

Nord Stream 2 AG

August 2018



# **NORD STREAM 2**

# **NON-TECHNICAL**

# **SUMMARY**

## **ENVIRONMENTAL IMPACT**

## **ASSESSMENT, DENMARK**

## **NORTH-WESTERN ROUTE**

## **NORD STREAM 2**

Non-Technical summary

Environmental Impact Assessment, Denmark, North-western route

## TABLE OF CONTENTS

<b>0</b>	<b>NON-TECHNICAL SUMMARY</b>	<b>1</b>
0.1	Background and justification for the project	1
0.2	EIA procedure and public participation	1
0.3	Pipeline route alternatives	2
0.4	Project description	4
0.5	EIA methodology	6
0.6	Assessment of potential impacts	8
0.7	Natura 2000	16
0.8	Marine strategic planning	19
0.9	Decommissioning	19
0.10	Cumulative impacts	19
0.11	Unplanned events and risk assessment	20
0.12	Transboundary impacts	20
0.13	Mitigation measures	21
0.14	Proposed environmental monitoring	22
0.15	Health, Safety, Environmental and Social Management System	22
0.16	Summary	23

## **0 NON-TECHNICAL SUMMARY**

### **0.1 Background and justification for the project**

The relevance of gas as a primary energy source is projected to stay stable or even increase over the next decades, given the necessity to reduce coal consumption due to climate reasons and phase-out of nuclear in large parts of the European Union (EU). In view of declining EU28 domestic production, the EU needs to import additional volumes of gas by as early as 2020 to ensure sufficient gas supply for the coming decades.

The Nord Stream 2 Pipeline System (NSP2) comprises two pipelines through the Baltic Sea planned to deliver natural gas from vast reserves in Russia directly to the EU gas market to fill the growing gas import demand. The twin approximately 1,250 kilometre (km) subsea pipelines will have the capacity to supply 55 billion cubic metres (bcm) of gas per year in an economical, environmentally safe and reliable way, compensating for the drop in the EU's domestic production. The privately funded, €9.5 billion infrastructure project will ensure long-term access to an important, low-emissions energy source, thereby contributing to the EU's climate protection efforts. Additional supplies will boost competition in the market and support the EU's global industrial competitiveness. Nord Stream 2 follows in the footsteps of the successful experience of construction and operation of the existing Nord Stream Pipeline (NSP), which has been recognised for its high environmental and safety standards, green logistics, open dialogue and public consultation.

Nord Stream 2 AG is a project company established for the planning, construction and subsequent operation of the Nord Stream 2 Pipeline. The company is based in Zug, Switzerland and owned by Public Joint Stock Company (PJSC) Gazprom. Five European energy companies, ENGIE, OMV, Shell, Uniper and Wintershall, have committed to provide long-term financing for 50% of the total cost of the project. The financial commitment by the European companies underscores the Nord Stream 2 project's strategic importance for the European gas market, contributing to competitiveness as well as medium- and long-term energy security, especially against the background of expected declining European production. At its headquarters, Nord Stream 2 AG has a strong team of over 200 professionals of over 20 nationalities, covering survey, environmental, health and safety, engineering, construction, quality control, procurement, project management and administrative roles.

NSP2 will deliver reliable and sustainable transportation capacity for natural gas under sound environmental and economic conditions, closing the upcoming EU import gap and covering imminent security of supply risks.

### **0.2 EIA procedure and public participation**

#### **0.2.1 EIA procedure**

Construction of pipelines for the transportation of hydrocarbons (i.e., petroleum products) on the Danish continental shelf requires a permit pursuant to the Act on the Continental Shelf and Certain Pipeline Installations in Territorial Waters and the Administrative Order on Pipeline Installations. The permit application must be submitted to the Danish Energy Agency (DEA), which processes the application and issues the permit on behalf of the Danish Minister for Energy, Utilities and Climate.

Gas, oil and chemical pipelines with a diameter exceeding 800 mm and a length of more than 40 km may only be granted a permit on the basis of an Environmental Impact Assessment (EIA). The EIA report must contain, as a minimum, the information listed in the Danish EIA Act, including a description of the resources or receptors likely to be significantly affected by the project, both inside and outside of Danish territory and during both the construction and operational phases of the project. The EIA report must also describe the main realistic alternative approaches to the project.

Denmark has signed the Convention on Environmental Impact Assessment in a Transboundary Context (“Espoo Convention”), which promotes international cooperation and public engagement when the environmental impact of a planned activity is expected to cross a national border. The NSP2 project is subject to the requirements of the Espoo Convention, as the pipeline will cross the territories of five countries and may cause transboundary impacts on four additional countries located in the Baltic Sea region.

The Danish EIA Act requires that a non-technical summary be prepared in conjunction with an EIA so that all interested members of the public may become informed about the project. This non-technical summary covers the Danish part of the NSP2 project. As described in section 3 below, the Danish part of the project includes the proposed pipeline route from the Swedish Exclusive Economic Zone (EEZ) border north-east of Bornholm through the Danish EEZ north and west of Bornholm to the German EEZ border south-west of Bornholm. Additional information on the project is available on the NSP2 website, [www.nord-stream2.com](http://www.nord-stream2.com).

### **0.2.2 Public participation**

In accordance with the Danish EIA Act, the EU EIA Directive and the Aarhus Convention, the Danish authorities must enable public participation in environmental decision-making. Therefore, the DEA must publish information concerning the application and the EIA report on the Agency’s website and allow at least eight weeks for public consultation. Public participation may also involve stakeholder meetings and public presentations of technical material.

Furthermore, Nord Stream 2 AG is dedicated to transparent communication and active consultation with relevant stakeholders, including regulatory bodies, non-governmental organisations, experts, affected communities, and other interested and affected parties. The communication strategy incorporates best practices and lessons learnt from the NSP process. Nord Stream 2 AG has already engaged with various stakeholders to inform them about the envisaged project and to understand their views. Further information on Nord Stream 2 AG’s communication strategy can be found on the NSP2 website.

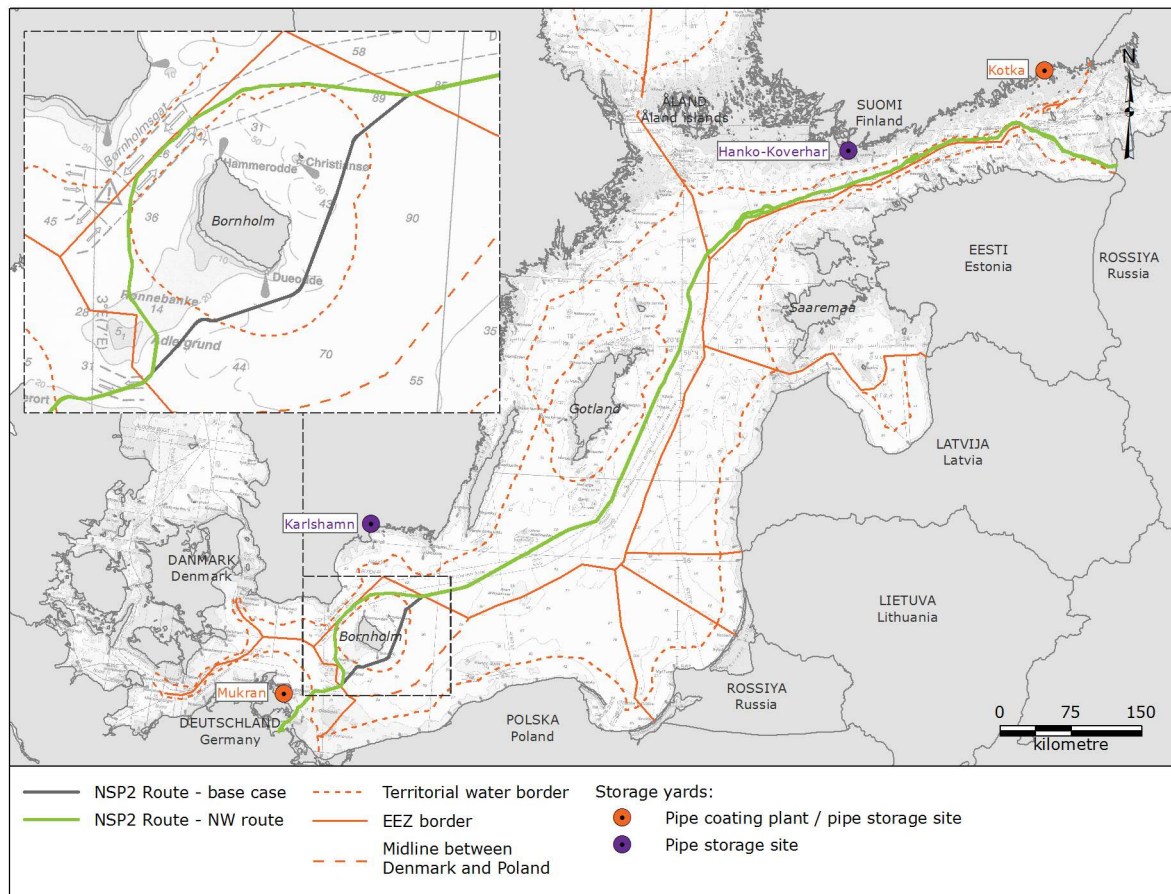
## **0.3 Pipeline route alternatives**

### **0.3.1 Investigation of route alternatives**

Nord Stream 2 AG investigated several route alternatives through Danish waters. The objective was to find the most effective way of meeting the purpose and need of the project while also avoiding or reducing potentially significant negative impacts.

The route alternatives were identified based on previous planning and experience from NSP, supplemented with new route surveys and seabed investigations, including geophysical and geotechnical investigations. Environmental, socio-economic, and technical criteria were then assessed for each of the route alternatives to determine the preferred route.

Alternative routes, all of which traverse Danish waters, are shown in Figure 0-1.



**Figure 0-1 Route corridor options developed for the NSP2 project.**

### 0.3.2 Selection of the preferred route

A construction permit application for the NSP2 base case route, including EIA and Espoo documentation, was sent to the relevant authorities for all involved countries in April 2017. The base case route was evaluated as the preferred route in the EIA for the NSP2 project. In Denmark, the NSP2 base case route application is being evaluated by the Minister of Foreign Affairs as a construction permit for a route in Danish Territorial Waters (TW) can only be granted if the activity is compatible with national foreign, security and defence policy interests, cf. section 3a(2) of the Act on the Continental Shelf and Certain Pipeline Installations in the Territorial Waters. As it is not clear when a recommendation by the Minister of Foreign Affairs will be given, Nord Stream 2 AG has decided to develop a route outside of Danish TW to the north and west (NW) of Bornholm and has selected the NW route in the present EIA as a proposed route for NSP2 (hereafter referred to as the “NSP2 route”).

The proposed NSP2 route (NW route) has been evaluated as a feasible alternative compared to the base case route. Aspects considered as part of the route alternatives assessment included: maritime safety, chemical warfare agent (CWA) risk area, extent of intervention works, fishery in the area, maritime spatial planning, military practice areas and the biological environment. Based on the comparison, it is concluded that the reference base case route is the preferred route for the Nord Stream 2 project in Danish waters in relation to environmental and socio-economic aspects, but that the proposed NSP2 route (NW route) is also a viable route variant.

### 0.3.3 No-action alternative

According to the regulations, an EIA should include a “no-action” (or “zero-”) alternative, which describes a situation in which the planned project is not carried out. In the present case, should



NSP2 not be constructed and operated in Danish waters, there would be no environmental or social impacts, neither adverse nor positive.

## 0.4 Project description

### 0.4.1 Project schedule

Nord Stream 2 AG has conducted research and carried out technical, geophysical and environmental surveys over several years to identify the optimal route alternative. The schedule for NSP2 planning, permitting and construction is outlined in Figure 0-2.

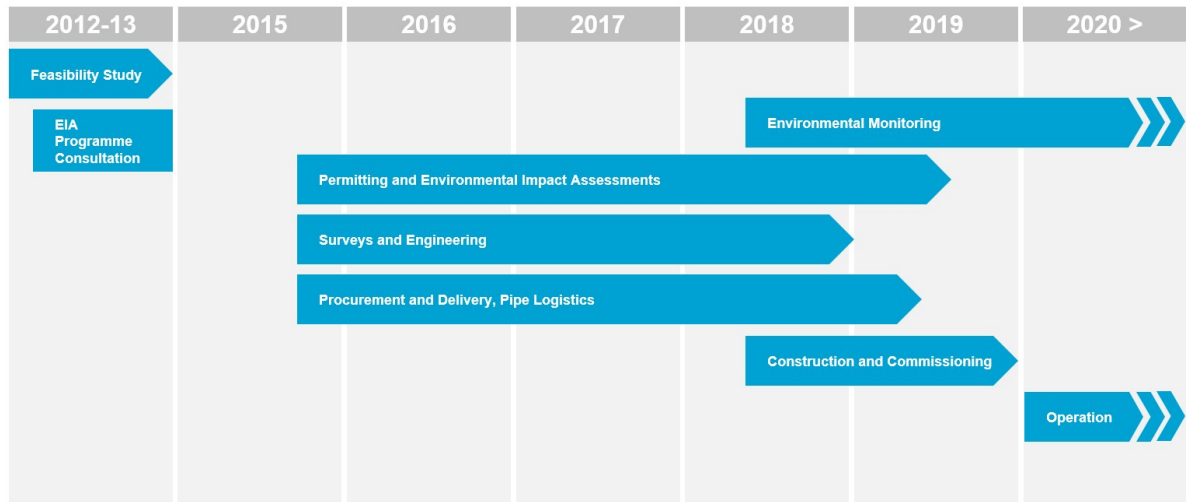
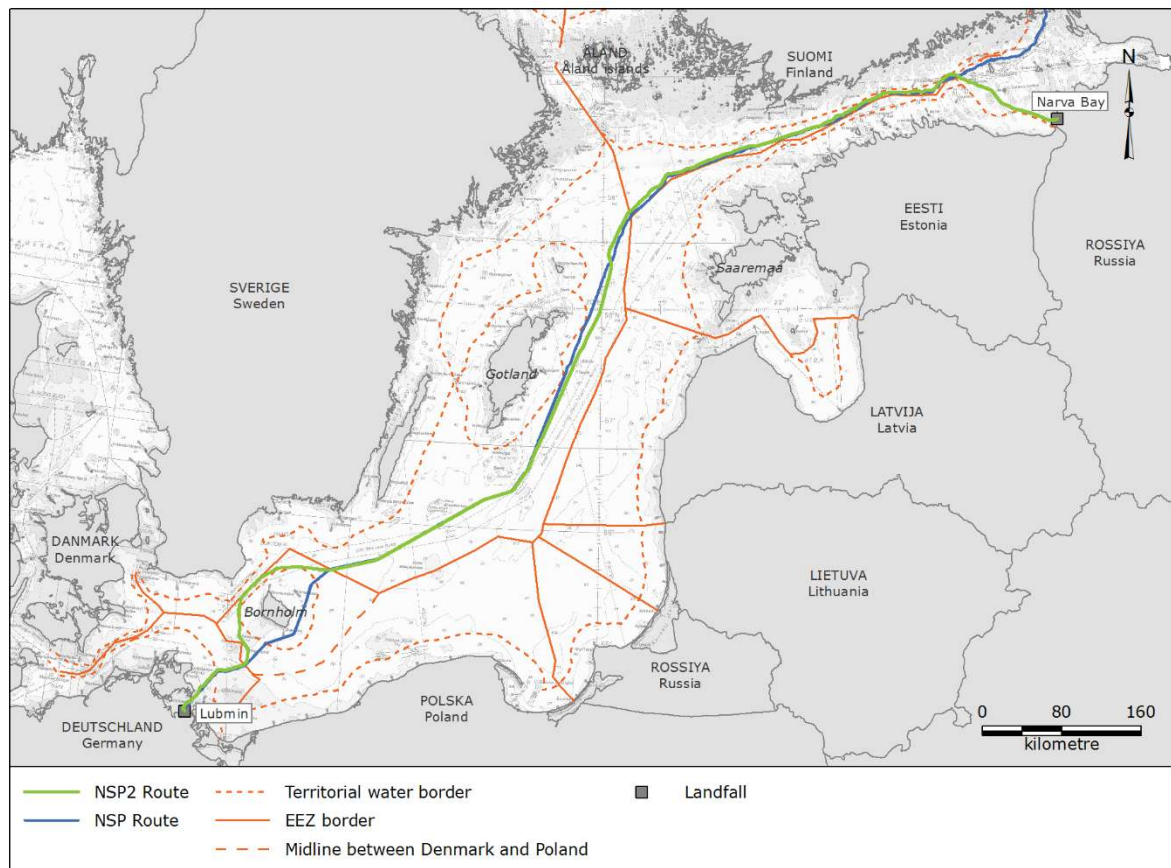


Figure 0-2 NSP2 project schedule.

### 0.4.2 Proposed NSP2 route

NSP2 is designed to transport natural gas and comprises two 48" diameter subsea pipelines and associated onshore facilities with the capacity to deliver 55 bcm of natural gas per year to the EU market. The pipelines will extend through the Baltic Sea from the southern Russian coast (Narva Bay) in the Gulf of Finland to the German coast (Lubmin area), with no spur lines or intermediate landfalls.

The proposed NSP2 route will cover approximately 1,250 km. The route crosses the TW of Russia and Germany and runs within the EEZs of Finland, Sweden, Denmark and Germany (see Figure 0-3).



**Figure 0-3 Proposed NSP2 route in the Baltic Sea.**

In Danish waters, the proposed NSP2 route runs exclusively in the EEZ west and north of Bornholm. The length of the proposed route in Danish waters is approximately 174 km. The two NSP2 pipelines (Line A and Line B) will run almost parallel to one another, with a separation distance for the two lines of between 25 and 105 m.

### 0.4.3 Construction activities

Construction activities in Danish waters include pipe-lay and seabed intervention works. Pipeline installation is expected to last approximately 125 days in total for the two pipelines, and the installation is assumed to be sequential, meaning that one pipeline will be installed at a time. Construction activities are scheduled to start in the course of Q2 2019, but this may be subject to change during project development.

Pipe-lay will be undertaken using specialised vessels handling the entire welding and pipe laying process. In the Danish sector, it is expected that a dynamically positioned (DP) pipe-lay vessel will be used. DP vessels do not require anchors and are kept in position by horizontal thrusters that constantly counteract forces from the pipeline, waves, currents and wind.

In some areas, the offshore installation of the pipelines will require additional stabilisation and/or protection against hydrodynamic forces (e.g. waves, currents), which can be achieved by either trenching the pipelines into the seabed or with rock placement. Trenching will be performed after the pipelines have been laid on the seabed (post-lay), at four sections that comprise a total of 14.5 km.

Rock placement is the use of rock pieces to provide support and cover for sections of the pipeline to ensure its long-term integrity. The types of rock placement works that are envisaged for seabed



intervention include gravel supports (pre-lay and post-lay) and gravel cover (post-lay) in five discrete locations that comprise a total of 11.3 km. Rock placement will also be used in the areas where NSP2 pipelines cross the NSP pipelines. For cable crossings, a solution with flexible or rigid separation mattresses is envisaged.

#### 0.4.4 Operational activities

Nord Stream 2 AG will be the owner and operator of NSP2. During normal operation, pressurized natural gas will be continuously introduced at Narva Bay, Russia and taken out at an equal rate at Lubmin, Germany.

An operations concept and security system has been developed to ensure the safe operation of the pipelines. The technical expectation of operation of the infrastructure is at least 50 years.

### 0.5 EIA methodology

This section provides a summary of the methodology applied in the EIA. The assessment methodology enables characterisation of the potential impacts from planned activities and assessment of their overall significance. Potential impacts from unplanned events are assessed using either a similar methodology or an established risk-based methodology, as appropriate. The resources and receptors that may be impacted by NSP2 are summarised in Table 0-1

**Table 0-1 Resources or receptors susceptible to potential impacts associated with NSP2.**

Resource or receptor type	Resource or receptor
Physical-chemical	Bathymetry
	Sediment quality
	Hydrography
	Water quality
	Climate and air
Biological	Plankton
	Benthic flora and fauna
	Fish
	Marine mammals
	Seabirds
	Protected areas
	Biodiversity
Socio-economic	Shipping and shipping lanes
	Commercial fishery
	Cultural heritage
	People and health
	Tourism and recreational areas
	Existing and planned installations
	Raw material extraction sites
	Military practice areas
Environmental monitoring stations	

Although conventional and chemical munitions are not a resource or receptor, and therefore not included in the list above, munitions were identified during consultation as an issue requiring consideration. Munitions have been assessed in relation to the above-listed resources and receptors, as applicable.

#### 0.5.1 Identifying potential impacts

A systematic approach was applied in the EIA to identify and evaluate the potential impacts that the NSP2 project may have on the physical-chemical, biological and socio-economic environment

and to describe mitigation measures to avoid, minimise or reduce any potentially negative impacts to acceptable levels. Throughout the EIA, where appropriate, a worst-case assessment of an impact has been considered to ensure that the conclusions are conservative.

The temporal scope of the assessment has included impacts that could arise during the construction and operational phases of the project. The pre-commissioning and commissioning phases will not impact resources or receptors in Danish waters; as such, they have not been addressed in the EIA. Impacts during decommissioning will depend on the decommissioning method, which will be developed near the end of the operational phase. Therefore, only a high-level assessment of potential impacts during decommissioning was undertaken, which is summarised in section 0.9.

**0.5.2 Assessment of potential impacts**

The impact assessment methodology has taken into consideration the nature, type and magnitude of a given impact as well as the sensitivity of a given resource or receptor to determine an impact ranking. The magnitude of an impact is defined by its spatial extent, duration and intensity. The sensitivity of receptors/resources to each impact was determined by considering their resilience and ecological and/or socio-economic importance, including protected status.

On this basis, an impact ranking was determined and expressed as a qualitative ranking (see Table 0-2). Impact rankings also accounted for the implementation of mitigation measures built-in to the project to avoid or reduce significant adverse impacts.

**Table 0-2 Impact ranking categories for planned activities.**

Negligible	Impact that is indistinguishable from the background/natural level of environmental and socio-economic change. Impact is considered "not significant".
Minor	Impact of low magnitude, within standards and/or associated with low or medium importance/sensitivity resources/receptors, or impact of medium magnitude affecting low importance/sensitivity resources/receptors. Impact is considered "not significant".
Moderate	Broad category within standards, but impact of a low magnitude affecting high importance/sensitive resources/receptors, or medium magnitude affecting medium or high importance/sensitivity resources/receptors, or of high magnitude affecting low sensitivity resources/receptors. The impact may or may not be significant, depending on the context, and further mitigation may be required to avoid or reduce the impact to non-significant levels.
Major	Impact that exceeds acceptable limits and standards and is of high magnitude affecting medium or high importance/sensitivity resources/receptors. Impact is considered "significant".

For the purposes of this EIA, a "significant" impact is one that should be considered by the relevant authority when determining the acceptability of a project.

**0.5.3 NSP2 modelling and assumptions**

An early task in the EIA process was to determine the characteristics of the physical changes that would arise from NSP2 activities. This was informed by a substantial body of empirical data gathered from the NSP monitoring programme, which spanned both construction and operation. In the cases of sediment release, underwater noise, airborne noise and air emissions, the results from NSP monitoring were supplemented with targeted modelling studies. The release of contaminants, including CWA, and nutrients during construction was evaluated based on the results of sediment release modelling and the levels of such substances identified during the field environmental survey.

## **0.6 Assessment of potential impacts**

### **0.6.1 Bathymetry**

Modelling has shown that potential changes to water depth caused by the NSP2 project (during the construction and operational phases) would not be significant enough to cause bathymetry-related impacts on local bottom-dwelling communities or the basic physical-chemical conditions for life near the pipelines.

It is therefore assessed that impacts on bathymetry during construction and operation of NSP2 will be **negligible** and **not significant**.

### **0.6.2 Sediment quality**

Along the Danish portion of the proposed NSP2 route, the bedrock consists mainly of sand- and mudstone. Along the proposed NSP2 route, surface sediments mainly consist of mud and sandy mud in the deeper section north and north-east of Bornholm, and more variable sediment types, including till, gravel and sand, in the shallower areas west and south-west of Bornholm.

Modelling indicates that seabed intervention works will lead to sedimentation in a localised area that corresponds to a sediment layer of approximately 1 mm. The predicted levels of sedimentation are not considered sufficient to alter the sediment quality in terms of chemistry, content of contaminants or the natural processes that take place in the sediment. Furthermore, survey results have shown that intervention works will not expose sediment of a fundamentally different quality, and the physical characteristics of the sediment will not be changed.

Changes in bottom-water dynamics due to the presence of the pipelines and other structures on the seabed can affect sedimentation and erosion patterns. These impacts are assessed to be highly localised and insignificant in relation to the vast bottom habitat area around the proposed NSP2 route.

Sacrificial anodes will be used to protect the pipelines from corrosion, which will result in the release of aluminium, zinc and cadmium. The amounts of metals released from the anodes will be so small that sediment is not expected to be affected above background variations.

It is therefore assessed that impacts on sediment quality during construction and operation of NSP2 will be **negligible** and **not significant**.

### **0.6.3 Hydrography**

The predicted sedimentation levels arising from NSP2 construction activities are within the natural range of yearly sedimentation in the Bornholm Basin, and therefore not of a magnitude that would cause any hydrographical changes in the marine environment.

The potential hydrographical effect on deep water flowing into the Baltic Proper was evaluated, and it was concluded that the pipelines will not lead to any significant "blocking effect".

It is therefore assessed that impacts on hydrography during construction and operation of NSP2 will be **negligible** and **not significant**.

### **0.6.4 Water quality**

Construction activities will result in increased levels of sediments in the water column, potentially along with contaminants and/or CWA that were previously present in these sediments. Modelling has shown that sediments will be suspended for a duration of several hours before resettling on the seabed. In the deeper parts of the route, where measured levels of contaminants are highest, the halocline will prevent the upward migration of contaminants to the surface waters, where they may

impact pelagic species and seabirds. The impact will thus be temporary and local to the area around the pipelines.

There is also the potential for discharges from project vessels to impact water quality; however, all project vessels will comply with the requirements of applicable international conventions regarding pollution at sea. As such, no impacts from vessel discharges are expected.

Gas flowing through the NSP2 pipelines during operation has the potential to increase the surface temperature of unburied pipeline sections, creating a temperature difference between the pipeline and the surrounding seawater. Natural mixing will ensure that the water temperature reaches equilibrium with the surrounding water within 1 m after crossing the pipeline, and the impact is therefore highly local. Modelling has shown that the transfer of heat from the buried parts of the pipelines to the sediment and the surrounding seawater is insignificant.

Sacrificial anodes will be used to protect the pipelines from corrosion, which will result in the release of aluminium, zinc and cadmium. Elevated levels of anode metal ions in the water column are expected only within a few metres of the anodes, and the levels will be insignificant compared with the existing level of water-borne inflow of metals to the area.

It is therefore assessed that impacts on water quality during construction and operation of NSP2 will be **negligible** and **not significant**, except for impacts associated with the release of sediments and contaminants into the water column, which are assessed to be **minor** and **not significant**.

#### **0.6.5 Climate and air quality**

Vessel traffic associated with construction and operation of NSP2 will generate air emissions that have the potential to impact climate and/or air quality. The total release of air pollutants during both project phases has been calculated, and corresponds to an amount that will not be significant in comparison with the annual Danish emissions caused by shipping. In addition, all construction and operation activities will occur several kilometres away from inhabited areas, so no onshore air quality impacts are expected.

It is therefore assessed that impacts on climate and air quality during construction and operation of NSP2 will be **negligible** and **not significant**.

#### **0.6.6 Plankton**

Construction activities will result in increased levels of sediments in the water column, potentially along with contaminants and/or CWA that were previously present in these sediments. Modelling has shown that sediments will be suspended for a duration of several hours before resettling on the seabed. In the deeper parts of the route, where measured levels of contaminants are highest, the halocline will prevent the upward migration of contaminants to the surface waters, where they may impact plankton. The impact will thus be temporary and local to the area around the pipelines.

Further, the previously described release of metals from sacrificial anodes into the water column may impact plankton. This will only occur within a few metres of the anodes, and the levels will be insignificant compared with the existing level of water-borne inflow of metals to the area.

It is therefore assessed that impacts on plankton during construction and operation of NSP2 will be **negligible** and **not significant**.

#### **0.6.7 Benthic flora and fauna**

Physical disturbance associated with construction activities may result in the disturbance of benthic flora and fauna. The impact would be limited to the footprint of the physical disturbance, which

covers a negligible area in comparison with the surrounding habitats that are physically uniform and support similar benthic communities.

Construction activities will result in increased levels of sediments in the water column, potentially along with contaminants and/or CWA that were previously present in these sediments. Modelling has shown that sediments will be suspended for a duration of several hours before resettling on the seabed. Most contaminants and CWA are unlikely to be dissolvable in water and will therefore also resettle on the seabed within hours. The impact will thus be temporary and local to the area around the pipelines.

During operation, the presence of the pipelines and structures on the seabed can potentially create a new hard-bottom substrate (a "reef effect"), where benthic fauna can settle. Mobile animals may then be attracted to the area in search of food and/or shelter. Overall, any changes to the population structure near the pipelines will be limited, given that the pipelines will occupy a negligible part of the total area with a similar habitat in the Baltic Sea.

It is therefore assessed that impacts on benthic flora and fauna during construction and operation of NSP2 will be **negligible** and **not significant**, except for impacts associated with change of habitat, which are assessed to be **minor** and **not significant**.

#### **0.6.8 Fish**

Physical disturbance from construction works will be limited to the footprint of the proposed NSP2 route and will not lead to impacts on fish at the population level. The ecosystem is furthermore expected to revert to its pre-impact state within a short time span.

Bottom dwelling fish, as well as fish eggs and larvae close to the seafloor, can be smothered as sediments that were released into the water column during construction settle back onto the seabed. However, modelling has shown that the rate and amount of sediment resettling on the seabed after construction works would not exceed thresholds that could permanently impact fish at the population level, and the impacts will thus be local and temporary.

Construction activities will result in increased levels of sediments in the water column, potentially along with contaminants and/or CWA that were previously present in these sediments. Suspended sediments can cause avoidance behaviour and injury/death in adult fish and can also reduce the viability of eggs and larvae. Modelling has shown that sediments will be suspended only into the lower 10 m of the water column for a duration of several hours before resettling on the seabed. Furthermore, most contaminants and CWA are unlikely to be dissolvable in water and will therefore also resettle on the seabed within hours. Any impact will thus be temporary and local to the area around the pipelines.

Underwater noise can potentially result in physical injury, behavioural disturbance, and in a worst case, death. Modelling of rock placement, considered the noisiest project activity, has shown that noise levels will not exceed the threshold for permanent hearing loss, although there is a risk of temporary hearing loss very close (within 100 m) to the noise source. Behavioural impacts are considered temporary, as the construction vessels will be continuously moving, and of low intensity, as fish are expected to leave the area as ships approach.

The proposed NSP2 route crosses an important cod spawning area, and the following potential sources of impact during construction have been considered: physical disturbance, release of sediments and contaminants into the water column and generation of underwater noise. On the basis of the assessments performed and described above, no impacts on cod spawning are anticipated.

During operation, the presence of the pipelines and structures on the seabed can potentially create a new hard-bottom substrate (a "reef effect"), which may attract fish in search of food and/or shelter. Overall, any changes to the population structure near the pipelines will be limited, given that the pipelines will occupy a negligible part of the total area with a similar habitat in the Baltic Sea.

It is therefore assessed that impacts on fish during construction and operation of NSP2 will be **negligible** and **not significant**.

#### **0.6.9 Marine mammals**

Marine mammals commonly found in Danish waters along the proposed NSP2 route include the harbour porpoise and grey seal. Foraging harbour seals may also potentially enter the project area. These species are protected under several international agreements as well as national legislation.

Construction activities will result in increased levels of sediments in the water column, potentially along with contaminants and/or CWA that were previously present in these sediments. Modelling has shown that sediments will be suspended for a duration of several hours before resettling on the seabed, and will not lead to injuries. In the deeper parts of the route, where measured levels of contaminants are highest, the halocline will prevent the upward migration of contaminants, thereby reducing the likelihood of toxicological impacts. The overall impact will thus be temporary and local to the area around the pipelines.

Underwater noise can potentially result in physical injury, hearing loss, behavioural disturbance or masking effects. Modelling of rock placement, considered the noisiest project activity, has shown that noise levels will not exceed the threshold for permanent hearing loss, although there is a risk of temporary hearing loss very close (within 80 m) to the noise source. Behavioural and masking impacts are considered temporary, as the construction vessels will be continuously moving, and of low intensity, as animals are expected to leave the area as ships approach.

During operation, the gas flowing through the pipelines will generate noise. A comparison of modelling results for noise generated by the NSP pipelines with ambient noise measurements in the area indicate that the noise from the NSP2 pipelines will be below ambient levels.

The change of habitat brought about by the presence of the pipelines on the seabed has been assessed not to lead to changes in diversity or abundance of benthic and/or fish species, and is therefore not anticipated to affect marine mammal foraging behaviour.

It is therefore assessed that impacts on marine mammals during construction and operation of NSP2 will be **negligible** and **not significant**, except for behavioural response impacts associated with the generation of underwater noise, which are assessed to be **minor** and **not significant**.

#### **0.6.10 Seabirds**

Construction activities will result in increased levels of sediments in the water column, potentially along with contaminants and/or CWA that were previously present in these sediments. Suspended sediments can impact the foraging efficiency of some birds due to increased turbidity or reduced food availability because prey may avoid the affected area. Modelling has shown that sediments will be suspended only into the lower 10 m of the water column and for a duration of several hours before resettling on the seabed. Furthermore, most contaminants and CWA are unlikely to be dissolvable in water and will therefore also resettle on the seabed within hours. Any impact will thus be temporary and local to the area around the pipelines.

Prey for bottom-feeding seabirds can potentially be covered as sediments that were suspended into the water column during construction settle back onto the seabed. However, modelling has shown



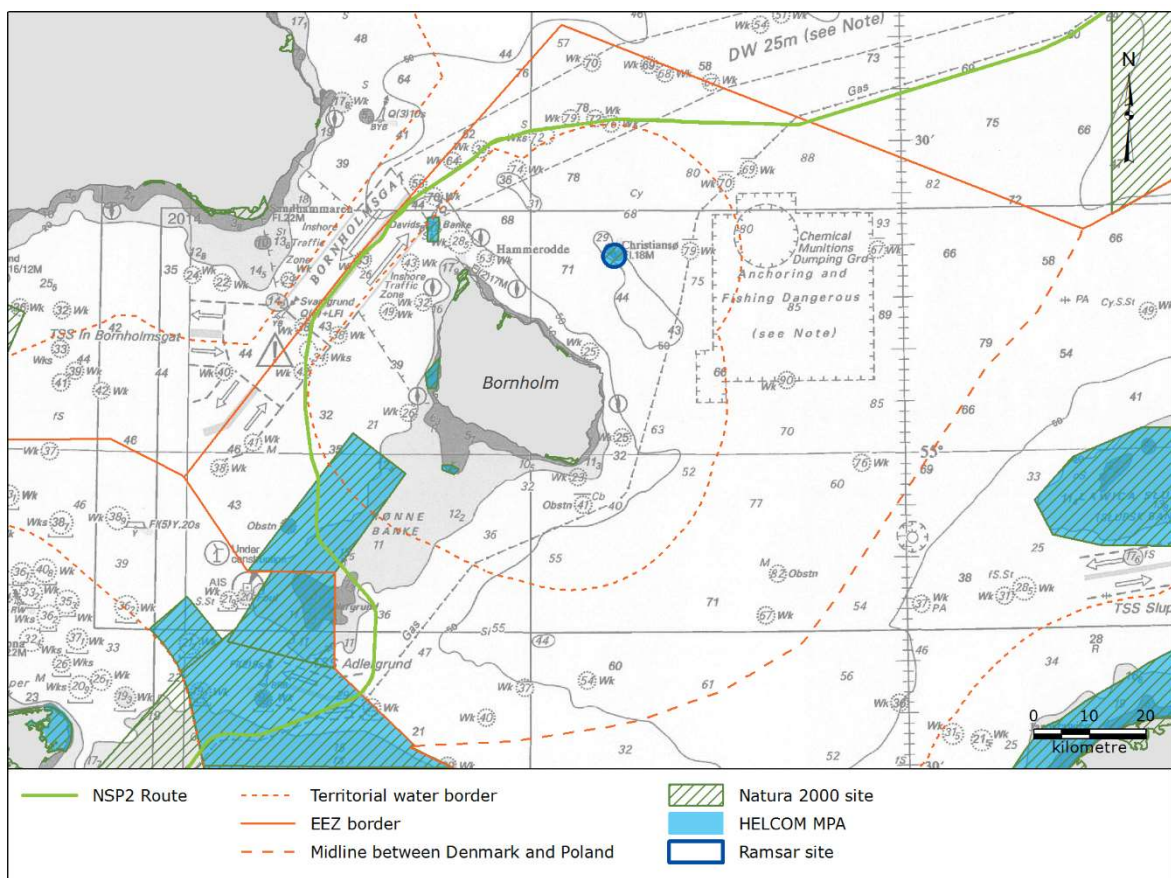
that the rate and amount of sediment resettling on the seabed after construction works would not be sufficient to affect the ability of seabirds to locate prey.

The physical presence of construction vessels (visual presence and noise) has the potential to disturb seabirds and cause them to temporarily abandon their resting and/or foraging areas. Data indicate that in general, impacts are expected to be limited to a 1-1.5 km radius around the working area. Any impacts on birds within this radius are considered temporary, as the construction vessels will be continuously moving.

It is therefore assessed that impacts on seabirds during construction and operation of NSP2 will be **negligible** and **not significant**.

### 0.6.11 Protected areas

Protected areas in Danish waters are shown in Figure 0-4. Natura 2000 sites are discussed separately in section 0.7.



**Figure 0-4 Protected areas along the pipeline route within Danish waters.**

The minimum distance from the proposed NSP2 route to a Ramsar site is 22 km, and the proposed NSP2 route crosses a HELCOM MPA. Impacts on protected areas have been assessed by considering the least resilient species, habitats or ecosystems for which a given protected area has been designated, particularly those associated with the pressures that have been identified as part of the protection, e.g., eutrophication, pollution, introduction of non-indigenous species (NIS), physical disturbance, etc. On this basis, no significant impacts on protected areas were identified.

It is therefore assessed that impacts on protected areas during construction and operation of NSP2 will be **negligible** and **not significant**.

### 0.6.12 Biodiversity

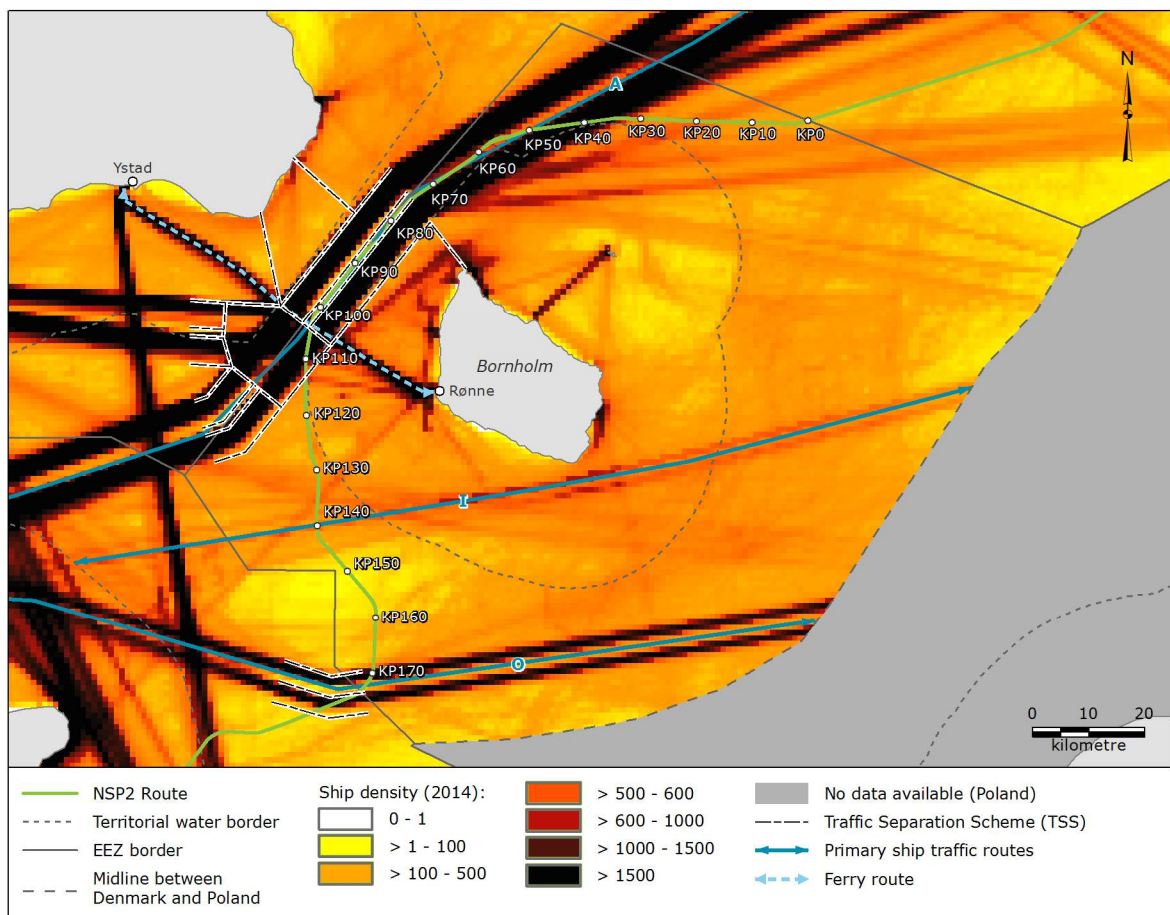
Biodiversity is typically referred to as the “health” of an ecosystem. The Helsinki Commission (HELCOM) has assessed the biodiversity status of the waters around Bornholm as ranging from “Bad” to “Moderate”, reflecting an impaired biodiversity status.

Impacts on biodiversity are consistent with the impacts identified for species, habitats and protected areas discussed above. Additionally, based on a review of the potential for in-combination impacts, it is considered that NSP2 will not impact the overall integrity and functioning of habitats, nor the trophic interactions between species. The potential of introducing NIS is limited by the fact that ballast water will only be exchanged outside of the Baltic Sea.

It is therefore assessed that impacts on biodiversity during construction and operation of NSP2 will be **negligible** and **not significant**.

### 0.6.13 Shipping and shipping lanes

Figure 0-5 shows the main ship traffic routes in Danish waters near the proposed NSP2 route.



**Figure 0-5 Ship traffic density in the Danish waters around Bornholm.**

During construction, vessels that are not involved in construction activities will not be allowed to enter the safety zones created around construction vessels. The imposition of safety zones will be temporary at any given location as the construction activities progress. Furthermore, the shipping lanes crossed by the proposed NSP2 route generally provide sufficient space and water depth for other ships to plan their journey and safely navigate around possible temporary obstructions.

During operation, safety zones will also be imposed in connection with periodic, vessel-based inspection and maintenance activities. However, given that inspection activities are planned at one-

to two-year intervals (or less), impacts are expected to be lower than those anticipated during construction.

It is therefore assessed that impacts on shipping and shipping lanes during construction of NSP2 will be **minor** and **not significant**. Impacts on shipping and shipping lanes during operation of NSP2 will be **negligible** and **not significant**.

#### **0.6.14 Commercial fishery**

During construction, fishing vessels will not be allowed to enter the safety zones created around construction vessels. The imposition of safety zones will be temporary at any given location as the construction activities progress. Additionally, supply vessels will bring pipes and other supplies to the pipe-lay vessel. The increased traffic has the potential to damage fishing gear, particularly longlines at the surface of the water column.

During operation, the physical presence of pipelines and structures on the seabed has the potential to impact bottom trawling activities through either protection zones or through damage or loss of gear. The NSP2 pipelines are designed to be resistant to impacts from interaction with fishing gear, and therefore Nord Stream 2 AG will apply for a dispensation to remove the fishery restriction usually enforced around pipelines in Danish waters during the operation of the pipeline. In addition, post-lay trenching and natural embedment of the pipelines will reduce their height above the seabed, thereby reducing the risk of bottom trawling gear becoming stuck.

It is therefore assessed that impacts on commercial fishery during construction of NSP2 will be **negligible** and **not significant**. Impacts on commercial fishery during operation of NSP2 will be **minor** and **not significant**.

#### **0.6.15 Cultural heritage**

Pipe-lay, anchor-handling, post-lay trenching and rock placement could damage cultural heritage objects (CHOs) or make them inaccessible for archaeological investigation. To ensure the integrity of CHOs during the construction and operation of NSP2, all targets found during route surveys will be visually inspected. Mitigation measures, as necessary, will be elaborated together with the relevant Danish authorities. Safety zones will be defined around identified CHOs. This approach was effective during NSP construction, with post-lay wreck surveys showing no impacts in Danish waters.

It is therefore assessed that impacts on cultural heritage during construction and operation of NSP2 will be **negligible** and **not significant**.

#### **0.6.16 Conventional and chemical munitions**

Potential impacts on resources and receptors in connection with conventional and chemical munitions that have been dumped in the Baltic Sea following World Wars I and II have been assessed in the respective assessment sections for each resource or receptor that may be impacted by disturbance of munitions during the construction and operational phases.

#### **0.6.17 People and health**

The closest Danish populations to the proposed NSP2 route are on Bornholm, located approximately 11.5 km to the south-east, and Ertholmene, located approximately 23 km to the south.

The noise levels from pipe-lay activities (considered worst-case for airborne noise) are not expected to exceed the World Health Organization (WHO) maximum onshore threshold guideline of 40 decibels (dB). In fact, it is unlikely that the noise will be heard above ambient levels.

Pipe-lay will be conducted on a 24-hour basis. During the night-time periods, the pipe-lay vessel will use spotlights. When visibility is good, it is possible to see 19 km or more across the Baltic Sea, and therefore the spotlight may be visible from Bornholm, but is unlikely to be visible from Ertholmene.

During operation, the potential also exists for airborne noise and light impacts arising from periodic, vessel-based inspection and maintenance activities. However, given that inspection activities are planned at one- to two-year intervals (or less), impacts are expected to be lower than those anticipated during construction.

It is therefore assessed that impacts on people and health during construction and operation of NSP2 will be **negligible** and **not significant**.

#### **0.6.18 Tourism and recreational areas**

During construction, recreational vessels used for e.g. diving or fishing will not be allowed to enter the safety zones created around construction vessels. The imposition of safety zones will be temporary at any given location as the construction activities progress. Furthermore, construction activities will lead to airborne noise, which may impact the enjoyment of recreational areas. However, given the distances between Bornholm and Ertholmene and the proposed NSP2 route, airborne noise is not expected to reach nuisance levels on the islands at any time.

The water turbidity may be increased during construction due to the suspension of sediment into the water column. However, given the use of safety zones around project-related vessels, no recreational activities, including those susceptible to such impacts (i.e. diving), will take place near the areas of highest turbidity. Suspended sediment beyond the safety zone will be at much lower levels and will settle to the seabed within a few hours.

During operation, safety zones around vessels used for periodic inspection and/or maintenance of the pipelines may affect recreational vessels within the immediate vicinity of the pipelines. However, the impact will be less than that during construction due to the low frequency of surveys.

It is therefore assessed that impacts on tourism and recreational areas during construction and operation of NSP2 will be **negligible** and **not significant**.

#### **0.6.19 Existing and planned installations**

Crossings of existing installations, including cables and the NSP pipeline system, will be agreed with the respective owners of each installation to ensure a separation is maintained between the NSP2 pipelines and each installation and the operation of the infrastructure is not affected. In the Rønne Banke Reserved Area, a corridor of approximately 35.3 km (with an additional buffer area anticipated around the pipelines) will become unavailable for future offshore wind farm development, out of a total reserved area of 898 km<sup>2</sup>. Nord Stream 2 AG will coordinate with the appropriate authorities to agree on the construction and operation of the NSP2 pipelines within areas reserved for potential future offshore wind farm development.

It is therefore assessed that impacts on existing and planned installations during construction and operation of NSP2 will be **negligible** and **not significant**.

#### **0.6.20 Raw material extraction sites**

No impacts on raw material extraction sites are anticipated during the construction phase. During the operational phase, the pipelines will occupy a 174 km corridor in Danish waters, within which the seabed will be inaccessible for future extraction of raw materials. None of the sites presently reserved for raw material extraction or sediment dumping are crossed by the proposed NSP2 route. Therefore, NSP2 would not preclude further activities from occurring within these areas. The route

crosses one area of potential future resource extraction (site 564-C), for approximately 3.1 km. Access to the remainder of this area, as well as all other designated potential future sites, would not be affected. Furthermore, the Danish authorities have stated that raw material extraction from this site is unlikely due to its location with a Natura 2000 site (see section 0.7).

It is therefore assessed that impacts on raw material extraction sites during construction and operation of NSP2 will be **negligible** and **not significant**.

#### **0.6.21 Military practice areas**

The proposed NSP2 route does not cross any military practice areas in Danish waters, but passes within 2 km east of Sector C of the ED-D 47 artillery firing exercise area and the Bravo 4 submarine exercise area, both of which are used by the German military. During exercises, ships are forbidden to enter these areas. The Naval District Bornholm and the Danish Navy inform the public when military practice areas are active.

During construction, supply vessels will bring pipes and other supplies to the pipe-lay vessel. The increased vessel traffic to and from the project area can potentially conflict with military practice activities. Although the proposed NSP2 route does not cross any mapped military practice areas, Nord Stream 2 AG nevertheless intends to coordinate with the appropriate authorities to ensure that there will be no conflicts between military activities and construction of NSP2. No impacts on military practice areas are anticipated during the operational phase.

It is therefore assessed that impacts on military practice areas during construction and operation of NSP2 will be **negligible** and **not significant**.

#### **0.6.22 Environmental monitoring stations**

Long-term trends in physical, chemical and biological variables are being monitored at selected environmental monitoring stations throughout the Baltic Sea. Monitoring stations in the Danish waters around Bornholm include Swedish, Finnish, and HELCOM stations. The closest station is located at a distance of approximately 1.8 km from the proposed NSP2 route and is managed by the Finnish authorities for water quality and benthos monitoring.

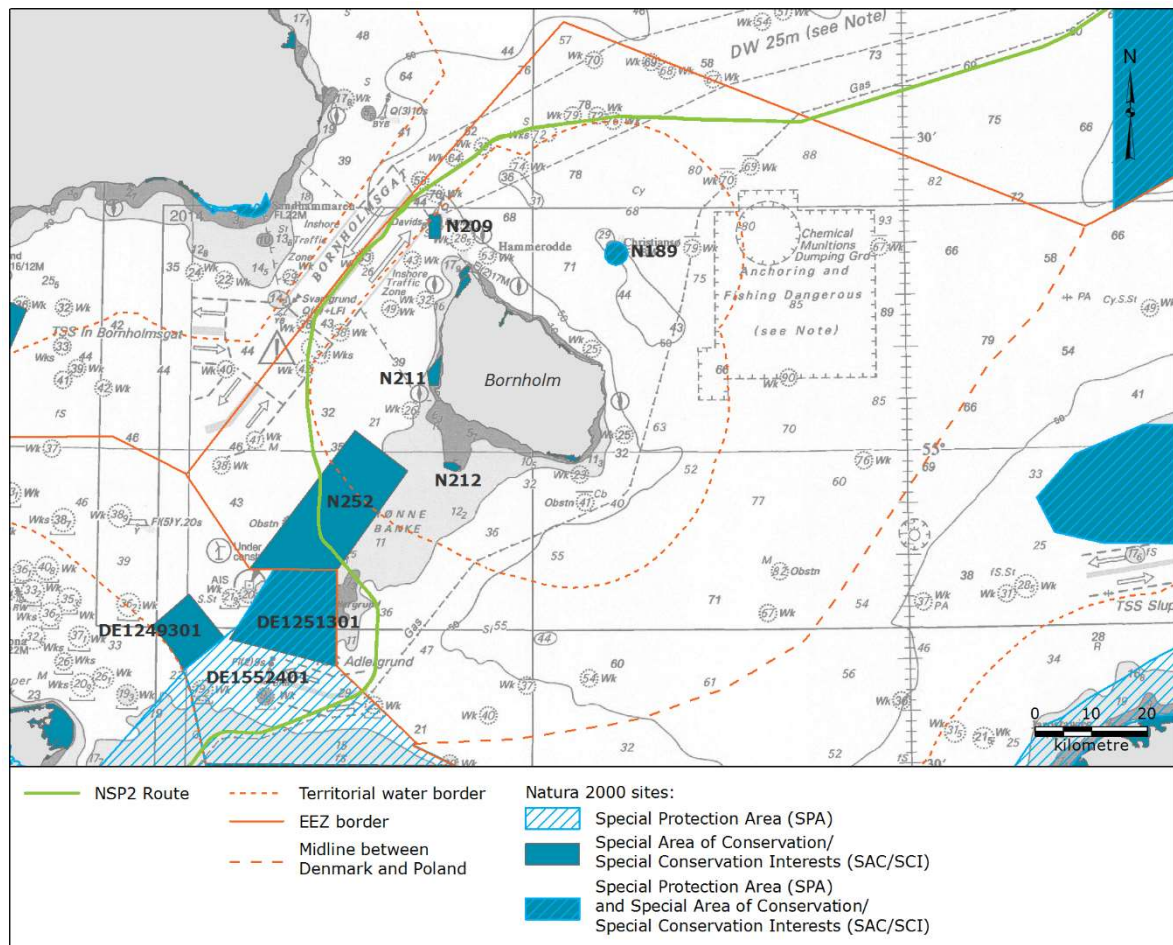
Modelling indicates that the impacts associated with increased suspended sediments and contaminants, as well as sedimentation on the seabed, will be short-term and limited to the near vicinity of the pipelines. It is therefore assessed that there will be a limited potential for impacts on environmental monitoring stations. Regardless, should construction works be scheduled near monitoring stations at a similar time as the planned measurement/sampling programme, then Nord Stream 2 AG will consult with the responsible authority to minimise potential interference. No impacts on environmental monitoring stations are anticipated during the operational phase.

It is therefore assessed that impacts on environmental monitoring stations during construction and operation of NSP2 will be **negligible** and **not significant**.

### **0.7 Natura 2000**

Natura 2000 is an ecological network of protected areas, set up to ensure the survival of Europe's most valuable species and habitats. The conservation objective of the Natura 2000 network is to achieve favourable conservation status for the designated species and habitats. Natura 2000 sites along the proposed NSP2 route are shown in Figure 0-6.





**Figure 0-6 Natura 2000 sites in the Danish section of the NSP2 project area.**

The first step of a Natura 2000 assessment is a Natura 2000 screening, which identifies the potential impacts of a project on a Natura 2000 site(s), either alone or in combination with other projects or plans, and considers whether these impacts are likely to be significant. If significant impacts are likely or some degree of uncertainty remains, further appropriate assessment should be carried out.

### 0.7.1 Screening

During the construction phase, potential sources of impacts on Natura 2000 sites are related to the release of sediment and contaminants (including metals, organic contaminants and CWA) into the water column, sedimentation on the seabed, generation of underwater noise and physical disturbance above water. During the operational phase, potential impacts are related to physical disturbance above water and the physical presence of pipelines and structures on the seabed.

Modelling results show that no impacts on designated species or habitats of the Natura 2000 sites are expected due to sediment/contaminant spread in the water, sedimentation on the seabed, above/underwater noise generation or emissions associated with NSP2 construction or operation.

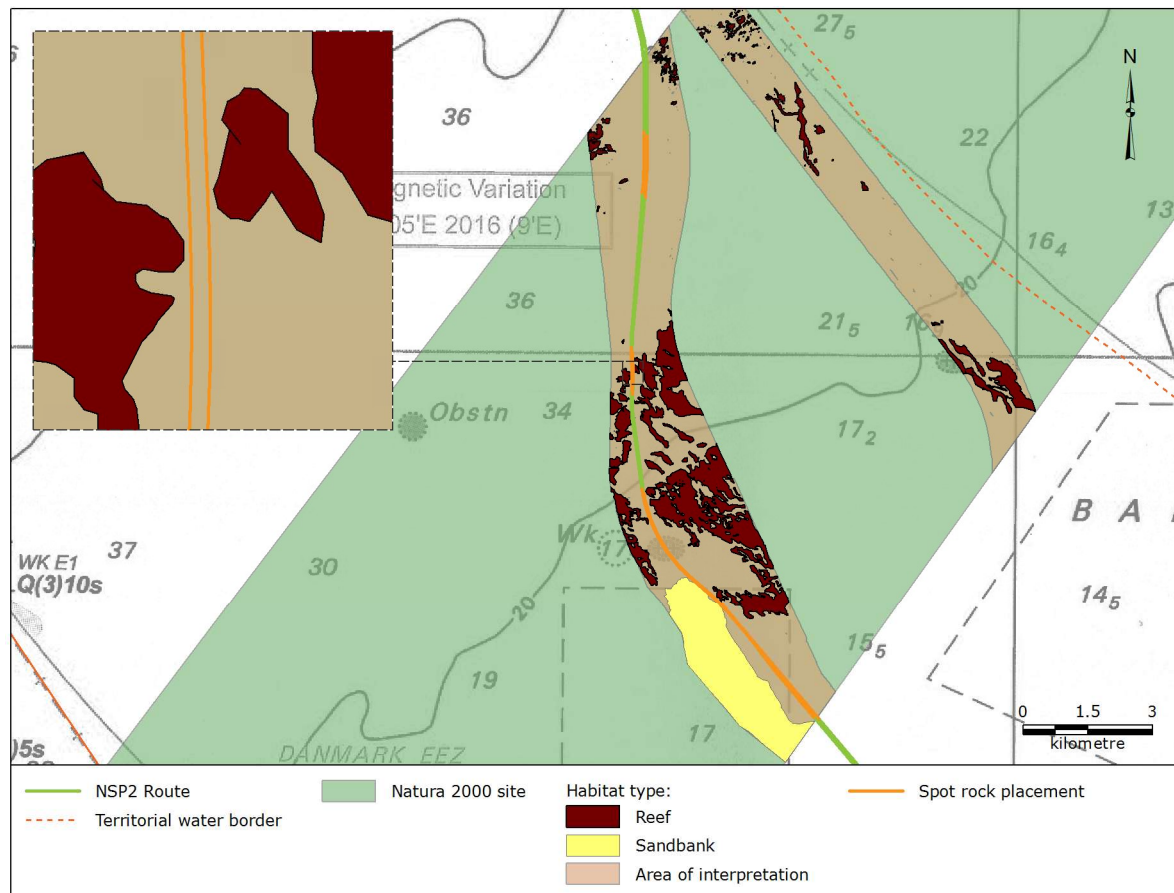
It is therefore assessed that there will be **no risk of significant impacts** on Natura 2000 sites (N189, N209, N211, N212) from the NSP2 project. The shortest distance between these Natura 2000 sites and the proposed NSP2 route is 4 km.

Activities associated with the NSP2 project in the Danish sector will occur within Natura 2000 site N252. For the Natura 2000 site N252, a **significant impact cannot be excluded**, and an appropriate assessment has therefore been carried out.



### 0.7.2 Appropriate assessment – N252 “Adlergrund og Rønne Banke”

The proposed NSP2 route crosses the N252 Natura 2000 site. Detailed mapping of the designated habitat types has been undertaken in two survey corridors, as shown in Figure 0-7.



**Figure 0-7 Natura 2000 detailed habitat types mapped in 2017-2018 in the optimised potential route corridors in the Natura 2000 site “Adler Grund og Rønne Banke” (N252).**

Based on the detailed habitat mapping (see Figure 0-7), the proposed NSP2 route has been optimised so that the proposed NSP2 route does not cross the habitat types sandbank or reef. Therefore, no direct physical disturbance of the designated habitat types is expected from the construction activities pipe-lay and rock placement.

The appropriate assessment for the Natura 2000 site Adler Grund and Rønne Banke includes an assessment of potential impacts on the habitat types sandbank and reef. Potential impacts include physical disturbance, release of sediments into the water column, release of contaminants into the water column, sedimentation on the seabed, generation of underwater noise, physical presence of pipelines and structures on the seabed, change of habitat, generation of heat from gas flow through the pipeline and release of metals from anodes.

Based on the available project information, the modelling results and above assessments, it is concluded that there will be **no risk of adverse impact** on the habitat types sandbank and reef and no adverse effect on site integrity.

### **0.7.3 Conclusion**

As the full Natura 2000 Appropriate Assessment (N252) and Natura 2000 screenings (N189, N209, N211, N212) have demonstrated, there will be no risk of significant or adverse impact on the designated species or habitats and there will be no significant impacts on the integrity of the Natura 2000 sites. Therefore, the coherence of the Natura 2000 network, including spatial and functional connections, will not be affected.

## **0.8 Marine strategic planning**

Several directives and programmes are in place with the aim of improving the quality of European waters and creating a common framework for marine spatial planning. These include the Marine Strategy Framework Directive (MSFD), Water Framework Directive (WFD) and Baltic Sea Action Plan (BSAP).

An assessment has been undertaken to determine the compliance of NSP2 with these directives and programmes, and shows that NSP2 will not prevent the achievement of the long-term goals, or be contrary to the objectives and initiatives set out in the MSFD, WFD and/or BSAP.

## **0.9 Decommissioning**

NSP2 is designed to operate for at least 50 years. The proposed decommissioning programme will be developed during the latter years of operation to enable consideration of any new or updated legislation and guidance, as well as to utilise good international industry practice and technical knowledge gained over the lifetime of NSP2. The condition of the NSP2 infrastructure may also influence the preferred decommissioning method and relevant mitigation measures.

The preferred option for decommissioning of the offshore NSP2 structures is likely to be leaving *in situ*. Management and mitigation methods for decommissioning will be developed in agreement with the relevant national authorities, in accordance with the legislative requirements at the time of decommissioning and with due consideration of available knowledge and technology.

## **0.10 Cumulative impacts**

In addition to assessing the impact of the NSP2 project on individual resources or receptors (see section 0.6), it is also necessary to consider the potential for NSP2-related impacts to interact with impacts from other existing or planned projects. These other projects may generate their own individually insignificant impacts, but when considered together with the impacts from NSP2, a significant combined or cumulative impact could result.

This section considers the potential for cumulative impacts from the construction and/or operation of NSP2 in conjunction with other planned and existing projects. These other projects have been selected on the basis of location, timing, degree of certainty (for planned projects), and potential for resulting in impacts on the same receptors as NSP2.

### **0.10.1 Planned projects**

Only two planned projects were identified as having the potential to combine with NSP2 and generate cumulative impacts. These include the potential route for the Baltic Pipe project and extraction areas south of Bornholm, both of which could be crossed by the proposed NSP2 route.

The Baltic Pipe project anticipates construction in 2020-2022, whereas the NSP2 pipelines are scheduled to be laid in 2018-2019. Therefore, there will be no temporal overlap in the construction of the two pipelines and as such, no potential for cumulative impacts. Sources of potential cumulative impacts during operation of the two systems that were assessed included the physical presence of pipelines and structures on the seabed; physical disturbance above water from e.g. the presence of vessels; the release of metals from anodes and the imposition of safety zones around vessels.

For each source, the assessment concluded that negligible cumulative impacts are expected, due to the localised extent and/or short duration of the impacts for both projects.

The proposed NSP2 route crosses an area proposed for future extraction of sediments. Sources of potential cumulative impacts that were assessed included sediment disturbance, dispersion and sedimentation (construction phase); the presence of vessels and restriction zones around vessels (construction and operational phases); underwater noise (construction phase) and emissions (construction and operational phases). For each source, the assessment concluded that negligible cumulative impacts are expected, due to the localised extent and/or short duration of the impacts for both projects.

Therefore, it is assessed that there would be **negligible** cumulative impacts on all resources and receptors due to interaction between NSP2 and planned projects, and no potential transboundary impacts were identified.

#### **0.10.2 Existing projects**

Consideration was also given to the potential for cumulative impacts from interaction of NSP2 with existing projects; namely, existing telecommunication cables and the NSP pipeline.

The assessment concluded that due to the localised extent and low magnitude of the impacts from each project, there would be **negligible** cumulative impacts on all resources and receptors due to interaction between NSP2 and existing projects, and no potential transboundary impacts were identified.

### **0.11 Unplanned events and risk assessment**

The construction and operation of NSP2 may give rise to hazards that could present risks to the environment, the public/third parties or workers. As such, comprehensive risk assessments have been carried out to understand, mitigate or prepare for possible risks. The identified risks to the environment and public during construction and/or operation of NSP2 that have been assessed in this EIA relate to the following unplanned events:

- Vessel collisions and subsequent oil spill;
- Gas release;
- Unplanned munitions encounter;
- Unplanned maintenance works;
- Wet buckle (construction phase only).

In all phases of the project, Nord Stream 2 AG will only undertake activities for which the associated risk is assessed to be acceptable.

### **0.12 Transboundary impacts**

The Espoo Convention (Article 1 vii) defines a transboundary impact as:

*"...any impact, not exclusively of a global nature, within an area under the jurisdiction of a Party caused by a proposed activity the physical origin of which is situated wholly or in part within the area under the jurisdiction of another Party."*

The Convention requires that an assessment of potential transboundary impacts be performed when a planned activity may lead to impacts across the boundaries of Parties of the Convention. NSP2 crosses the jurisdictions of several countries and will be constructed in a marine environment, where an impact may be experienced some distance from its source. Therefore, the potential for planned activities in Danish waters to impact resources or receptors in neighbouring countries was assessed


in the EIA. The potential for transboundary impacts has only been identified for Sweden and Germany, see Table 0-3. Furthermore, the EIA also assessed the potential for transboundary impacts on regional or global receptors in the Baltic Sea arising from the construction and operation of NSP2 in Danish waters, see Table 0-4.

**Table 0-3 Assessment of potential transboundary impacts arising from the construction and operation of NSP2 in Danish waters.**

Source of potential impact	Sweden	Germany
Release of sediments into the water column		
Release of contaminants into the water column		
Release of CWA into the water column		
Sedimentation on the seabed		
Generation of underwater noise		
Emissions of air pollutants and GHGs		
Imposition of safety zones around vessels		
Physical presence of pipelines and structures on the seabed		

**Table 0-4 Assessment of potential transboundary impacts on regional or global receptors in the Baltic Sea arising from the construction and operation of NSP2 in Danish waters**

Potentially impacted regional or global receptors	Potential impact
Altered hydrography	
Air quality and climate	
Fish	
Marine biodiversity	
Shipping and shipping lanes	
Fishery	
Marine strategic planning	
Protected areas (including Natura 2000)	



Where the pipelines enter the German and Swedish EEZs, the nature and magnitude of the potential environmental impacts arising from the activities within the Danish EEZ will be of the same nature, but of a significantly smaller magnitude than those resulting from similar construction activities within the German and Swedish EEZs, respectively. It is therefore generally assessed that the impacts from activities within the Danish EEZ on neighbouring countries will be **negligible to minor** and thus **not significant**. This is in line with the monitoring results obtained during the construction and first years of operation of NSP.

Furthermore, the construction and operation of the NSP2 pipelines within the Danish EEZ will have no significant impact on protected areas, including internationally protected areas (Natura 2000 sites, Ramsar sites). Therefore, the coherence of the Natura 2000 network, including spatial and functional connections, will not be affected.

Lastly, the EIA also evaluated the potential for transboundary impacts from unplanned events, such as an oil spill following a ship collision or a gas leakage. Unplanned events have been subject to a risk assessment (see section 14 of EIA, Denmark, North-western route), which concluded that the likelihood of occurrence is extremely low. The potential for transboundary impacts is also assessed to be negligible.

## 0.13 Mitigation measures

Nord Stream 2 AG is committed to designing, planning and implementing NSP2 with the lowest reasonably practicable impact on the environment. The environmental and social management system (ESMS) for managing planned impacts and emergency response is detailed in section 0.15.

A key objective during the planning and design of NSP2 has been to identify the means of reducing the impact of the project on the receiving environment. To achieve this, mitigation measures have

continually been developed and integrated into each phase of the project. These mitigation measures have been identified through consideration of legal requirements, best practice industry standards, applicable international standards, experience from NSP and other infrastructure projects, as well as application of expert judgement.

In developing mitigation measures, the primary goal has been to prevent or reduce identified negative impacts. If it was not possible to avoid an impact (i.e. there is no technically or economically feasible alternative), minimisation measures have been planned. In cases where it is not possible to reduce the significance of negative environmental impacts through management actions, restoration or offset measures are considered.

Mitigation measures during construction and/or operation of NSP2 have been proposed for the following topics: water quality, non-indigenous species, shipping and shipping lanes, commercial fishery, cultural heritage, conventional and chemical munitions, existing and planned offshore installations, military practice areas, environmental monitoring stations, Natura 2000 and the management of hazardous materials and wastes.

## 0.14 Proposed environmental monitoring

The purpose of an environmental and socio-economic monitoring programme is to verify and evaluate the assumptions and environmental impacts described in the EIA. In addition, the data gathered through a monitoring programme may identify the need for further environmental mitigation measures if, contrary to expectations, they indicate unforeseen environmental impacts.

The proposed NSP2 monitoring programme draws on the vast knowledge and experience acquired from the NSP monitoring programme. This concluded that impacts on the marine environment were negligible to minor, not significant and limited to the immediate vicinity of the pipelines. It is anticipated that the NSP2 programme will include monitoring activities before, during and/or after construction, see Table 0-5.

**Table 0-5 Sources of potential impacts on monitoring stations during construction and operation of NSP2.**

Parameter	Prior to construction	During construction	During operation
<b>Natura 2000</b> Condition of habitat types	X	X	X
<b>Water quality</b> Turbidity and sedimentation		X	
<b>Cultural heritage</b> Wrecks and other identified objects	X		X
<b>Munitions</b> Condition of nearby munitions	X		X
<b>CWA</b> CWA in seabed sediment	X	X*	X
<b>Fishery</b> VMS and logbook study	X		X
<b>Maritime traffic</b> Monitoring of maritime traffic (AIS data) to report to authorities and monitor appropriate and safe behavior of construction vessels		X	
*An expert from the Danish Navy will likely be on board a pipe-lay vessel.			

The precise approach of the final monitoring programme will be elaborated in consultation with the Danish authorities. Environmental and socio-economic monitoring results will be made publicly available.

## 0.15 Health, Safety, Environmental and Social Management System

A health, safety, environmental and social management system (HSES MS) has been developed by Nord Stream 2 AG to enable identification and management of all relevant HSES risks associated

with the project. The HSES MS also covers the management of security where it may impact the safety of personnel and affected communities, the integrity of project assets and the reputation of Nord Stream 2 AG.

The current HSES MS is applicable to the planning and construction phases of NSP2. It will be adjusted once the pipeline system is commissioned so as to manage HSES issues for the operational phase. Throughout all phases of the project, Nord Stream 2 AG will ensure that HSES information is proactively communicated both internally and externally, and that all staff and contractors adhere to the standards and requirements in the HSES MS.

## **0.16 Summary**

In summary, the construction and operation of NSP2 has the potential to result in **mainly negligible to a few minor** impacts on the environment. No impacts, either individually or in combination, are assessed to be significant.



A summary of the potential impacts on all resources and receptors assessed in the EIA is provided in Table 0-6 (physical-chemical and biological) and Table 0-7 (socio-economic), based on the assessment of potential impacts (see section 0.6).



**Table 0-6 Summary of the overall impacts caused by the NSP2 project on physical-chemical and biological resources or receptors.**


Source of potential impact		Physical-chemical					Biological						
		Bathymetry	Sediment quality	Hydrography	Water quality	Climate and air quality	Plankton	Benthic flora and fauna	Fish	Marine mammals	Seabirds	Protected areas***	Biodiversity
Construction phase	Physical disturbance on the seabed												
	Release of sediments into the water column												
	Release of contaminants into the water column												
	Release of chemical warfare agents into the water column												
	Sedimentation on the seabed												
	Generation of underwater noise									**			
	Physical disturbance above water*												
	Emissions of air pollutants and greenhouse gases												
	Introduction of non-indigenous species												
Operational phase	Physical presence of pipelines and structures on the seabed								****				
	Changes of habitat												
	Physical disturbance above water*												
	Emissions of air pollutants and GHGs												
	Generation of heat from gas flow through the pipelines												
	Release of metals from anodes												
	Introduction of non-indigenous species												

\* E.g. from presence of vessels, airborne noise and light.  
 \*\* Impact on marine mammals from underwater noise is assessed to be "Negligible" for PTS/TTS and "Minor" for behavioural response and masking.  
 \*\*\* Protected areas include Ramsar sites and HELCOM MPAs. For Natura 2000 sites, a separate assessment has been undertaken in section 0.7.  
 \*\*\*\* This impact refers to the noise of the gas flowing through the pipeline.

 Negligible impact       Minor impact

**Table 0-7 Summary of the overall impacts caused by the NSP2 project on socio-economic resources or receptors.**

Source of potential impact		Socio-economic								
		Shipping and shipping lanes	Commercial fishery	Cultural heritage	People and health	Tourism and recreational areas	Existing and planned installations	Raw material extraction sites	Military practice areas	Environmental monitoring stations
Construction phase	Physical disturbance on the seabed									
	Release of sediments into the water column									
	Release of contaminants into the water column									
	Physical disturbance above water									
	Imposition of safety zones around vessels									
	Sedimentation on the seabed									
Operational phase	Physical presence of pipelines and structures on the seabed									
	Physical disturbance above water									
	Imposition of safety zones around vessels									



Negligible impact
  Minor impact