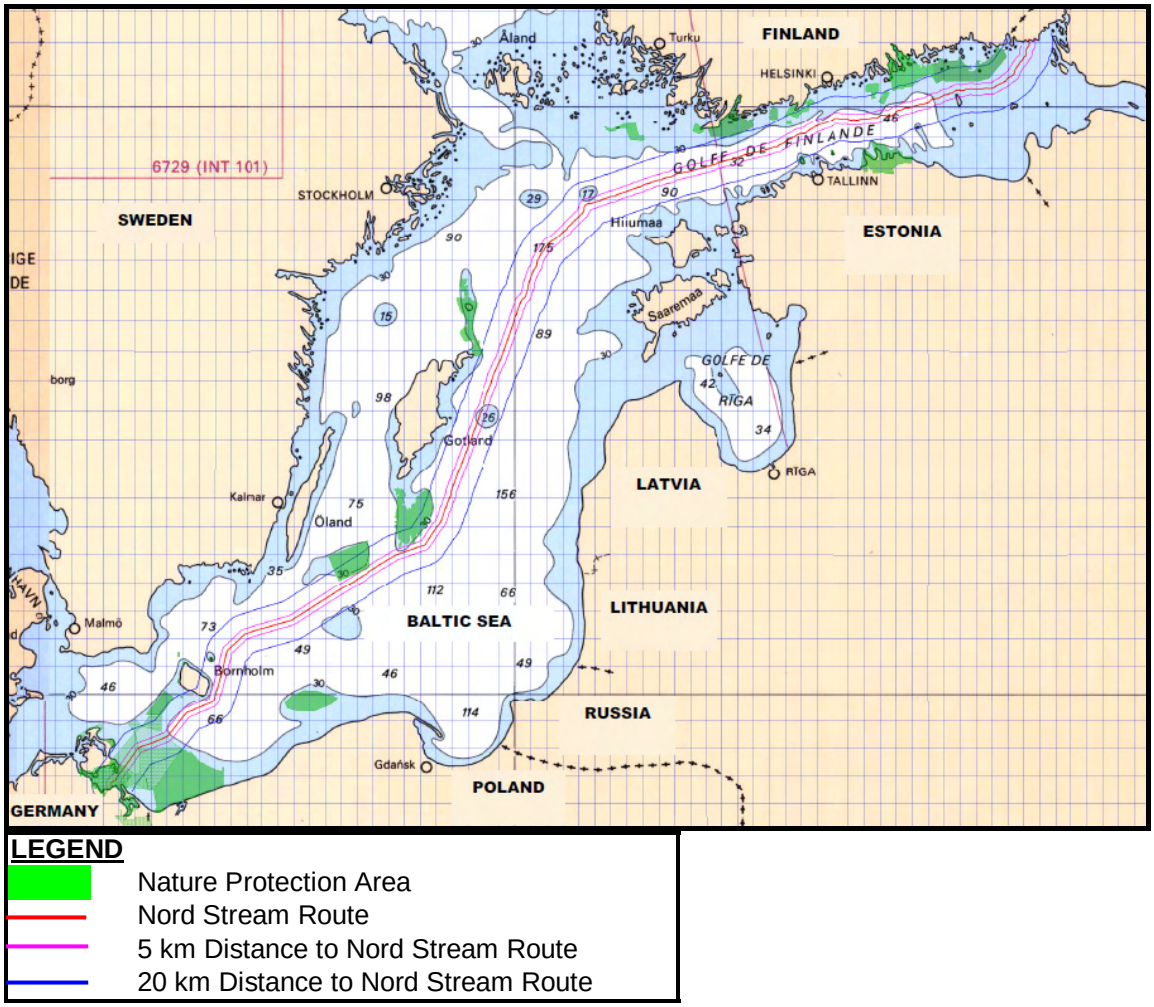


Figure 1.1 Map of all Natura 2000 Sites along the Pipeline Route

A detailed analysis of potential impacts on Natura 2000 sites is included in each of the **national application documents** prepared by Nord Stream for EU member states, in which legislation regarding Natura 2000 sites applies: Finland, Sweden, Denmark and Germany.

A more **detailed summary** of these analyses can be found# in chapter 10 of the Espoo document provided by Nord Stream.

This document provides a **short summary** of the assessment carried out by the Project on Natura 2000 sites and its results, in order to make this information easily accessible. It includes a short explanation of the methodology used (2), an assessment of Potentially Affected Natura 2000 Sites in Finland (3), in Sweden (4), in Denmark (5) and in Germany (6). It concludes with an assessment of Potential Cumulative Impacts (7), as well as of Potential Transboundary Effects (8).

2 Summary of the Assessment Methodology

The Project has carried out a thorough analysis of potential impacts that might result from the construction, commissioning, operation and decommissioning of the Nord Stream pipeline on Natura 2000 areas. This assessment of potential impacts focuses on the extent to which the project could have any likely significant effects on the designation criteria and the conservation objectives of the sites.

Selection Criteria for the Assessment of Potentially Affected Natura 2000 Areas

In order to determine, which Natura 2000 sites might potentially be impacted by the project and therefore were to be included in the analysis carried out by Nord Stream, the Project established criteria: indirect effects from construction of the pipeline might reach up to 20 kilometres. Therefore, Nord Stream assessed all sites within a corridor of 20 kilometres on both sides of the pipelines. Since potential impacts differ according to the specific designation criteria and conservation objectives of each site, and after discussions with relevant national authorities, Nord Stream refined this criteria and decided to include certain sites that lie beyond this corridor (at least for an initial assessment e.g. in Denmark), and also to exclude sites even though they are located within the 20 kilometres corridor. Sites were excluded where an initial evaluation concluded that no potential physical impacts or impacts on species were likely to occur.

As a consequence, the Nord Stream impact assessment has looked in detail at a total of 27 Natura 2000 sites lying within 20 kilometres of the pipeline route. Of these, the pipeline crosses six sites, lies within 5 kilometres of a further four sites, and lies within 20 kilometres of 17 sites.

This detailed assessment, carried out for potentially affected Natura 2000 areas in terms of its designation criteria and conservation objectives, includes the following information:

- Natura 2000 standard information sheets
- Map information
- Information on EU Habitat Directive and Bird Directive species and habitats that have been identified as grounds for designation of Natura 2000 areas
- Results from field surveys conducted by Nord Stream AG (i.e., habitat mapping outside Natura 2000 areas, surveys of sea birds and marine mammals and benthic surveys)
- Modelling data on sediment spreading

Identification of Potential Impacts from Project Activities

The categories of impacts that have been used to assess the potential effects of the Nord Stream project on Natura 2000 sites, habitats and species are presented in **Table 2.1** below.

The Potential impacts have been assessed as interactions between planned activities and receptors. The impacts are divided into impacts during construction and operation.

Table 2.1 Potential Impacts between planned activities(1) and receptors

Receptors	Project phase	Impact	Activity
Protected areas	Construction	Suspension of sediments, nutrients and contaminants and re-sedimentation of released sediments (including effects on the food chain)	Munitions clearance
			Rock placement
			Dredging
			Ploughing
			Offshore pipelaying
			Hyperbaric tie-in
			Anchor handling
		Noise and visual disturbance from increased vessel movement	Munitions clearance
			Rock placement
			Dredging
			Ploughing
			Pipe supply
			Offshore pipelaying
			Hyperbaric tie-in
			Anchor handling
	Operation	Noise from gas flowing	Pipe on seabed and gas flowing
		Disturbance from supply traffic and rock placement	Monitoring and surveying
			Restriction zone
			Maintenance rock placement as required

In carrying out the assessment of potential effects on individual sites, the Project has ensured that the specific requirements of the key species and habitats present and the factors affecting the conservation status of a site have been addressed. The methodology has been adapted on the basis of the legal requirements and discussions with stakeholders in each State.

(1) No potential impacts on Natura 2000 sites have been identified for the commissioning and decommissioning phases of the project.

3 Assessment of Potentially Affected Natura 2000 Sites in Finland

In Finland the assessment of potential impacts on Natura 2000 sites has been conducted using the methodology defined and suggested for carrying out a “preliminary Natura 2000 assessment”, as described in the Finnish Environment Institutes guidelines “Biodiversity impact assessment in regional planning, environmental impact assessment and Natura 2000 assessment”. The basis for selecting this methodology was that no protected area is crossed by the pipeline and the measured distance between the impact source (i.e. the pipelines and rock placement areas along the pipelines’ route) and the protected areas (10 kilometres) is considerable.

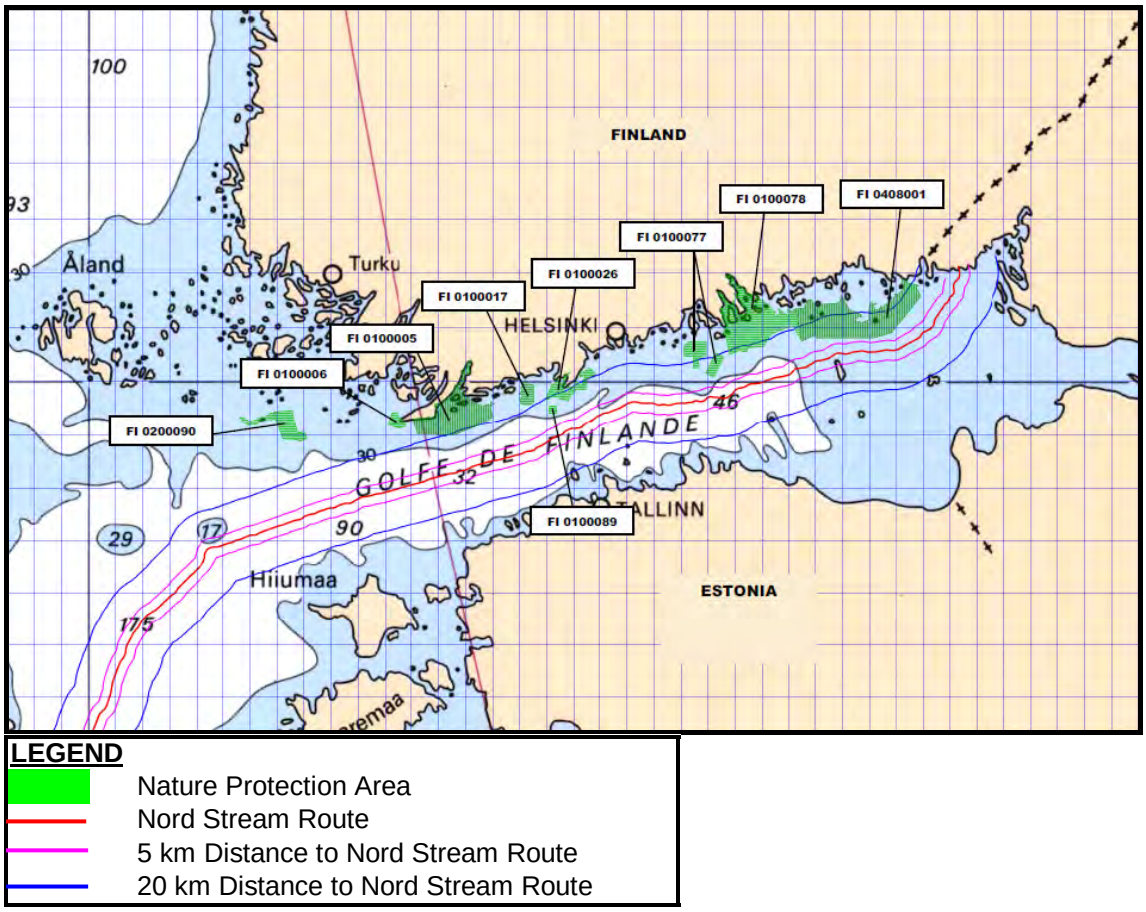


Figure 3.1 The Finnish Natura 2000 areas in the Gulf of Finland

Potentially Affected Natura 2000 Sites in Finland

Initially, the scope of the assessment covered all sites within a 20 kilometre corridor around the route of the pipelines. As a result of consultations with the relevant authorities additional Finnish Natura 2000 sites were included in the initial assessment of potential impacts because of their relative proximity to the proposed pipeline route. The 9 Finnish Natura 2000 sites within the scope of the national assessment cover 287,808 hectares, representing 5.9 per cent of the area covered by all Finnish Natura 2000 sites.

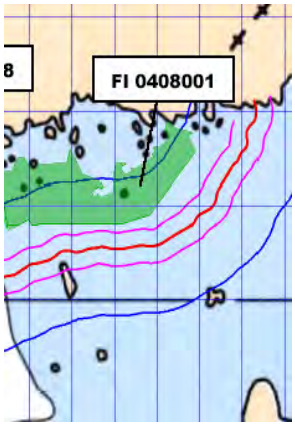
All Åland Natura 2000 areas are located more than 50 kilometres away from the pipeline and were therefore excluded from the assessment. A detailed map of Natura 2000 areas is presented in Atlas Map PA-2-F.

The closest Natura 2000 area to the pipelines' route in Finland is the "Söderskär and Långören Archipelago", which is situated within 10 kilometres of the pipelines. However, the Eastern Gulf of Finland Archipelago and Water Areas Natura area is within 6.8 km of the pipelines' route when the Russian sector is considered.

Each of the sites considered for more detailed assessment because of potential effects from the Nord Stream project is described below.

Descriptions of Potentially Affected Natura 2000 Areas (see Figure 3.1)

Eastern Gulf of Finland archipelago and water areas (FI 0408001, SPA, SCI)



Distance between FI 0408001 in Finland and the planned Nord Stream pipeline route in the Russian section of the project: 6.8kilometres

Distance between FI 0408001 in Finland and the planned Nord Stream pipeline route in the Finnish section of the Project: 23kilometres

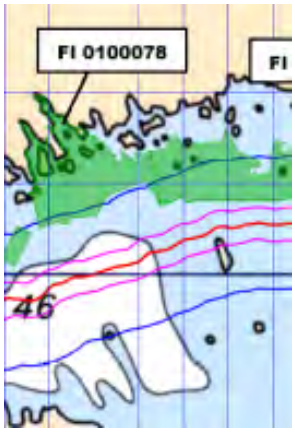
Conservation Objectives: This Natura 2000 area is almost 100,000 hectares in extent and contains a cluster of islands, basins and underwater ridges. The site is located mainly in the outer archipelago and sea area within the municipalities of Hamina, Kotka, Pyhtää and Virolahti. The shortest distance to the pipeline corridor is about 23 kilometres in Finland and 6.8 kilometres in Russia.

The Natura 2000 area includes important underwater habitats such as Sandbanks slightly covered by sea water (1110), Reefs (1170), and Coastal lagoons (1150). The site is an important nesting area for archipelago birds and hosts large communities of lesser Black-backed

gull (*L. fuscus*), Common tern (*S. hirundo*) and Arctic tern (*S. paradisaea*). The area also includes important underwater ridge formations and spawning areas of herring (*C. harengus*). There are also known grey seal haul-outs

The core of the Natura 2000 area consists of the Eastern Gulf of Finland National Park. It is proposed that the Natura 2000 area will be included in the Marine and Coastal Baltic Sea Protection Areas Network as a BSPA site.

Pernaja Bay and the Pernaja Archipelago (FI 0100078, SPA, SCI)

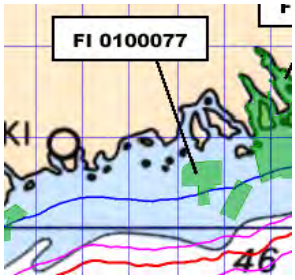


Distance to planned Nord Stream pipeline route: 15 kilometres

Conservation Objectives: This Natura 2000 area extends from Pikkupernajanlahti Bay near the town of Porvoo to the border of the Uusimaa Regional Centre's operational area.

The area contains a range of habitats e.g. Narrow inlets, Reefs and Coastal lagoons. It is an important resting area for birds. There are also known grey seal haul-outs. The Natura 2000 area is proposed to be part of the wetland protection network established under the Ramsar Convention.

Söderskär and Långören archipelago (FI 0100077, SPA, SCI)



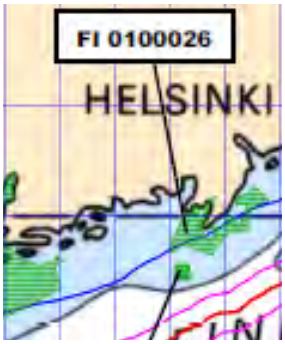
Distance to planned Nord Stream pipeline route: 10 kilometres

Conservation Objectives: This Natura 2000 area extends to approximately 18,000 hectares and is located near the town of Porvoo. The southern islands and water areas of the archipelago belong to the Sandkallan-Stora Kölhällen protection area, which is a designated sanctuary for Grey seal.

The Natura 2000 area includes important underwater habitats such as Sandbanks slightly covered by sea water and Reefs (both priority habitats listed in Annex I of the Habitats Directive). The outer archipelago hosts numerous seasonal breeding birds and is an important resting area for birds.

The area is proposed for inclusion as part of the BSPA network. The Langören area is also proposed for inclusion as a part of the Ramsar network.

Kirkkonummi Archipelago (FI 0100026, SPA, SCI)



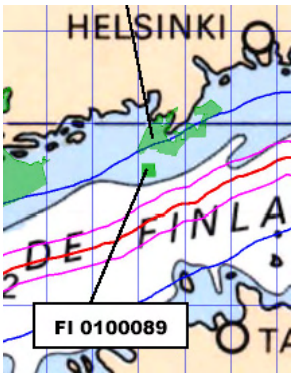
Distance to planned Nord Stream pipeline route: 15 kilometres

Conservation Objectives: The area extends to over approximately 1,750 hectares and covers the coast of the municipality of Kirkkonummi. Its western parts extend from Sommarn in Inkoo almost to Espoo in the east. The site includes all of the islands within the area and some water areas that are defined separately.

The archipelago and coastal areas are relevant for conservation of important habitat types and bird species. The Natura 2000 area includes the inner, middle and outer archipelago and includes important underwater habitats listed in Annex I of the Habitats Directive, Sandbanks slightly covered by sea water, Reefs and Coastal lagoons. The site hosts very diverse protected bird species, many of them breeding within the area.

The area is proposed for inclusion in the BSPA network.

Kallbådan islet and water area (FI 0100089, SCI)

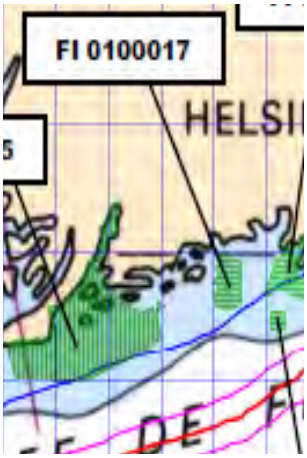


Distance to planned Nord Stream pipeline route: 11 kilometres

Conservation Objectives: This Natura 2000 area extends for approximately 1,500 hectares and is located in the open sea south-west of Cape Porkkala.

The Natura 2000 area was primarily established to protect the grey seal, and it hosts a seal sanctuary. The area also contains the Annex I habitat type 'Baltic Sea islets and islands'.

Inkoo archipelago (FI 0100017, SCI)



Distance to planned Nord Stream pipeline route: 21 kilometres

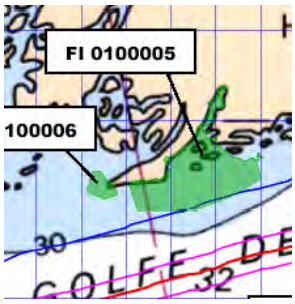
Conservation Objectives: This Natura 2000 area has a size of 203 hectares and it is located in the outer archipelago of the municipality of Inkoo. There is only one water area included in the Inkoo Natura 2000 area, the water area in the Timmerö protected area (68 hectares).

The Inkoo archipelago Natura 2000 area is important nesting and resting place for birds. Breeding birdspecies include Caspian Tern, Black Guillemot, Lesser Black-backed Gull, Turnstone and numerous Arctic and Common Terns.

Gray seals are also visiting this area, although usually only single seals are observed near Hästen island.

Most of the islands and skerries are stony and treeless. There is one exception, Stora Fagerö, which is larger wooded island with sandy beaches, ridges and ancient seashore banks. Forests consist of old spruce forest with old pines and birches. There is also a lot daceyed trees, important for many insects.

Tammisaari and Hanko Archipelago and Pohjanpitäjänlahti marine protected area (FI 0100005, SPA, SCI)

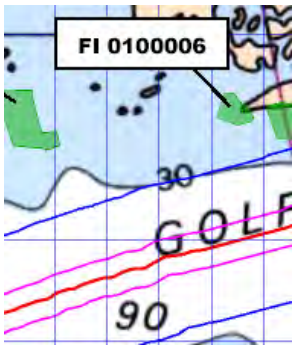


Distance to planned Nord Stream pipeline route: 19 kilometres

Conservation Objectives: This marine Natura 2000 area extends over approximately 53,000 hectares and includes Pohjanpitäjänlahti Bay, the Tammisaari Archipelago and southern Hanko Bay.

The Natura 2000 area includes important underwater habitats such as Large shallow inlets and bays, Reefs, Coastal lagoons and Narrow inlets (as listed in Annex I of the Habitats Directive). It holds many semi-enclosed lakes and shallow bays that are important nesting and resting places for birds. More than 25 protected bird species are included in its conservation objectives. The Grey seal is also found here.

Tulliniemi Bird Protected Area (FI 0100006, SPA, SCI)

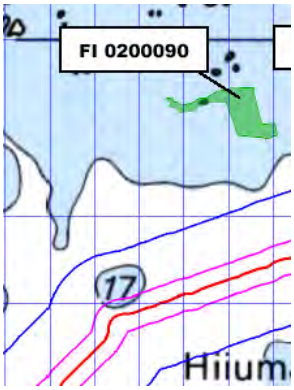


Distance to planned Nord Stream pipeline route: 30 kilometres

Conservation Objectives: The rather small Tulliniemi Natura 2000 area has a size of approximately 2,600 hectares and is part of the western Salpausselkä lateral moraine. Part of the lateral moraine is located below sea level.

The Natura 2000 area includes important underwater habitats such as sandbanks slightly covered by sea water and reefs. The archipelago is very important for nesting sea birds. Because of its geographical location, Tulliniemi is one of the most important passage areas for migrating birds and thus also an important area for research. The area also contains different types of dunes. The Natura 2000 area includes the Tulliniemi nature conservation area.

The Archipelago Sea (FI0200090, SPA, SCI)



Distance to planned Nord Stream pipeline route: 30 kilometres

Conservation Objectives: The Archipelago Sea Natura 2000 area, in the south-western Finland, is rather a large area, approximately 50,000 hectares. Some 88% of the area is water area. The majority of the area is situated in the outer archipelago zone.

The Natura 2000 area includes 46 different habitat types according to the Habitats Directive (mostly land based), of which 15 are prioritised as specially protected habitat types. The area is not only important for terrestrial, but also for underwater habitats such as coastal lagoons and reefs. The Archipelago Sea Natura 2000 area is important for a great variety of bilds and also for both grey and ringed seals. The majority of the Natura 2000 area is included in the Archipelago Sea National Park. The Archipelago Sea constitutes the centre of the Archipelago Sea Biosphere area, which UNESCO founded in 1994 in order to support and improve research on sustainable development.

Summary of Impacts on Natura 2000 Areas in Finland

Table 3.1 below presents a summary of the potential impacts on Natura 2000 areas in Finland. No potentially significant impacts have been identified.

Table 3.1 Impacts on Natura 2000 areas assessed

Impact	Intensity of effect	Scale of effect	Duration of effect	Overall significance of impact
Sediment spreading and sedimentation	Not Significant	Local 3-4 kilometres	Short-term Days (2-3)	Not Significant
Noise during construction and operation	Not Significant	Local 2-3 kilometres	Short-term Days (1-2)	Not Significant
Physical disturbance during construction	Not Significant	Local 1-2 kilometres	Short-term Days (1-2)	Not Significant
Transboundary and cumulative impacts on protected areas	Not Significant	-	-	Not Significant

4 Assessment of Potentially Affected Natura 2000 Sites in Sweden

Nord Stream's potential impacts on Natura 2000 areas in Sweden have been discussed at meetings and consultations with e.g. the Swedish Environmental Protection Agency, Gotland University, Swedish Fishermen's Federation and the County Administrative Boards of Gotland, Kalmar and Blekinge in the context of the overall preparation of the application documentation in Sweden.

The potential threats to the habitats and species in the Natura 2000 areas, such as increased sedimentation, noise and physical disturbance during construction and operation, have been identified in order to assess the potential impacts from the construction, pre-commissioning and operation of Nord Stream.

Three Natura 2000 sites in Sweden have been identified as having potential impacts from the Nord Stream Project and thus requiring a more detailed assessment. These are shown in **Figure 4.1** and described below.

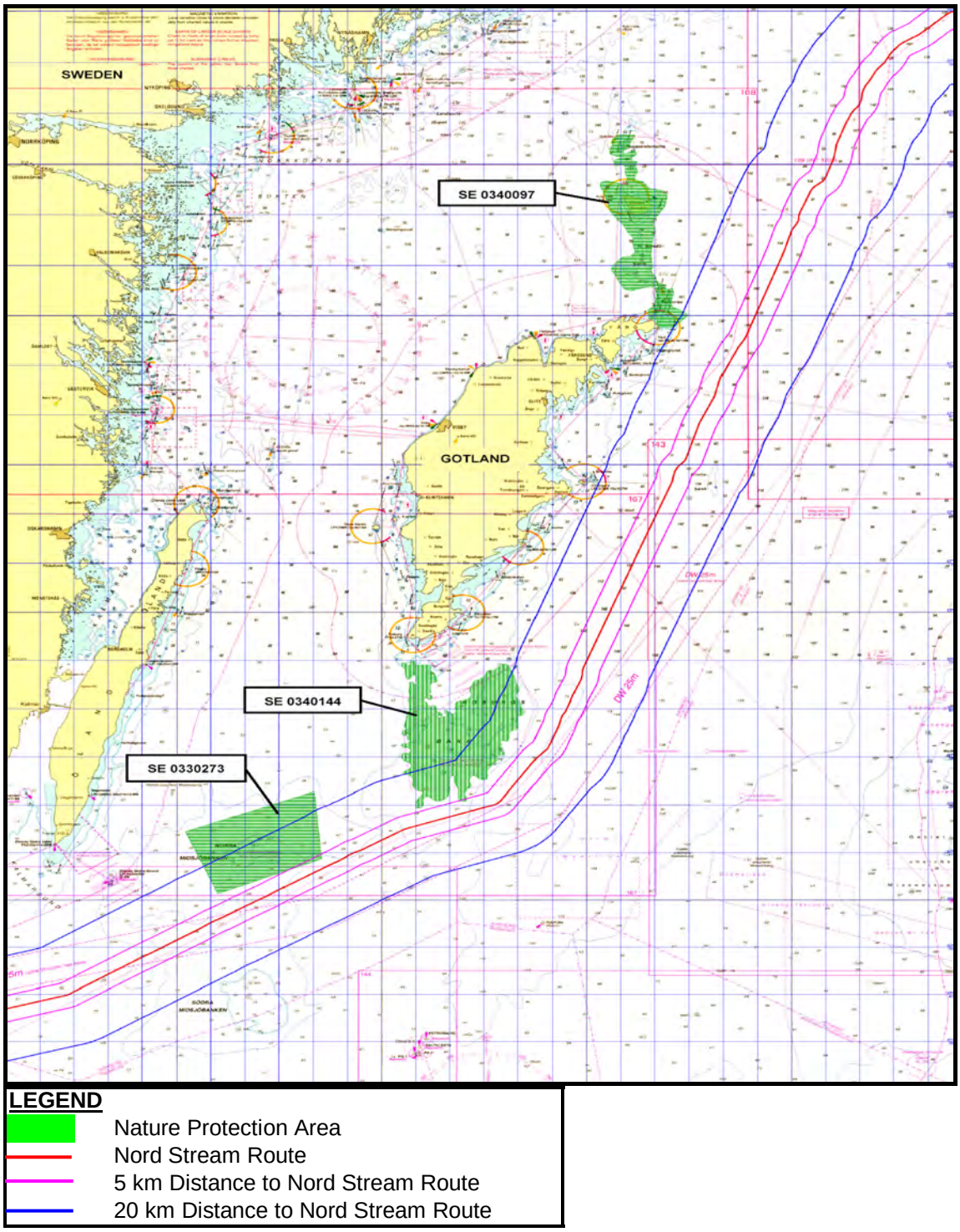


Figure 4.1 Natura 2000 Areas Along the Pipeline Route in the Swedish EEZ

Descriptions of Potentially Affected Natura 2000 Areas in Sweden

Kopparstenarna/Gotska Sandön/Salvorev (SE0340097 SCI)

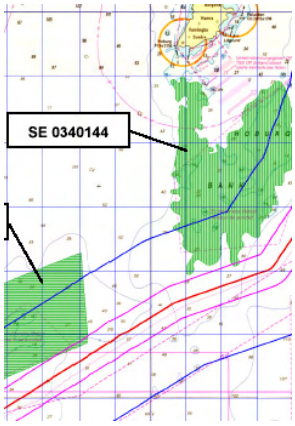
Distance to planned Nord Stream pipeline route: 18 kilometres

Conservation Objectives: Gotska Sandön is a national park. Together with Kopparstenarna and Salvorev, it forms a Natura 2000 area north of Fårö Island. Kopparstenarna and Salvorev make up a marine reserve, and the border of the Natura 2000 area and the marine reserve are the same.

The Salvorev area is made up of sublittoral sandbanks measuring approximately 56,000 hectares. The area is designated for the Habitats types Sandbanks and Reefs.

Grey seal an Annex II species under the Habitats Directive are found here. The area also has a large population of Blue Mussel (M.edulis). The area is a breeding area for Turbot. Many seabirds stay in the area for shorter or longer periods. Salvorev and Gotland's eastern coast are the most important Swedish bird areas in the Baltic Sea after Hoburgs Bank. Long-tailed duck is the overwhelmingly dominant species in wintertime, with approximately 250,000 ducks wintering here. Bird Directive Annex I bird species found in the Salvorev area include the Baltic gull and the Sandwich tern.

Hoburgs Bank (SE 0340144 SCI)

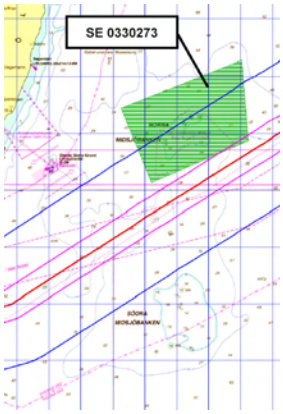


Distance to planned Nord Stream pipeline route: 4 kilometres

Conservation Objectives: Hoburgs Bank is an area of shallow sea, of which the northern part is situated only five nautical miles south of Gotland. Large parts of the area are at depths of approximately 35 m. The bank consists partly of bedrock, but there are also large areas made up of sublittoral sandbanks and reefs. Key habitats found in this area include Sandbanks and Reefs.

The Birds Directive Annex I species of concern are the Long-tailed duck, Common eider and the Black Guillemot.

Norra Midsjö Bank (SE0330273 SCI, SPA)



Distance to planned Nord Stream pipeline route: 3.2 kilometres

Conservation Objectives: Norra Midsjöbanken is situated to the east of the southern end of Öland. It is a vast bank, partly consisting of a moraine ridge on bedrock. The area contains two key habitats Sandbanks and Reefs. It is some 98,403 hectares in extent.

Norra Midsjöbanken is a spawning area for Turbot and Herring. A large population of Blue mussels makes the area important for birds. It is of global interest for Black guillemot and is an important wintering area for Long-tailed duck.

Summary of Impacts on Natura 2000 Areas in Sweden

There are no potentially significant effects from the construction and operation of the Project on Natura 2000 sites due to the nature of the activities that will be carried out in these areas and the conservation objectives of these sites which will not be affected. The likely effects are summarised in **Table 4.1**.

Table 4.1 Summary of Impacts on Natura 2000 Areas in Sweden

Natura 2000 area Impact	Intensity of effect	Scale of effect	Duration of effect	Overall significance of impact
Sediment spreading and sedimentation	Not Significant	Not Significant	Not Significant	Not Significant
Noise during construction and operation	Not Significant	Not Significant	Not Significant	Not Significant
Physical disturbance during construction	Not Significant	Not Significant	Not Significant	Not Significant
Transboundary and cumulative impacts on protected areas	Not Significant	Not Significant	Not Significant	Not Significant

5 Assessment of Potentially Affected Natura 2000 Sites in Denmark

Nord Stream's potential impacts on Natura 2000 areas in Denmark have been discussed at a meeting with the nature protection authorities on the 3rd March 2008 in the context of the overall preparation for the application documentation in Denmark. A map of the offshore and coastal habitats and bird protection areas was produced for the Bornholm area as basis for further assessment. The areas examined are all in the EEZ and territorial waters around Bornholm.

The Danish Ministry of Environment proposed a new Natura 2000 area at Adlergrund and Rönne Banke to the west of Bornholm in October 2008. This area has been included in the assessment.

The Natura 2000 areas in Denmark identified as requiring a more detailed assessment of potential impacts are described in greater detail below.

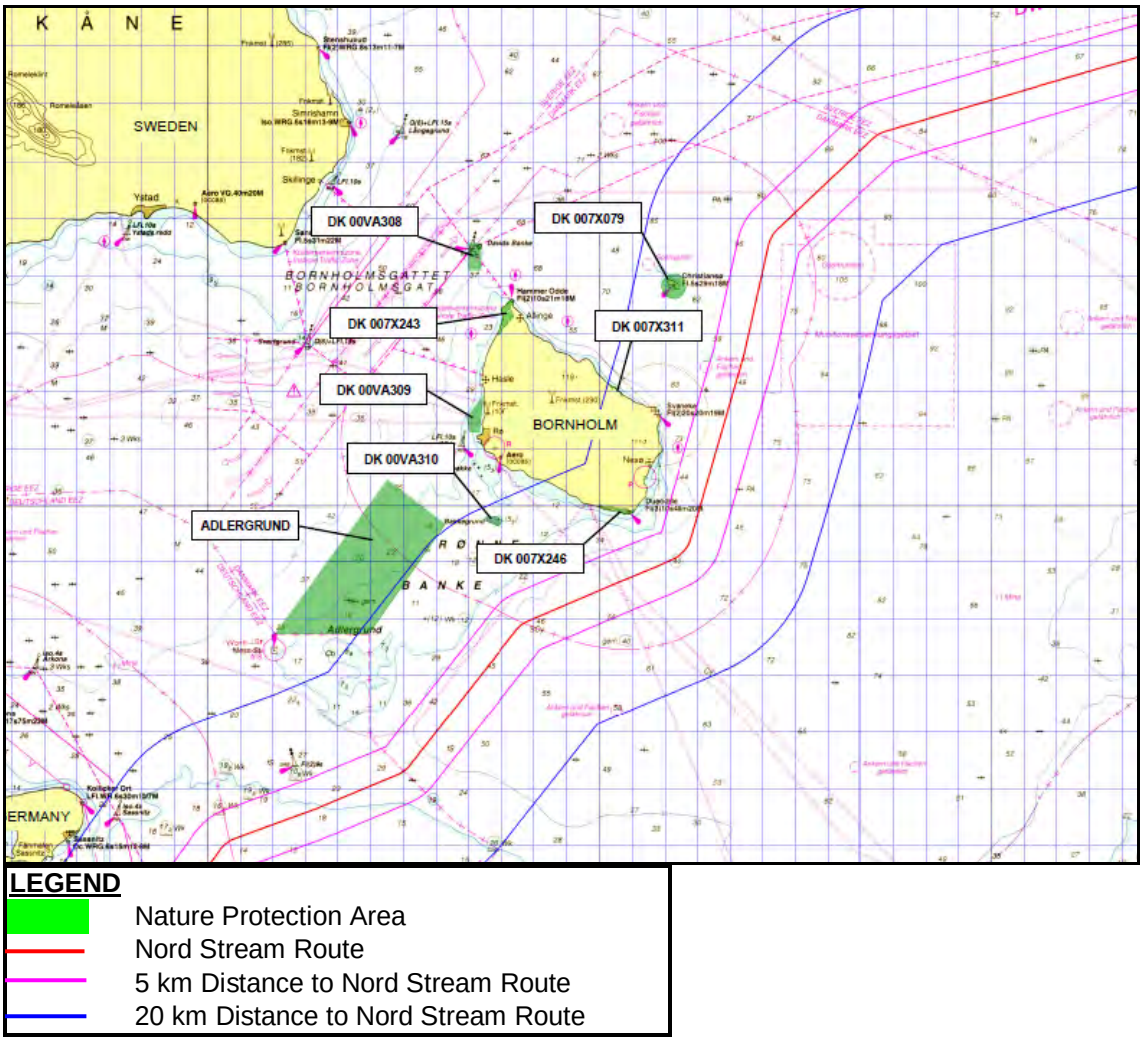


Figure 5.1 Natura 2000 Sites along the Pipeline Route in the Danish Sector

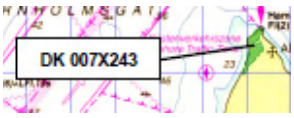
Descriptions of Potentially Affected Natura 2000 Areas in Denmark

Davids Banke (DK00VA308 SAC)

Distance to planned Nord Stream pipeline route: 44.3 kilometres

Conservation Objectives: Benthic fauna, fish, fishery and birds in the area have not been investigated since they are not relevant to the designation of the area. It should be noted that harbour seals and harbour porpoise are very rarely observed in the area.

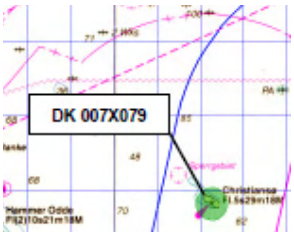
Hammeren and Slotslyngen (DK007X243 SAC)



Distance to planned Nord Stream pipeline route: 38.3 kilometres

Conservation Objectives: Hammeren and Slotslyngen is an area of 549 hectares, located on the northern coast of Bornholm. The area is designated on the basis of 18 habitat types and one species, the Great crested newt. Most of the habitat types are located on land; the only habitat types very close to, or at the coastline, are “Vegetated sea cliffs of the Atlantic and Baltic coasts” and “Submerged or partially submerged sea caves”. There are no investigations or data detailing the flora and fauna of these two habitats.

Ertholmene (DK007X079 SCI, SPA)



Distance to planned Nord Stream pipeline route: 11.2 kilometres

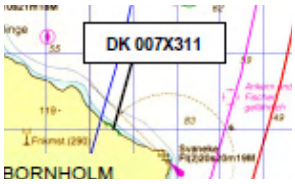
Conservation Objectives: Ertholmene is an area of 1,256 hectares, located east of the northern part of Bornholm. The islands (Christiansø, Frederiksø, Græsholmene, Tat, Østerskær) and the water area around the islands are designated on the basis of one marine habitat (Reef) and five terrestrial habitats, one of which is Vegetated sea cliffs of the Atlantic and Baltic coasts. The area is also designated based on the following bird species Common guillemot and Razorbill, which are listed in Annex 1 of the Birds Directive.

The Natura 2000 area is restricted to islands and to water depths of less than 50 metres.

The island of Græsholmene is an important breeding area for birds, especially guillemots and razorbills. Guillemots also winter in the area. Græsholm also houses the second largest colonies of Herring gull and Common eider in Denmark. The following bird species found in the area are also of note: Lesser black-backed gull, Mew gull, Cormorant, Red-breasted merganser, Tufted duck and Mallard.

Harbour porpoise and seals (Harbour seal and Grey seal) are very rarely observed in the area.

Randkløve Skår (DK007X311 SAC)



Distance to planned Nord Stream pipeline route: 17.0 kilometres

Conservation Objectives: Randkløve Skår is an area of 37 hectares, located on the eastern coast of Bornholm. The area is designated on the basis of nine habitat types, including the habitat Vegetated sea cliffs of the Atlantic and Baltic coasts.

Hvideodde Rev (DK00VA309 SAC)

Distance to planned Nord Stream pipeline route: 32.5 kilometres

Conservation Objectives: Hvideodde Rev is an area of 789 hectares, located offshore to the north of the city of Rønne on Bornholm. The area is designated on the basis of the marine habitat Reefs. The area also includes Kåsgård Rev and Nyker Rev in addition to Hvideodde Rev. The water depth varies from 0.5 metres to 20 metres at the outer border of the Natura 2000 area.

Dueodde (DK007X246 SAC)

Distance to planned Nord Stream pipeline route: 9.2 kilometres

Conservation Objectives: Dueodde is an area of 253 hectares, located at the southern end of Bornholm. The area is designated on the basis of eight habitat types, with the habitat Embryonic shifting dunes located close to the coastline. The Natura 2000 area does not include the water area around the southern end of Dueodde.

Bakkebrædt and Bakkegrund (DK00VA310 SCI)

Distance to planned Nord Stream pipeline route: 16.1 kilometres

Conservation Objectives: Bakkebrædt and Bakkegrund are three small, separate stone reefs with a total area of 299 hectares, located offshore at Rønne Banke, west of Bornholm. The area is designated on the basis of the marine habitat Reefs. The reefs are restricted to water depths of less than 10 metres, and Bakkegrund, with a depth of 5.3 metres, is the shallowest. The area is dominated by the Common mussel. Together with Rønne Banke, Bakkebrædt and Bakkegrund is an important location for wintering Long-tailed ducks. Harbour porpoise and Harbour seals are rarely observed in the area.

Adlergrund (proposed SAC)

Distance to planned Nord Stream pipeline route: 18.4 kilometres

Conservation Objectives: Adlergrund is an area of 31,900 hectares, located to the west of Bornholm at Adlergrund and Rønne Banke. The area is proposed as a Natura 2000 area on the basis of the marine habitats Reefs and Sandbanks which are slightly covered by sea water all the time, and on the basis of the presence of the Harbour porpoise.

Summary of Impacts on Natura 2000 Sites in Denmark

Due to the distances between the pipeline and the Natura 2000 sites discussed in **Section 5,** and the fact that one of the two closest sites is terrestrial (Dueodde), only the site at Ertholmeme which is closest to any seabed intervention works has been assessed in detail.

The impacts on protected areas from construction and operation of the planned Nord Stream pipelines within the Danish EEZ and territorial waters are summarised in the table below, with respect to the intensity, scale and duration of the effects, and the overall significance of the impacts on the environment. All the effects outlined above occur outside the designated protected areas and also outside areas that the designated birds use as feeding areas.

Table 5.1 Summary of Impacts on Natura 2000 areas in Denmark

Impact	Intensity of effect	Scale of effect	Duration of effect	Overall significance of impact
Sediment spreading and sedimentation	Not significant	Local 3-4 kilometres	Short-term Days (2-3)	Not significant
Noise during construction and operation	Not significant	Local 2-3 kilometres	Short-term Days (1-2)	Not significant
Physical disturbance during construction	Not significant	Local 1-2 kilometres	Short-term Days (1-2)	Not significant
Transboundary and cumulative impacts on protected areas	Not significant	-	-	Not significant

6 Assessment of Potentially Affected Natura 2000 Sites in Germany

Potential impacts of the Nord Stream project on the conservation objectives of various Natura 2000 sites in the Territorial Waters and the EEZ of Germany have been assessed in the context of the overall preparation of the application documentation in Germany according to the legal requirements of Art. 6 (3) of the EU Habitats directive and the respective German Federal and State law.

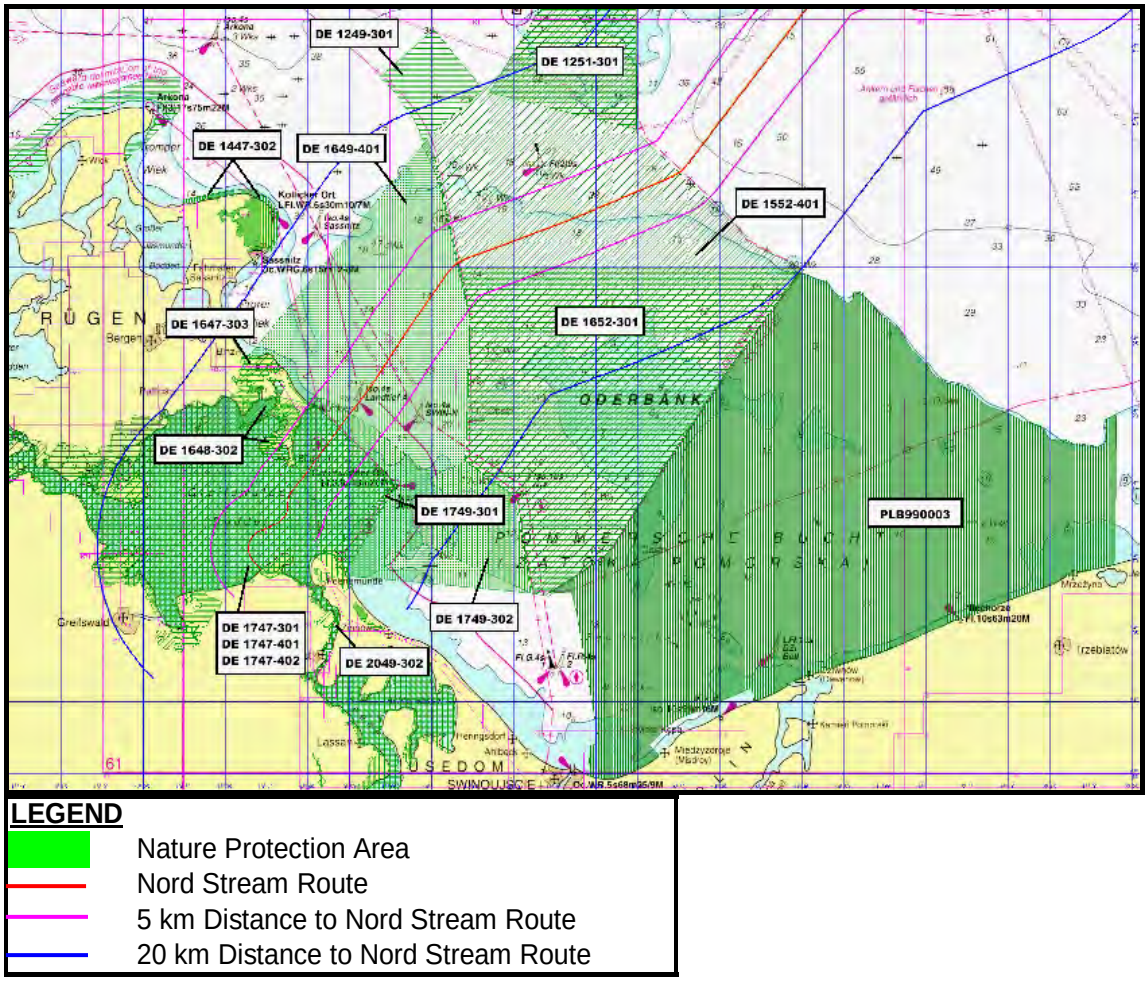


Figure 6.1 Natura 2000 areas in the German EEZ and Territorial Waters

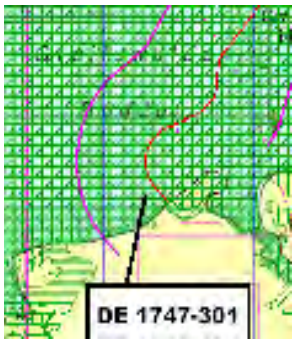
Basis for the Assessment of Impacts

Spatial aspects of potential impacts were investigated on the basis of potential impact ranges, defined for all receptors of importance (habitats, birds, and other animal species) through the Scoping Conference held in Germany.

The sites considered in the assessment are presented below.

Descriptions of Potentially Affected Natura 2000 Areas

Greifswalder Bodden and Parts of Stralsund and Nordspitze Usedom (DE 1747-301 SCI)



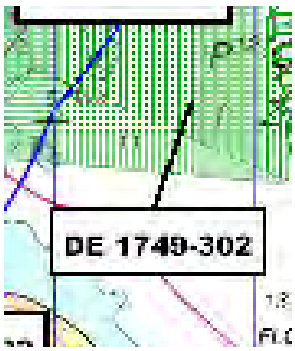
Distance to planned Nord Stream pipeline route: Crossed

Conservation Objectives: The Habitats Directive area encompasses the Bay of Greifswald and its shoreline as well as large portions of the Boddenrandschwelle. An approximately 15.5 kilometre stretch of the pipeline route runs within the Natura 2000 area, encroaching on the Habitats Directive Annex I habitat types found throughout the protection area. The coastal route crosses the Habitats Directive habitat types: Sandbanks, in the area of the Boddenrandschwelle and in the shallow waters off Lubmin; Wind Flats, also in the shallow waters off Lubmin; Large Wide Inlets and Bays, between the Boddenrandschwelle and the shallow waters off Lubmin; and Reef, locally in shallows such as the Neptungrund.

This protected area contains a large number of Annex I habitats. These are as follows: Sandbanks, Mudflats and sandflats, large shallow inlets and bays; Reefs, Annual vegetation of drift lines, Perennial vegetation of stony banks, Vegetated sea cliffs of the Atlantic and Baltic coasts, Atlantic salt meadows, Embryonic shifting dunes, Shifting dunes and Fixed dunes.

It also contains a number of Annex II species. These include the Grey and Harbour seal, Bitterling, River and Sea lampreys, Asp, Twait shad and European otter.

Greifswalder Boddenrandschwelle and Parts of the Pomeranian Bight (DE 1749-302 SCI)



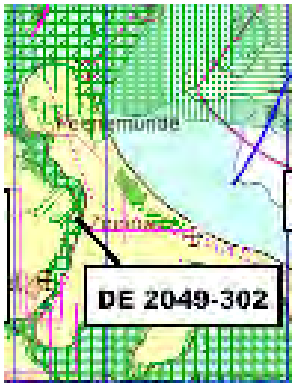
Distance to planned Nord Stream pipeline route: Crossed

Conservation Objectives: The Boddenrandschwelle is a shallow sandbar formed during the last glaciation which separates the Greifswalder Bodden (coastal inlet) from the Pommeranian Bight (open Baltic Sea).

The extensive reefs and sandbanks in the vicinity of the Boddenrandschwelle are one of the major spawning grounds for spring spawning Herring in the western Baltic Sea. Herring, Herring eggs as well as benthic invertebrates (especially Blue mussels) are a major food source for a variety of sea bird species.

This Natura 2000 area contains the following Annex I habitat types; Sandbanks, Large shallow inlets and bays and Reefs. It also contains a number of Annex II species, Grey and Harbour seals, Harbour porpoise, River and Sea lampreys, the Twait shad and the Atlantic sturgeon.

Peeneunterlauf, Peenestrom, Achterwasser and Kleines Haff (DE 2049-302 SCI)

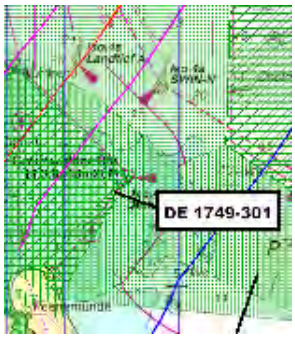


Distance to planned Nord Stream pipeline route: 6.3 kilometres

Conservation Objectives: This site covers the western part of the Oder estuary, comprising coastal inlets and lagoons and the Peenestrom, a stream characterized by changes in salinity in relation to fresh water runoff and weather induced sea level changes.

Estuaries, Annual vegetation of drift lines, Vegetated sea cliffs of the Atlantic and Baltic coasts and Atlantic salt meadows are the Annex I habitat types found in this area. The Annex II species found include Bitterling, River lamprey, Sea lamprey, Asp, Atlantic salmon and European otter.

Greifswalder Oie (DE 1749-301 SCI)

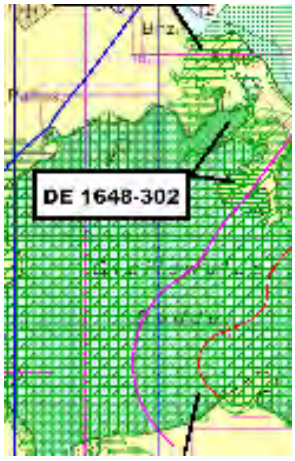


Distance to planned Nord Stream pipeline route: 9.5 kilometres

Conservation Objectives: The island of Greifswalder Oie is surrounded by extensive shallow reefs which result from erosion of glacial tilt since the transgression of the south western Baltic sea started about 2000 years ago.

Several Annex I habitat types are found in this protected area. They are Reefs, Annual vegetation of drift lines, Perennial vegetation of stony banks and Vegetated sea cliffs of the Atlantic and Baltic coasts. This Natura 2000 area also contains the Annex II species Grey seal and Harbour seal.

Coastal Area Southeast Rügen (DE 1648-302 SCI)



Distance to planned Nord Stream pipeline route: 1.8 kilometres

Conservation Objectives: The reserve comprises a mosaic of marine, coastal and especially terrestrial habitats of glacial origin. Grey seals occasionally use exposed boulders as haul out sites. The route of the pipeline runs outside the protected area and does not physically encroach on it.

The Annex I habitats types found in this area are Sandbanks, Mudflats and Sandflats, Coastal lagoons, Large shallow inlets and bays, Reefs, Annual vegetation of drift lines, Perennial vegetation of stony banks, Vegetated sea cliffs of the Atlantic and Baltic coasts, Shifting sand dunes and Fixed dunes.

The Annex II species Grey seal and European otter are found in this protected area.

Granitz (DE 1647-303 SCI)

Distance to planned Nord Stream pipeline route: 10.5 kilometres

Conservation Objectives: The Granitz is one of the largest moraine cliffs on Rügen Island.

Extensive broadleaf forests are the major object of protection of this SCI. Offshore shallow reefs result from coastal erosion processes and Grey seals (an Annex II species) occasionally use exposed boulders as haul out sites.

This Natura 2000 area has the following Annex I habitats; Reefs, Annual vegetation of drift lines and also Vegetated sea cliffs of the Atlantic and Baltic coasts.

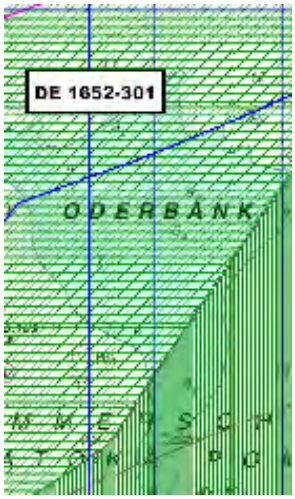
Jasmund (DE 1447-302 SCI)

Distance to planned Nord Stream pipeline route: 20.4 kilometres

Conservation Objectives: This SCI is part of a National Park covering a great variety of forest and bog habitats, a spectacular chalk cliff as well as offshore reefs.

The Jasmund Natura 2000 area contains the following Habitats Directive Annex I habitats; Reefs, Perennial vegetation of stony banks and Vegetated sea cliffs of the Atlantic and Baltic coasts. Grey seals, an Annex II species occasionally use exposed boulders as haul out sites.

Pomeranian Bight and Oderbank (DE 1652-301 SCI)



Distance to planned Nord Stream pipeline route: 0.6 kilometres

Conservation Objectives: The Oderbank is the central morphological structure of the Pomeranian Bight. The route of the Nord Stream pipeline runs 0.6 kilometres from this site.

It is the largest sandbank of the southern Baltic Sea (the best representative of this habitat type in the entire Baltic). It rises up to 8 metres water depth and serves as a wintering area for numerous seabirds. The Oderbank is also a nursery ground for flat fish.

Two distinct groups of Harbour porpoise occur on the Oderbank at low densities: animals from the Danish Belt Sea during summer and autumn, animals from the highly endangered sedentary stock of the southern Baltic Sea in winter, especially during the ice season.

In terms of the classification of habitats in Annex I of the Habitats Directive it is categorised as "Sandbanks which are slightly covered by sea water all the time". In terms of the species listed in Annex II of the Habitats Directive the site is of significance for both Harbour porpoise and Twait shad.

Adlergrund (DE 1251-301 SCI)

Distance to planned Nord Stream pipeline route: 7.2 kilometres

Conservation Objectives: The Adlergrund encompasses the shallowest parts of the Rönnebank between the islands of Rügen and Bornholm.

The site represents the largest area in the southern Baltic Sea with reefs and sandbanks. At the outer edges of the reef the site is dominated by sandbanks formed form glacial sands.

The Adlergrund is an important feeding area for over-wintering sea ducks and Black guillemots and serves in severe winters as a sanctuary for the sea ducks of the Pomeranian Bight.

In terms of the classification of habitats in Annex I of the Habitats Directive, the area contains the following priority habitats, "Sandbanks" and "Reefs". In terms of Annex II species of the Habitats Directive the Harbour porpoise and the Grey seal are key species.

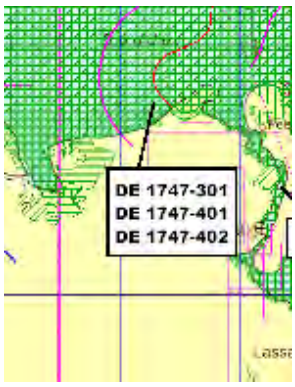
Western Rönnebank (DE 1249-301 SCI)

Distance to planned Nord Stream pipeline route: 15.9 kilometres

Conservation Objectives: This area comprises an extensive moraine ridge close to the coast at Rönnebank, with extensive strata of glacial material to a depth of 43 metres with stone reefs through it.

In terms of Annex I of the Habitats Directive the priority habitat is "Reefs". The Annex II species of concern is the Harbour porpoise. Another Annex II species, the Twait shad, is also found in the area.

Greifswalder Bodden and Southern Strelasund (DE 1747-402 SPA) and: (DE 1747-401 SPA)



Distance to planned Nord Stream pipeline route: Crossed

Conservation Objectives: The area of the Greifswalder Bodden SPA is slightly larger than the SCI. The site has been designated twice to enlarge its size.

The Greifswalder Bodden is the core section of an extensive system of coastal inlets which form the most important wintering area for waterfowl in the Baltic Sea. About 80 different species of ducks, geese, swans, mergansers, waders, terns and gulls use the

Greifswalder Bodden as a stop over site during migration, or either as a wintering or moulting area.

The large variety of marine and coastal habitats provides suitable breeding habitats for 20 species of Annex I of the Birds Directive. Most of them are coastal breeding water birds (waders, terns, gulls). Huge concentrations of migratory waterfowl are the major food source for some rare raptors such as the Peregrine Falcon and White-tailed Eagle.

Western Pomeranian Bight (DE 1649-401 SPA)

Distance to planned Nord Stream pipeline route: Crossed

Conservation Objectives: This SPA forms the western section of the Pomeranian Bight, the second most important wintering area for seabirds in the Baltic Sea. It connects the inner coastal lagoon system (SPA Greifswalder Bodden) with the shallow banks of the open sea (Oderbank and Adlergrund).

Red-throated Divers, Slavonian Grebes, and Sea ducks are the most abundant species found there during winter and spring. Spawning Herring is the most important food source for all species between February and May.

Pomeranian Bight (DE 1552-401 SPA)

Distance to planned Nord Stream pipeline route: Crossed

Conservation Objectives: The SPA is one of the most important staging areas for sea birds in the Baltic Sea. Up to half a million individuals winter there.

The Pomeranian Bight is an extremely important wintering area for Slavonian grebes. It is also one of three important wintering areas for Long-tailed ducks and Velvet scoters. Common scoters, also use the SPA as an important stop over site and as a moulting area during summer. The Pomeranian Bight is an important stop over site for Red-throated divers during the spring migration between February and April. Altogether about 20 seabird species occur in the Pomeranian Bight throughout the year.

Summary of Impacts on Natura 2000 Areas in Germany

Impacts on Habitats and Species

Potential impacts of the Nord Stream project inside the German EEZ and Territorial waters differ between sites which have to be crossed, sites in close vicinity (< 5 kilometres), and sites at greater distances (> 5 kilometres). Terrestrial sites, far away from the pipeline route and not bordering the sea, will not be affected at all.

In relation to sites which have to be crossed, potential impacts vary between inner coastal waters and the open sea, because the pipelines will be laid on the seabed in deeper waters (> 15 metres water depth) and covered by sediment in shallow waters. The construction and operational phases will differ in terms of their potential effects.

Shallow Water Sites to be Crossed - Greifswalder Bodden and the Boddenrandschwelle

Dredging and backfilling of the pipelines route will cause a temporary loss to limited areas of marine Natura 2000 habitats inside Greifswalder Bodden and across the Boddenrandschwelle. The pipelines will have to be covered by sediment in shallow waters for pipeline protection reasons as well as for ship traffic safety. The depth of the trench will vary according to the technical and safety requirements in order to minimise the impact area, the excavation volume, the re-suspension of sediments and the overall construction process. In addition, a number of special mitigation measures are being taken to minimise the environmental impacts. These are summarised in **Box 6.1** below.

Box 6.1 Mitigation Measures to be taken in Shallow Water Natura Sites in Germany

- Both pipelines will be laid in one single trench.
- Trenching and pipe-laying will be performed stepwise in such a way that no section of the trench will stay open for longer than six and a half months.
- Dredging and backfilling will be restricted to one season from mid May until the end of December. No seabed intervention works will take place from January until mid May, the spawning season of Herring.
- Dredged sediments will be stored temporarily on a spoil ground outside Natura 2000 sites. They will be clustered there according to their ecological function to ensure proper restoration of the seabed. Restoration will focus on both the natural relief as well as the original sediment quality of the top soil layer (fine or medium sand, pebbles, boulders, etc)
- Organically enriched sediments will not be used for backfilling. They will be deposited on an onshore spoil ground.
- The belt of macrophytes in the shallow waters near the beach at Lubmin harbour will be crossed by a cofferdam to minimise trench width. The dredged material will be stored there inside an additional cofferdam to prevent major re-suspension of sediments.

Permanent monitoring during seabed intervention works will ensure the implementation of screens if defined threshold values will be exceeded. No impacts will result from re-suspension of nutrients or chemical pollutants, because their sediment concentrations are very low.

Based on previous investigations of benthic re-colonisation processes in the inner coastal waters of the German Baltic Sea it has been concluded that recovery of plants (macrophytes) and of sea bottom organisms (zoobenthos) will take place within three years after construction. They will therefore be able to recolonise and re-establish themselves relatively quickly. Negative effects on Natura 2000 habitats will affect only a small portion of the overall area of each habitat and will be limited to an overall period of about four years. According to recommendations from the Federal Agency of Nature Conservation (BfN) these impacts can be judged as non-significant.

Table 6.1 Temporary Loss of Natura 2000 Habitats inside the Greifswalder Bodden and at the Boddenrandschwelle

Habitat type (Annex II Habitats Directive)	Area (ha) inside DE 1747-301	Area (ha) affected by trenching	Area (ha) inside DE 1749-302	Area (ha) affected by trenching
1110 sandbank	6000	10.6	3600	-
1140 temporarily exposed flat	1200	0.3	-	-
1160 costal inlet	45000	32.3	400	
1170 reef	1800	6.6	12600	3.8

No significant negative effects are predicted for the operational phase. The cool gas in the pipelines will not affect the temperature of the seabed or the organisms living in its upper layers.

Grey seals (up to five individuals in total) might be temporarily displaced from the Greifswalder Bodden during the construction of the pipeline (due to noise disturbance). No significant negative effects are expected, since they do not reproduce in this region of the Baltic Sea. Offshore construction works will not affect terrestrial species.

Offshore construction works (noise and light emissions, ship traffic outside the traditional shipping routes, turbidity) will cause local displacement of birds. However, a number of mitigation measures will limit the intensity of disturbances:

- No offshore construction during the Herring spawning season, the peak period for staging seaducks, grebes, mergansers, and divers at the Boddenrandschwelle
- Routing of the pipeline in close vicinity of existing shipping routes (i.e. existing disturbance corridors of minor relevance for staging birds)
- Restriction of construction to one season

Disturbance will affect only few individuals for short periods of time, especially in early winter, because intensive maritime tourism already restricts waterfowl occurrence to the shallow windflat areas and the Boddenrandschwelle during summer.

Deep Water Sites to be Crossed - Pomeranian Bight (> 15 metres water depth)

The pipelines will be laid on the seafloor between the northern border of Greifswalder Boddenrandschwelle and Parts of the Pomeranian Bight and the German EEZ border. Only minor seabed interventions will be required (local ploughing or rock dumping) to avoid free spans and to ensure pipeline stability. These seabed interventions will not cause major re-suspension of sediment, because fine and medium sand with very low organic matter content dominates this route section. Turbidity will, therefore, not affect any Natura 2000 habitat.

Pipe-laying activity will cause disturbances to marine mammals for about two months in two successive years. Disturbance effects will be restricted to single individuals and only short periods of time because of the general scarcity of Harbour Porpoises and seals in the Pomeranian Bight.

Summary of Impacts on Protected Areas in Germany

The impacts on protected areas from construction and operation of the planned Nord Stream pipelines within the German EEZ and territorial waters are summarised in the table below, with respect to the intensity, scale and duration of the effects, and the overall significance of the impacts on the environment.

Table 6.2 Summary of Impacts on Natura 2000 areas in Germany

Impact	Intensity of effect	Scale of effect	Duration of effect	Overall significance of impact
Sediment spreading and sedimentation	Managed via detailed mitigation	0.3 – 32,2 hectares affected depending on habitat type	4 years	Not Significant
Noise during construction	Not Significant	Local	Temporary (days)	Not Significant
Physical disturbance during construction	Not Significant	Local	Temporary (days)	Not Significant
Transboundary and cumulative impacts on protected areas	Not Significant	-	-	Not Significant

7 Assessment of Potential Cumulative Impacts

Each of the Natura 2000 assessments carried out at national level have considered the potential for cumulative impacts (i.e. the combination of a number of impacts from individual projects that could, potentially, have a cumulative effect on the environment) due to the development of Nord Stream and other planned projects.

No significant potential cumulative impacts have been identified. This reflects the detailed planning of the route alignment which has taken account of proposed developments and has also, for example in the case of the German section of the route, taken advantage of the fact that there are established zones where the implementation of projects is foreseen which can accommodate the pipelines.

8 Assessment of Potential Transboundary Impacts

Potential transboundary impacts might occur in the vicinity of the border areas of the Finnish, Swedish, Danish and German EEZ. Due to the relative proximity of Natura 2000 sites to the Pipeline Route, and in agreement with the responsible authorities Nord Stream has assessed potential impacts from the Nord Stream Project from activities:

- In the Russian sector of the Nord Stream Pipeline on Natura 2000 sites in Finland
- In the Finnish sector of the Nord Stream Pipeline on Natura 2000 sites in Estonia
- In the German sector of the Nord Stream Pipeline on Natura 2000 sites in Poland

An assessment of the potential transboundary impacts on the **Eastern Gulf of Finland** archipelago and water areas Natura 2000 site (FI 0408001, SPA, SPI) due to **Project activities in Russia** (see **Figure 3.1**) has concluded the site will not experience any significant impacts. The site, located a minimum of 6.8 km from the pipelines' route in Russia, is only within the range of impact from noise and vibration generated by munitions clearance. The latter would impact marine mammals, which are not a conservation objective of this site.

Three **Natura 2000 sites in Estonia** are located in the relative proximity of the pipeline route (see **Figure 6**):

- Lahemaa (EE 0010173 SAC) is located in a distance of approximately 19 kilometres from the pipeline route.
- Prangli (EE 0010126 SAC) is located in a distance of approximately 24 kilometres from the pipeline route.

- Naissaare (EE 0010127 SAC) is located in a distance of approximately 17 kilometres from the pipeline route.

The Natura 2000 site EE 0010126 is located more than 20 kilometres away from the Nord Stream pipeline route and has been assessed as not being affected by potential negative impacts from the Nord Stream Project.

The Natura 2000 sites EE 0010173 and EE 0010127 are located within the 20 kilometres corridor. The predicted maximum range of potential negative impacts of 20 kilometres is based on the observation that noise emissions during the construction phase could cause disturbance of seals in a distance of up to 20 kilometres from the Pipeline Route. The mentioned Natura 2000 sites aim mainly to protect terrestrial habitats and species. Disturbance of seals as a result of noise emissions during construction is not relevant as seals are not considered a conservation objective at these sites. Thus, no significant transboundary effects have been identified in the assessments of potential impacts on Natura 2000 areas for sites located in Estonia.

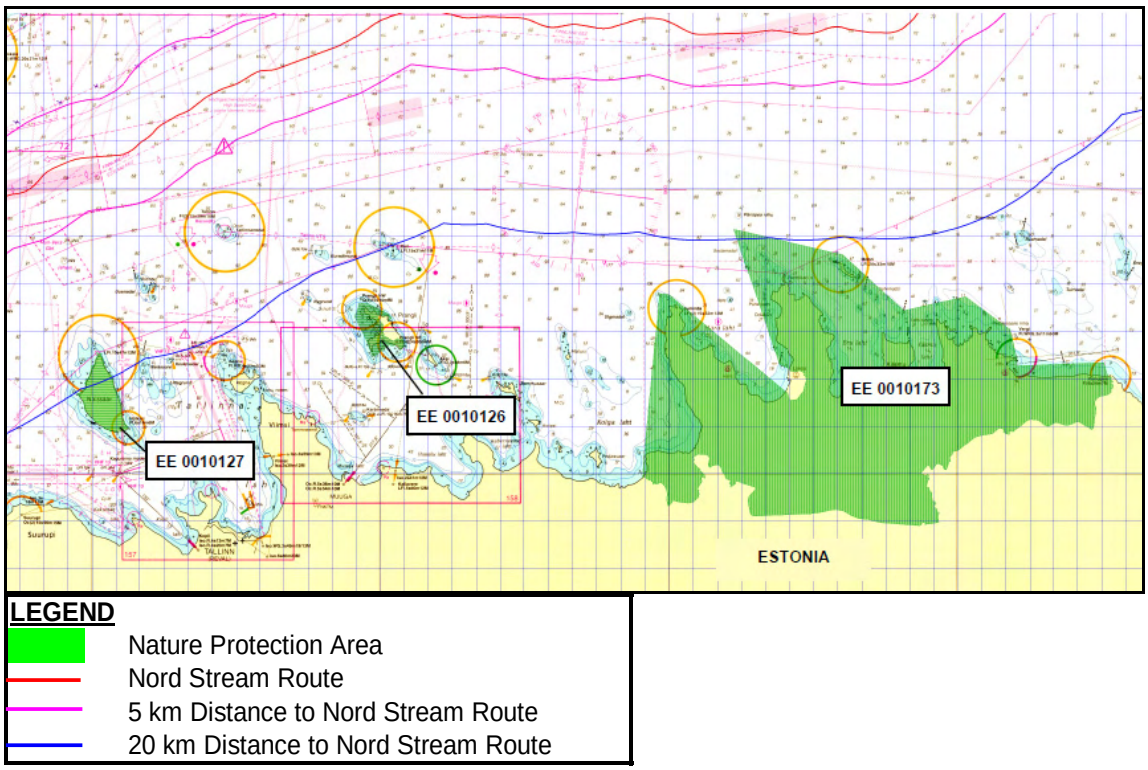


Figure 8.1 Potential transboundary effects on Natura 2000 areas in Estonia

Natura 2000 sites in Poland (see **Figure 6.1**) are located more than 20 kilometres away from the Nord Stream Pipeline Route and have been assessed as not being affected by potential negative impacts from the Nord Stream Project.