Danish Energy Agency

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Subsoil Resources
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Permit for Nord Stream 2 Natural Gas Pipelines

In a letter dated 15 April 2019, Nord Stream 2 AG applied to the Danish Energy Agency for a permit to construct two parallel natural gas pipelines in the Danish continental shelf area in the Baltic Sea southeast of Bornholm. The application was for two equivalent route variants NSP2 with NSP2 V1 (NSP2 / NSP2 V1) and a combination of NSP2 with NSP2 V2 (NSP2 / NSP2 V2), so that the Danish Energy Agency could, following completion of the environmental process, decide which route variant a permit can be issued for.

The construction and operation of a pipeline installation for transporting hydrocarbons on the Danish continental shelf requires the permission of the Danish Minister for Climate, Energy and Utilities, see Section 4(1) of Executive Order No. 1189 of 21 September 2018 under the Act on the continental shelf and certain pipeline installations in territorial waters (the Continental Shelf Act). The right to issue a permit has been delegated to the Danish Energy Agency, see Section 3(1)(2) of Executive Order No. 1512 of 15 December 2017 on the tasks and responsibilities of the Danish Energy Agency.

1. Permit

1.1. Decision

The Danish Energy Agency hereby issues a permit for construction of the natural gas pipelines covered by the application - route variant NSP2 / NSP2 V1 to Nord Stream 2 AG.

The permit is issued pursuant to Section 4(1) of the Continental Shelf Act, and Section 2(1) of Executive Order No. 1520 of 15 December 2017 on certain pipeline installations in territorial waters and on the continental shelf.

This permit covers the construction, including laying, of the natural gas pipelines on the Danish continental shelf area. Before the pipelines are commissioned, Nord Stream 2 AG must apply to the Danish Energy Agency for a permit to operate the pipeline, see Section 2(1) of Executive Order No. 1520 of 15 December 2017 on certain pipeline installations in territorial waters and on the continental shelf.

The permit does not cover necessary permits, approvals, etc. pursuant to any other legislation, nor does it exempt Nord Stream 2 AG from the obligation to obtain the necessary permits and approvals pursuant to other legislation.

The permit is partly issued on the basis of an environmental impact assessment carried out in accordance with the Environmental Impact Assessment Act, as the project concerns the installation of natural gas pipelines with a diameter of 1153 mm and a length of 147 km and therefore comes under Annex 1 No. 16 of the Environmental Impact Assessment Act, see Section 15(1)(1), and Annex 1 No. 16 of Executive Order No. 1225 of 25 October 2018 under the Act on the environmental impact assessment of plans and programmes and specific projects (EIA) (the Environmental Impact Assessment Act). The environmental impact report which was prepared for the project forms part of the necessary documentation in connection with the consideration of the application and was prepared by the developer. The environmental impact assessment includes an assessment pursuant to the Habitats Directive and the Birds Directive, etc. A public consultation process lasting at least eight weeks has been carried out.

Nord Stream 2 is also covered by the Espoo Convention, as the project may have implications for the environment across national borders. This means that, like the other countries, Denmark is obliged to notify any other countries which could potentially be affected about the project. If one of the notified countries declares an interest in participating in the environmental impact assessment process, they must be involved in relation to any transboundary environmental impacts of the project in Denmark within their territory. For this reason, Estonia, Finland, Latvia, Lithuania, Poland, Russia, Sweden and Germany have been involved in the environmental impact assessment.

The environmental impact report was distributed for national consultation between 15 May 2019 and 10 July 2019. The Espoo documents, which include an assessment of the transboundary environmental impacts of the part of the pipelines that has been applied for in Danish waters, were distributed for public consultation amongst the countries concerned during the corresponding period, albeit through until 17 July 2019.

The permit is issued on the basis of a satisfactorily concluded assessment of the project's environmental impact in Denmark, as well as transboundary environmental impacts on the countries, including the consultation of the general public, both nationally and under the auspices of Espoo. The Danish Energy Agency's conclusions are presented in section 4.

The permit is issued following consultation of the Danish Working Environment Authority, the Danish Directorate of Fisheries, Danish Defence Command/Navy Command, the Danish Ministry of Defence Estate Agency, the Danish Geodata

Agency, the Danish Environmental Protection Agency, the Agency for Culture and Palaces and the Danish Maritime Authority and others.

Amongst others on the basis of the environmental impact reports and the consultation responses submitted for the route southeast of Bornholm on the continental shelf and the route northwest of Bornholm on the continental shelf, the Danish Energy Agency has concluded that the route passing southeast of Bornholm is preferable to the route passing northwest of Bornholm. This conclusion is particularly based on the view that the impact on shipping and Natura 2000 sites is considered to be significantly less for the southeastern route than for the northwestern route. Against this background, a permit is hereby issued for the NSP2 / NSP2 V1 route southeast of Bornholm on the continental shelf. See also Appendix 4.

The permit may not be utilised until the appeal deadline of four weeks after announcement of the permit has expired, see Section 6(a)(4) and (5) of the Continental Shelf Act.

1.2. Conditions

The permit pursuant to Section 4(1) of the Continental Shelf Act is granted subject to the following conditions, see Section 4(2) of the Continental Shelf Act, and Section 4 of Executive Order No. 1520 of 15 December 2017 on certain pipeline installations in territorial waters and on the continental shelf.

1. This permit is solely granted for the NSP2 / NSP2 V1 route.
2. With the issuing of this permit, the application for Nord Stream 2's northwestern route on the continental shelf is put on hold, and shall lapse when Nord Stream 2 AG commences pipeline laying and related activities covered by the permit. Nord Stream 2 AG shall notify the Danish Energy Agency when the laying of pipelines and related activities are commenced in Denmark, and when the pipeline installation has been constructed, i.e. the activities in connection with laying of the pipelines have been concluded.
3. The present permit shall lapse if Nord Stream 2 AG abandons the project in its entirety or in part. Nord Stream 2 AG shall notify the Danish Energy Agency if the pipeline project is not carried out in accordance with the application.
4. Before laying of the pipelines commences, Nord Stream 2 AG shall submit an updated schedule for the project, including the anticipated timing of laying of the pipelines. The schedule shall be submitted to the Danish Energy Agency.
5. Nord Stream 2 AG shall establish an agreement with the owners of the cable and pipeline installations which are crossed by the pipelines. The aim of this agreement will be to ensure that the owners are indemnified in respect of the crossing.

6. Following the establishment of an agreement with the owners of infrastructure that is to be crossed, but before the crossing is constructed, Nord Stream 2 AG shall submit a design and method selection in connection with the crossing of other infrastructure for approval by the Danish Energy Agency.
7. Nord Stream 2 AG shall make provision for any future pipelines and cables to cross the natural gas pipelines.
8. Nord Stream 2 AG shall take out insurance to cover damage that is caused by activity carried out pursuant to the permit, even if the damage is accidental.
9. Materials for stabilising the pipeline shall not damage the flora and fauna of the Baltic Sea, e.g. by introducing invasive species in connection with rock placement.
10. In conjunction with rock placement, a lookout shall be kept for animals from the ship and deterrent measures shall be implemented using “pingers” before rock is laid in order to protect marine mammals. A more detailed specification of pingers shall be approved by the Danish Energy Agency prior to the placement of rock.
11. In connection with the planning of the construction work, Nord Stream 2 AG shall strive to avoid pipe-laying in the fisheries restriction zone, which is known as the Bornholm Basin during the period July to August when cod spawn. No intervention works may be carried out during the aforementioned period.
12. Nord Stream 2 AG shall consult with the relevant authorities and/or organisations that operate environmental monitoring stations close to the pipeline route prior to laying of the pipelines.
13. An agreement between Danish Fishermen PO and Nord Stream 2 AG shall be submitted to the Danish Energy Agency as soon as it becomes available and no later than prior to the commencement of pipe laying.
14. Nord Stream 2 AG shall comply with the requirements established by the Danish Maritime Authority in connection with the execution, operation and decommissioning of the project.
15. Nord Stream 2 AG shall comply with the requirements and guidelines laid down by Danish Defence in connection with the execution of the project.
16. Nord Stream 2 AG shall comply with the requirements established by the Danish Environmental Protection Agency in connection with the execution and operation of the project.
17. Nord Stream 2 AG shall comply with the requirements established by the Agency for Culture and Palaces in connection with the execution of the project.
18. Nord Stream 2 AG shall prepare a monitoring programme for the construction phase, including in connection with laying of the pipelines. The monitoring programme shall encompass monitoring of the environmental conditions and be approved by the Danish Energy Agency before laying of the pipelines commences.

19. It is assumed that laying will be carried out using a lay vessel equipped with dynamic positioning (DP vessel).
20. Nord Stream 2 AG shall prepare an evaluation of the pipelines after they have been laid, including a post-lay survey. The evaluation and associated conclusions shall be submitted for approval by the Danish Energy Agency as regards whether any additional seabed intervention works are necessary, and depth data shall be sent to the Danish Geodata Agency.
21. Nord Stream 2 AG shall comply with the requirements established by the Danish Geodata Agency in connection with the execution of the project. The Danish Geodata Agency expects Nord Stream 2 AG to apply for a permit to carry out a hydrographic survey and to fulfil the general conditions for such hydrographic surveys. The projected coordinates for the pipelines shall be submitted to the Danish Geodata Agency, and the final coordinates for the laid pipelines (as-built) shall be submitted to the Danish Energy Agency, the Danish Ministry of Defence Estate Agency and the Danish Geodata Agency when they become available.
22. For all phases of the project, Nord Stream 2 AG shall establish an emergency service to address the impacts of spillages of hydrocarbons or other accidental events. A plan for the established preparedness shall be submitted annually to the Danish Energy Agency.
23. Before the pipelines may be brought into use, Nord Stream 2 AG shall submit documentation for a management system for the integrity of the pipelines during operation, inspection and maintenance of the pipelines. The management system shall ensure that operation and condition are continuously monitored and the condition of the pipelines regularly inspected with a view to ensuring that the integrity of the pipelines is maintained. The management system shall be reassessed using a risk-based approach based on the observations made concerning the condition and operating conditions of the pipelines.
24. Nord Stream 2 AG shall document the extent of physical loss, and physical disturbance of the seabed's overarching habitat types shall be evaluated, documented and reported to the Danish Environmental Protection Agency. Where possible, the extent of physical loss and physical disturbance shall be determined on the basis of the overarching habitat types defined in the Marine Strategy Framework Directive. Reporting of the extent of physical loss and physical disturbance of the seabed's overarching habitat types should take place no later than six months after completion of the construction works.
25. Nord Stream 2 AG shall ensure that the gas composition remains within the design specifications for the pipelines. Any significant change to the composition shall be approved by the Danish Energy Agency.
26. Nord Stream 2 AG shall prepare a monitoring programme for inspection and maintenance for the operational phase. The monitoring programme shall encompass monitoring of the safety aspects. The monitoring

programme shall be approved by the Danish Energy Agency and be implemented before the pipelines are put into operation.

27. Nord Stream 2 AG shall prepare a monitoring programme for the operational phase. The monitoring programme shall encompass monitoring of the environmental conditions and be approved by the Danish Energy Agency before the pipelines are put into operation.
28. Nord Stream 2 AG shall submit the data acquired during the construction and operational phase in the military practice areas to the Naval Command.. Data from the NATO submarine exercise areas may not be published or shared with third parties without the permission of the Naval Command.
29. Nord Stream 2 AG shall publish results from the environmental monitoring programmes annually, but after the data have been approved by the Naval Command. The data that is to be published solely concerns the environmental conditions during the construction and operational phases.
30. Once the precommissioning activities have been completed, but before the pipelines are put into operation, Nord Steam 2 AG shall submit the results thereof to the Danish Energy Agency.
31. A verifying third party shall issue a “Certificate of Compliance” documenting that the installations fulfil applicable legislation, standards and Nord Stream 2 AG’s technical specifications. The Danish Energy Agency requests that a “Certificate of Compliance” be submitted to the Danish Energy Agency when it becomes available, but before the date of commissioning of the pipeline installation.
32. Before each of the pipelines is commissioned, an Offshore Inspection Release Note shall be obtained from the verifying third party. The Inspection Release Note shall be submitted to the Danish Energy Agency as soon as it becomes available.
33. During the construction and operating phases, the pipeline installation shall be subject to supervision by the Danish authorities. As part of the Danish Energy Agency's supervision of the pipelines, the Danish Energy Agency may at any time request the disclosure of both internal and external audits with a view to gaining an insight into completed audits and independent third party verification.
34. Well in advance of the anticipated decommissioning of one or both pipelines, Nord Stream 2 AG shall prepare a plan for decommissioning of the pipeline installation and submit the plan to the Danish Energy Agency for approval by the Danish Energy Agency. Following a prior dialogue with Nord Steam 2 AG, the Danish Energy Agency may order Nord Steam 2 AG to remove - by a specified deadline after decommissioning - pipeline installations covered by this approval either in their entirety or in part from the seabed, see Section 4(2) of Executive Order No. 1520 of 15 December 2017 on certain pipeline installations in territorial waters and on the continental shelf.

1.3. Guidance on Filing a Complaint

The decision may be appealed in writing to the Danish Energy Board of Appeal, Toldboden 2, 8800 Viborg no later than four weeks after announcement of the decision, see Section 6(a) of the Continental Shelf Act. The decision shall be announced on the Danish Energy Agency's website www.ens.dk.

Parties eligible to appeal under Section 6(a)(1) of the Continental Shelf Act include any party with a significant and individual interest in the decision, as well as local and national associations and organisations whose main aim is to protect nature and the environment. The same applies to local and national associations whose objects include the safeguarding of significant recreational interests if the decision concerns such interests.

Yours sincerely,

Kristoffer Böttzauw

2. The application

2.1. Applicant

According to the application documents, Nord Stream 2 AG is owned by PJSC Gazprom. Nord Stream 2 AG will be responsible for the planning of day to day operations.

Nord Stream 2 AG's head office is situated at Baarerstrasse 52, 6300 Zug, Switzerland.

2.2. Application documents

The application was processed against the background of the following central documents submitted by Nord Steam 2 AG on 15 April 2019:

- "Application for construction permit, Denmark"
  - Annex I: Detailed technical information
    - Nord Stream 2 Line A and Line B Route coordinates
    - Health, Safety, Environment and Social (HSES) policy
    - Health, Safety, Environment and Social Management System (HSES MS) manual
    - Project Quality Plan
    - Pipeline Construction Risk Assessment, Global Maritime
    - Offshore Pipeline Frequency of Interactions, Nord Stream 2 and Saipem
    - Offshore Pipeline Damage Assessment, Nord Stream 2 and Saipem
    - Offshore Pipeline Risk Assessment, Nord Stream 2 and Saipem
  - Annex II: Environmental Impact Assessment (EIA):
    - Nord Stream 2 AG Environmental Impact Report, Denmark, Southeastern Route, including Non-Technical Summary
    - Nord Stream 2 AG Environmental Impact Report, Denmark, Southeastern Route, Atlas.
  - Annex III: Documentation in accordance with the Espoo Convention:
    - Nord Stream 2, Transboundary Impacts, Environmental Impact Report, Denmark - Southeastern Route
    - Nord Stream 2, Non-Technical Summary, Environmental Impact Report, Denmark, Southeastern Route

2.3. The Nord Stream 2 Project

According to the application documents, the pipeline project on the Danish continental shelf area that is covered by the application forms part of a larger pipeline project which consists of two subsea pipelines for transporting gas from Russia to Germany; see Figure 1.

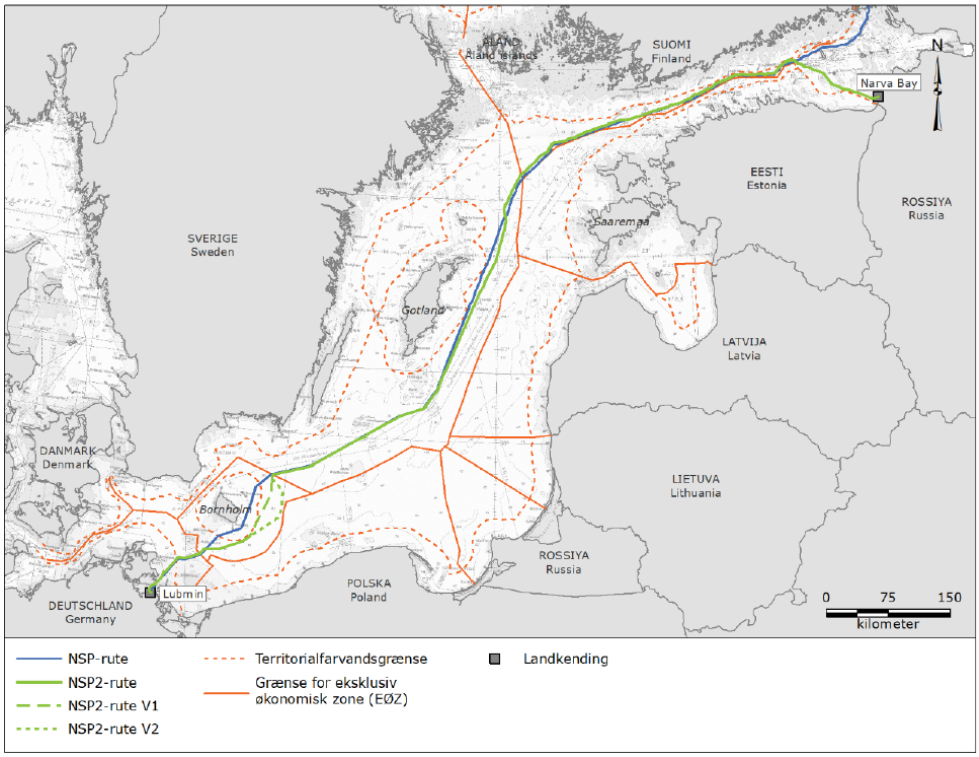

Figure 1 *Source: Figure 2-2, "Application for construction permit, Denmark - Southeastern Route", April 2019*.

The application concerns the construction of two subsea pipelines, each with a diameter of 48 inches, in the Danish continental shelf area. The capacity of the project upon full development is 55 billion m^3 natural gas per year. The planned total length of the pipeline route is approximately 1230 km.

2.4. Location of the Danish part of the pipeline project

The Danish part of the pipeline project in the Baltic Sea is located east and south of Bornholm in the Danish continental shelf area, where Nord Stream 2 AG is applying for a permit for two route variants NSP2 / NSP2 V1 and NSP2 / NSP2 V2 as two equivalent alternatives, so that, once the environmental process has been completed, the Danish Energy Agency will be able to decide whether a permit can be issued for the construction of either a combination of NSP2 with NSP2 V1 (NSP2 / NSP2 V1) or a combination of NSP2 with NSP2 V2 (NSP2 / NSP2 V2), see Figure 2.

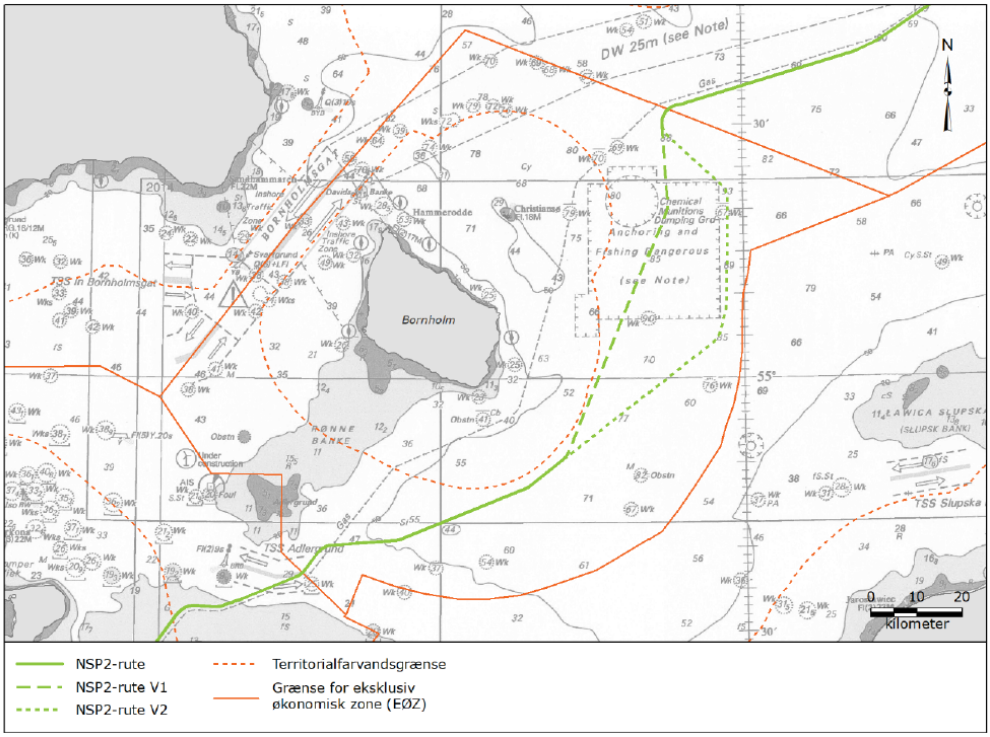

Figure 2 *Source: Figure 3-1, "Application for construction permit, Denmark - Southeastern Route", April 2019*.

The Danish section will be approximately 147 km long if the NSP2 / NSP2 V1 route variant is chosen, or approximately 164 km long if the NSP2 / NSP2 V2 route variant is chosen. It is planned that the two Nord Stream 2 pipelines (Line A and Line B) will run parallel to each other, separated by a distance between the two lines of approximately 35 m and 155 m, with provision for local deviations due to unevenness in the seabed. The application covers two pipeline corridors with +/- 150 m on either side of each pipeline.

The coordinates for the precise placement in Danish waters are specified in Supplement I to the application. It will only be possible to determine the final coordinates of the pipelines once they have been laid.

2.5. Schedule

According to the application, construction work for the first of the two parallel pipelines is expected to commence in early 2020, with a view to completion for the transport of gas during the second half of 2020, see section 3.3 of the application.

The construction phase for the pipelines in Danish waters is expected to collectively amount to approximately 115 days if the combination of the proposed Nord Stream 2 route NSP2 / NSP2 V1 is chosen, and approximately 125 days if the combination of the proposed Nord Stream 2 route NSP2 / NSP2 V2 is chosen. Where necessary

preparatory seabed interventions will be carried out prior to the construction of each pipeline.

According to the application, permits for the project have been issued in Sweden, Germany, Finland and Russia. At the time of submission of the application and subject to the condition that the Danish permit is issued within the anticipated time horizon, Nord Steam 2 AG expects the total duration of the construction phase encompassing both pipelines from Russia to Germany to be less than two years.

The installation of Nord Stream 2 and associated preparatory construction works at the two landfall facilities in Russia and Germany commenced in the second quarter of 2018 and the company has informed the Danish Energy Agency that installation of the pipelines was concluded in Russian, German, Swedish and Finnish waters on 21 October 2019.

2.6. Technical information

2.6.1. Seabed intervention

According to the application and the environmental impact assessment, laying of the pipelines in certain areas could potentially require intervention works before or after laying. Intervention works may be necessary in order to stabilise the pipeline or protect the integrity of the pipeline. The intervention works may involve trenching the pipeline in the seabed or rock placement.

The intervention works are summarised as follows:

- Installation of rock berms in predetermined locations on the seabed before the pipelines are constructed;
- Installation of rock berms around the pipeline in predetermined locations on the seabed;
- Trenching of pipelines following laying of the pipelines by sinking the pipeline below the level of the seabed using a subsea pipeline plough.

One location has been identified where additional stabilisation of the pipelines may be necessary and where it is assumed that the pipelines will be buried after laying. Potential intervention works entailing a maximum of 4 km of trenching is expected, where either rock placement will be carried out or the pipelines will be trenched after laying. The application includes a reservation concerning the right to make changes to the detailed design of the pipelines.

Furthermore, Nord Stream 2 shall cross the existing Nord Stream pipelines, where necessary with localised rock placement along a total length of less than 1 km.

2.6.2. Crossing of infrastructure

Section 8 of the application states that Nord Stream 2 crosses electrical power and communication cables. Furthermore, the Nord Stream 2 pipelines cross the Nord Stream pipelines in Danish waters just outside the territorial waters south of

Bornholm. Section 7.3 of the application furthermore states that the company is aware that the proposed Nord Stream 2 route crosses the future route of the Baltic Pipe, while section 8.5 states that Nord Stream 2 AG will not hinder future crossings. The parties are expected to establish crossing agreements, which stipulate technical solutions for the crossings. The company has stated that specific crossing designs will be developed for each cable and pipeline crossing.

Concrete mattresses will generally be used at cable crossings, while rock fill/rock berms will be used around pipeline crossings.

The company has also stated that agreement will be reached with the owners of the cables/pipelines concerning crossing designs, and the details will be incorporated into the crossing agreements.

2.6.3. Hydrocarbon content and gas composition

According to section 7 of the application, the gas will be pure natural gas. Nord Stream 2 AG has stated that the Nord Stream 2 pipelines are designed for dry, sweet (not acidic) natural gas, i.e. the gas is free from H_2S. With the aim of ensuring that the gas composition is suitable for the pipeline system, the transport contracts with the gas suppliers include restrictions relating to composition, which will be enforced throughout the lifetime of the pipeline. These composition-related restrictions ensure that the H_2S concentration will never exceed the threshold that is specified for sweet natural gas.

2.6.4. Design

According to the application, the pipelines are designed in accordance with recognised standards and practice for pipelines. More specifically, the pipelines are designed in accordance with DNV OS F101 with a design life span of 50 years. Nord Stream 2 AG has appointed Det Norske Veritas (DNV) as the independent third party to verify the design prior to commissioning. When DNV GL has completed its third party verification of all the project's phases and the pipeline has been commissioned with satisfactory results, a DNV GL Certificate of Conformity will be issued for each of the Nord Stream 2 pipelines.

Scheduled maintenance and inspections will be carried out in accordance with DNV-GL's requirements, statutory requirements and recognised, generally accepted industry practice. Planned inspection and maintenance for the landfall facilities will be carried out throughout the year to safeguard operation. Large-scale maintenance activities will be performed during an annual shut-down during the non-winter months.

<u>Pressure conditions in the pipelines</u>

The Nord Stream 2 pipelines are designed for three pressure classes, which reflect the pressure loss along the full length of the pipeline.

The company will design the pipelines to cover three pressure classes over their entire length, i.e. in three sections, each of which will have its own requirements regarding maximum pressure. The maximum pressure in the initial section I of the pipelines (from KP 0 to KP 300) will be 220 bar, while in the intermediate section II (from KP 300 to KP 675) it will be 200 bar. In the final section III (from KP 675 to KP 1230 (NSP2 / NSP2 V1) / KP 1248 (NSP2 / NSP2 V2 1230), it will be 177.5 bar. The entire Danish section of the pipelines will be situated in section III, and the maximum design pressure will therefore be 177.5 bar.

The pressure conditions in the pipelines will be continually monitored to ensure that the maximum design pressure is not exceeded.

Temperature conditions in the pipelines

According to section 7.1 of the application, the offshore design temperature is -10 to + 40 degrees C.

Diameter and wall thickness of the pipelines

The company is designing the pipelines with a nominal diameter of 48 inches and a constant internal diameter of 1153 mm along the entire length of the pipeline. The wall thicknesses of the steel pipes are based on the maximum permissible operating pressure and will vary depending on the pressure class from the thickness dimension in section I, which runs from Russia with the highest design pressure, through to the thinnest dimension in section III, which amongst other things covers the entire Danish section. The wall thickness in section III in the Danish sector will be 26.8 mm in accordance with the design standard used, DNV OS-F101.

The company will install special buckle arrestors at regular intervals between the normal pipes in specific areas in deeper sections in order to minimise the risk of the pipe being damaged as a result of buckling during the installation phase. Buckling arrestors are sections of pipe with greater thickness, which are installed in deep water areas, typically at intervals of 927 m. Buckling arrestors are manufactured from the same steel alloys as the pipelines. The buckling arrestor materials and requirements are largely the same as for the ordinary pipe sections.

Materials and corrosion

The pipelines will be constructed of 12.2 m long individual steel pipes, which will be welded together during the continuous laying process. In the application, the steel quality is specified as being SAWL 485 FD(U)(1) carbon steel and has been chosen in accordance with the design standard used, DNV OS-F101.

Internally, the steel pipes will be coated with an epoxy-based lining to reduce friction in the pipe and therefore improve the flow conditions.

Externally, the steel pipes will be coated with an external three-layer coating of polyethylene (PE) to prevent external corrosion. The three-layer polyethylene external anti-corrosion coating consists of an inner layer of fusion-bonded epoxy, a middle adhesive layer and a top layer of polyethylene. Additional corrosion protection will be achieved by incorporating sacrificial anodes. The sacrificial anodes will be a dedicated and independent protection system in addition to the anti-corrosion coating.

Outermost, on top of the external corrosion coating, a weight-increasing coating will be applied, which will consist of concrete containing iron ore. The primary purpose of this coating will be to stabilise the pipeline when it is lying on the seabed, but the coating will also provide external protection from external stresses, e.g. fishing gear.

The application states that the concrete-coated pipes will be transferred to the lay vessel, where they will be welded together and non-destructive testing will be carried out. Before the laying process commences, a shrink sleeve will be applied over the bare metal section, and a coating applied on top of the weld in order to fill the gap in the concrete coating on either side of the weld and to protect the weld from corrosion.

2.6.5. Laying and commissioning of the pipelines

Laying of the pipelines will be carried out using a conventional S-laying technique from a lay vessel with dynamic positioning (DP vessel) or an anchored vessel. Nord Stream 2 AG expects one DP vessel to be used. Pipe sections will be delivered to the lay vessel by means of pipe supplier vessels. On the lay vessel, the pipe sections will be assembled to form a continuous pipeline which is lowered onto the seabed.

The process on board the lay vessel comprises the following general steps, which form a continuous process: welding of pipe, non-destructive testing of welds, corrosion protection of welds and continuous installation on the seabed.

Both pipelines will be constructed in specific sections for subsequent interconnection. It may be necessary to leave the pipelines on the seabed if the meteorological conditions render positioning difficult or cause excessive movements within the system. A mean laying rate of approximately 3 km per day is expected, depending on the meteorological conditions, water depth and pipe wall thickness.

In the application, Nord Stream 2 AG states that a safety zone will be established for dynamically positioned lay vessels of 1 nautical mile, equivalent to around 2 km, and for other vessels a safety zone of 0.25 nautical miles, equivalent to approximately 500 metres. The final safety zones and reporting of positions will be agreed with the Danish Maritime Authority.

After the pipelines have been laid, they will be commissioned before they are taken into use. Commissioning will be carried out to confirm the mechanical integrity of the pipelines and ensure they are ready for operation and use.

In the application, Nord Stream 2 AG states that commissioning will be carried out in the form of dry commissioning without pressure-testing. The adopted “dry” commissioning concept for the pipelines includes cleaning and measurement in connection with the internal inspection and external ROV examination of the pipelines.

Following the successful commissioning of the pipelines, the pipelines will be filled with natural gas with a view to commissioning. The actual commissioning process comprises all activities that take place following start-up through until the pipelines begin transporting natural gas, including filling of the pipelines with natural gas. Prior to filling with gas, all start-up activities must be completed successfully and the pipelines filled with dry air at atmospheric pressure.

After start-up, the pipelines will contain dry air. Nitrogen gas will then be introduced into the pipelines as a static buffer immediately prior to filling with natural gas. This will ensure that the inflowing natural gas cannot react with the atmospheric air and produce unwanted mixtures inside the pipeline. Commissioning will then proceed by filling the pipelines with natural gas from the connected facilities on land.

During commissioning on Danish continental shelf, a support vessel will be used to monitor the gas filling process in the pipeline. DNV-GL has been appointed as an independent third-party expert to verify that the pipeline system, from pig trap to pig trap, has been designed, fabricated, installed and commissioned in accordance with the applicable technical, quality and safety requirements. Once DNV-GL has completed third party verification of all project phases and the pipeline has been successfully commissioned, a DNV-GL Certificate of Conformity will be issued for each of the Nord Stream 2 pipelines.

2.6.6. Decommissioning

The pipelines have been designed for a 50-year operational life. Once a pipeline’s life-span has been reached or it is no longer used for economic reasons, it will be shut down.

The company has stated that the preferred option for decommissioning will probably be to leave the pipelines in situ, and that the decommissioning process will be carried out in accordance with the national or international standards for the industry applicable at the time of closure of the pipelines.

A decommissioning programme will be developed during the final years of the operational phase, which will take into account experiences that have been gained and existing and future legislation in the area.

2.7. Safety and environment

2.7.1. Risk assessment

The application includes a risk assessment of all potential risks regarding the employees of third parties and environmental risks during the construction phase. The risk assessment was carried out in accordance with DNV-RP-H101 and IMO guidelines for risk management and formal safety assessment during offshore and seabed operations.

An operational risk assessment has also been carried out in relation to fatal accidents and the environment, amongst other things. This risk assessment was carried out in accordance with DNV-OS-F101 for pipeline integrity and DNV-RP-F107 for potential environmental risks during the operational phase.

Management system for the design and installation phase

The company has described its management system in the application's 'Annex I Health, Safety, Environmental and Social Management System (HSES MS) Manual'. The company states that the management system is structured according to the principles of OHSAS 18001 and ISO 14001. The company has established a policy for Health, Safety and Environment (HSE) in accordance with ISO 14001:2015 and OHSAS 18001:2007.

2.7.2. Route selection

For the entire pipeline route generally, the company has based its route selection process in the application on a set of criteria which the company established, see "Nord Stream 2 Environmental Impact Assessment, Denmark", and studies, surveys and geophysical, geotechnical and environmental samples that have been collected.

In general, three criteria were considered in connection with the selection of feasible route alternatives for the Nord Stream 2 pipelines:

- The first criterion relates to environmental aspects and focused on avoiding protected areas and/or other areas with ecologically sensitive flora and fauna, as well as the minimisation of intervention works on the seabed.

- The second criterion relates to socio-economic factors in order to minimise the disturbance of maritime activities such as shipping, fisheries, dredging, military areas, tourism, existing installations such as cables and wind turbines, raw material extraction and conventional and chemical munitions.

- The third criterion concerns technical aspects relating to pipeline design, component fabrication, installation method, resource use, operating conditions, integrity and risk assessment data, water depth, seabed surface, minimum bending radius for the pipeline, installation, maintenance and repair considerations, criteria for cable and pipeline crossings, and the distance to and crossing of shipping lanes. A focus has been placed on minimising the construction time and any disruption.

Overall, the company has applied the following set of technical, environmental and socio-economic parameters/criteria in the planning and optimisation of the pipeline route:

- Seabed conditions, which can give rise to a need for seabed intervention works and which therefore have potential environmental impacts.
- Protected and environmentally sensitive areas, including fishing banks and spawning grounds
- Shipping safety and shipping lanes
- Munitions and chemical warfare agents
- Patterns and intensity of commercial fishing
- Existing and planned infrastructure
- Parallel routing with the Nord Stream pipeline system in order to minimise the combined footprint of the two pipeline systems
- Raw material extraction areas
- Military practice areas
- Minimising the overall pipeline length

In the application, the company states that Nord Stream 2 AG's preferred route is the basic scenario route (running east and south of Bornholm in the territorial waters) based on an evaluation of a number of possible alternative routes, as specified in Nord Stream 2 AG's application of 3 April 2017 and associated documents in relation to the environmental impact assessment process. It should be noted that the company withdrew the application on 28 June 2019 due to uncertainty over when processing of the case would be completed and a permit issued.

The company concluded that a route running northwest of Bornholm on the continental shelf was a feasible alternative compared with the basic scenario route, and they therefore submitted an application and an associated environmental impact assessment report in August 2018. The application stated that the basic scenario route was the company's preferred route, but that the northwestern route was feasible.

On 1 November 2018, the Danish Ministry of Foreign Affairs and the Polish Ministry of Foreign Affairs announced that Denmark and Poland had reached agreement

concerning a maritime boundary which, when it entered into force, would delimit the two continental shelf's and the EEZ boundaries in the two countries in the Baltic Sea south of Bornholm. The treaty entered into force on 2 June 2019.

On 26 March 2019, the Danish Energy Agency asked Nord Stream 2 AG to investigate a southeasterly route on the continental shelf and to draw up an environmental impact report and associated application, as the Agency concluded on the basis of the available information that the route southeast of Bornholm on the continental shelf was preferable to the route northwest of Bornholm on the continental shelf. The Danish Energy Agency's final conclusions are presented in section 1.1 above.

Against this background, Nord Steam 2 AG developed a route outside Danish territorial waters, southeast of Bornholm. It is this application that the present permit covers. The eastern part of the route is divided into two potential route variants, NSP2 / NSP2 V1 and NSP2 / NSP2 V2 respectively, which the company considers to be possible alternatives in relation to the basic scenario route and the northwestern route.

In the application, Nord Stream 2 states that the two route variants NSP2 / NSP2 V1 and NSP2 / NSP2 V2 are two equivalent alternatives, and that, once the environmental process has been completed, the Danish Energy Agency will be able to decide whether a permit can be issued for the construction of either a combination of NSP2 with NSP2 V1 or a combination of NSP2 with NSP2 V2, see Figure 2.

2.7.3. Shipping safety

The company considers that the impact on shipping during the laying and operation of the pipelines will be local, short-term and of low intensity, see section 9 of the "Nord Stream 2 Environmental Impact Report, Denmark - Southeastern Route". The impacts will primarily occur during the laying phase.

During the construction phase, it is anticipated that a safety zone will be created around the lay vessel, see section 2.7.6 of the present permit.

In the application, Nord Stream 2 AG states that the contractors will be obliged to develop and implement monitoring (including tracking of ships through AIS data), along with communication protocols and procedures for addressing ships which approach the safety zone.

2.7.4. Fisheries

Fisheries aspects are described in section 4.3 of the application. According to the application, the pipeline is to be constructed through a spawning area for cod, which is situated in both Swedish and Danish territory. It passes through important fishing waters south and east of Bornholm.

During the construction phase, unauthorised shipping traffic, including fishing vessels, will be asked not to enter the safety zones around the construction vessels. However, the introduction of safety zones will always be temporary at each position, as laying of the pipeline is expected to move forwards at an average rate of approximately 3 km per day.

The application states that construction activities are not considered to be a problem for the fishermen, which has been confirmed by fishermen on a number of occasions. Fishermen have indicated that they will simply avoid the lay vessel and construction activities during the construction phase.

In connection with operation, the physical presence of pipelines and structures on the seabed has the potential to impact on bottom-trawling through either the imposition of protection zones or damage to or loss of gear. Offshore pipelines in Danish waters are automatically given a 200 m wide protection zone along either side of the pipeline, within which bottom-trawling, for example, is not permitted. However, the Nord Stream 2 pipelines are designed to be resistant to stresses caused by fishing gear, and Nord Stream 2 will therefore apply for dispensation to remove any fishing restrictions.

The application states that the presence of an exposed pipeline on the seabed will impact on fisheries activities to some extent in places where the pipeline passes through areas where bottom-trawling is practised. The impact will essentially be limited to bottom-trawling, as the use of gear such as gill nets, pound nets, Danish seine and longlines will allow fishing to continue in the area without any risk of incidents or obstructions. Fishing vessels with pelagic trawls can avoid the pipelines by maintaining an adequate distance between the net being towed and the pipelines.

In many places, natural embedding of the pipeline system will depend on the seabed conditions - significantly reducing the risk and inconvenience for bottom-trawling fisheries. Nord Stream 2 will be marked on sea charts. However, experience gained from Nord Stream indicates that fisheries can co-exist with the pipelines, and thus far no gear has been reported lost or damaged.

Under the Danish Fisheries Act, Danish fishermen are entitled to compensation from Nord Stream 2 AG in connection with any damage, inconvenience or loss of fisheries activities that the project causes to commercial fisheries. On this basis, an agreement between Danish Fishermen PO, Bornholms og Christiansø's Fiskeriforening and Nord Stream 2 AG is expected to be signed prior to construction.

2.7.5. Diving operations

Section 5.3 of the application states that no diving operations are anticipated during construction and maintenance of the pipelines. Any diving operations which prove to be necessary will be carried out in accordance with applicable Danish legislation.

2.7.6. Protection zone and safety zone

The application states that, during the laying of the pipelines, safety zones will be required of approximately 3000 m (equivalent to 1.5 nautical miles) for anchored lay vessels, approximately 2000 m (equivalent to 1 nautical mile) for DP lay vessels, and within a radius of 500 m for other vessels with limited manoeuvring capacity. Nord Stream 2 AG has subsequently stated that one DP lay vessel will be used. Nord Stream 2 AG is therefore applying for a temporary safety zone of approximately 1 nautical mile on either side of the pipeline. Details such as the shape, size and marking of exclusion zones, e.g. using virtual buoys, will be agreed with the authorities.

The contractor will implement a safety zone by agreement with the relevant Danish authorities. Nord Stream 2 AG will require contractors to develop and implement monitoring (including tracking of vessels through alarm neutralisation signal data) and communication protocols and procedures for contact with vessels which approach the safety zone.

In collaboration with relevant construction contractors and the Danish Maritime Authority, Nord Stream 2 AG will announce the position of the construction vessel and the extent of the safety zone that is required in 'Notices to Mariners' in order to increase the level of vigilance amongst shipping during laying of Nord Stream 2.

During laying of the pipelines, there will be a ban on unauthorised ships, including fishing vessels, entering the zone.

2.7.7. Munitions and military practice areas

Chemical munitions

Various chemical munitions were dumped in the Bornholm Basin after the Second World War. The main site in Danish waters used for chemical munitions disposal was the southern part of the Bornholm Basin. The primary designated dumping area was circular in shape, with a radius of approximately 5.5 km (3 nautical miles), situated northeast of Bornholm. As navigation equipment was not particularly precise at the time, chemical warfare agents may be dispersed across a large area. A more realistic secondary dumping area east of Bornholm is also indicated on sea charts as an area where fishing with bottom-trawling gear, anchoring and seabed intervention is not advised.

The application states that precautions will be taken in areas where there is a potential risk of chemical munitions being encountered in order to avoid human contact with chemical substances. These measures include adequate staff training

and the provision of protective equipment in accordance with HELCOM's guidelines for preventive measures and first aid.

During the construction phase, contact with known chemical munitions (which were identified during the design investigations) will be avoided through local re-routing in order to avoid interaction. Chemical munitions which are identified during construction and during the lifetime of the pipelines will be managed through a procedure for chance finds. The identification, and where necessary, handling of any munitions will be agreed with Naval Command.

To minimise the risk of encountering unexpected chemical munitions in connection with pipe-laying, a preliminary investigation will be carried out prior to laying in order to identify any anomalies on the seabed along the pipeline route. In addition, a remotely operated vessel (ROV) will be used for touchdown monitoring through critical areas, such as crossings, lay-down locations, etc.

Finds have been identified along both route variants. The route has been adapted to take account of munitions that have been encountered along the proposed NSP2 route, NSP2 route V1 and NSP2 route V2, i.e. a minimum displacement distance to the pipelines.

See section 4.7.7 for mitigation measures in relation to chemical munitions and conditions for preparedness.

Conventional munitions

A munitions screening investigation along the proposed NSP2 route, NSP2 route V1 and NSP2 route V2, identified a series of bottom mines (of the order of 800 kg) along NSP2 V2, while no conventional munitions were identified along the proposed NSP2 or NSP2 V1.

The route has been adapted to take account of the munitions that have been encountered along the route with the exception of an identified strip of bottom mines (explosive charges of the order of 800 kg per mine), which crosses the entire corridor of NSP2 V2.

The application states that the necessary mitigatory measures were not fully developed at the time of the assessment as regards identified munitions which cross the NSP2 V2 corridor.

The mitigation measures include one or more of the following:

- Re-routing of the pipeline, potential re-routing is being investigated and assessed.
- Moving of individual munitions to a permanent storage site on the seabed outside the pipeline corridor.

As regards undetected munitions during previous investigations, the application states that, based on the accuracy of the UXO investigation and the geographic location of the proposed Nord Stream 2 routes, it is considered to be unlikely that interaction with undetected munitions will occur during the construction or operation of Nord Stream 2. The Royal Danish Navy will be informed of any munitions-related objects encountered along the route, and will be asked to evaluate identified objects and propose a method for dealing with them. It has been stated that munitions screening investigations which were previously carried out in Danish territorial waters along the Nord Stream route and the proposed Nord Stream 2 base case route did not result in any finds of conventional munitions.

Military practice areas

The company has stated that NSP2 V1 and NSP2 V2 cross ES D 138 and ES D 139, temporary firing areas east of Bornholm, which are used by Naval Command for firing exercises and are jointly administrated by Danish Defence with Sweden.

Both route alternatives also cross submarine exercise areas east of Bornholm, which are used by the German military for diving exercises with submarines. During exercises, ships are officially forbidden to enter these areas. Danish Defence informs the general public when military practice areas are in use.

In connection with the construction work, supply vessels will deliver pipes and other supplies to the lay vessels. The increasing shipping traffic to and from the project area could potentially come into conflict with military exercises. Nord Stream 2 AG will coordinate with the relevant authorities to ensure that there is no conflict between military activities and the construction of Nord Stream 2.

Once the pipelines and related support structures have been constructed, they may constitute an obstacle to submarine exercises carried out by the German navy east of Bornholm. However, correspondence received from the German military confirms that no diving to the bottom takes place in the area which will be used for the pipelines and collisions will therefore not occur. In addition, the German defence authorities have stated that they would not have any general objections to the pipelines crossing the mapped areas with submarine exercises.

2.7.8. Environment

The company has described the environmental conditions in “Nord Stream 2 AG Environmental Impact Report, Denmark, Southeastern Route” including a Non-Technical Summary and atlas, which describes the environmental conditions in the area in which the planned pipelines are to be laid, and the company’s assessment of how the Danish part of the pipelines will impact on the environment in the Baltic Sea. Furthermore, a report is enclosed with the application which includes a description and assessment of the transboundary environmental impacts of the project in Denmark and in neighbouring countries pursuant to the Espoo Convention.

Monitoring

Section 16.2 of "Nord Stream 2 AG Environmental Impact Report, Denmark, Southeastern Route" sets out the company's proposed monitoring programme. Amongst other things, the section states that, on the basis of the results of the monitoring which was carried out in connection with the construction and operation of the existing Nord Stream pipelines, it has been concluded that effects and impacts on the marine environment would be insignificant to minor, and were limited to the immediate vicinity of the pipelines. However, it is proposed that the chosen parameters be monitored in connection with the construction and operation of the Nord Stream 2 pipelines with a view to:

- Monitoring and verifying the various environmental impacts which are described and assessed in the environmental impact assessment.
- Meet the expected high level of interest amongst stakeholders and the public in general

Nord Stream 2 AG furthermore states that the precise approach to the final monitoring programme, including procedures, locations and monitoring periods, will be established in consultation with the Danish authorities. Environmental and socio-economic monitoring results will be made publicly available.

Nord Stream 2 AG is proposing to carry out monitoring as regards water quality, cultural heritage, ammunition, chemical warfare agents in seabed sediments, fisheries, shipping and the footprint of the Nord Stream 2 pipelines (impact on the seabed area which is affected by the pipelines, including physical loss for overarching habitat types).

Environmental monitoring stations

According to section 7.24 of the environmental impact report, the environmental monitoring stations which are situated in Danish waters around Bornholm are Swedish, Finnish and HELCOM stations.

In relation to NSP2 / NSP2 V1, the minimum distance from the pipelines to the environmental monitoring stations is 0.1 km, whilst for NSP2 / NSP2 V2, the corresponding distance is 1.7 km. The application states that, in order to minimise the potential impact on historical or future data collected by the environmental monitoring stations, Nord Steam 2 AG will consult with the relevant authorities and/or organisations which operate the stations in order to minimise the potential disruption. Against the background of the above, it is considered that impacts on the environmental monitoring stations will be limited.

2.7.9. Nature protection areas and Annex IV species

According to the environmental impact report, no activities associated with Nord Stream 2 in the Danish sector are planned to take place within designated Natura 2000 sites.

The closest Danish Natura 2000 site is Adler Grund and Rønne Banke (DK00VA261 on Figure 3), which is situated approximately 18 km from the proposed route variants. The designation is based on the presence of sand bank and reef habitats.

The Natura 2000 site at Ertholmene is situated approximately 45 km from NSP2 / NSP2 V1 and approximately 30 km from NSP2 / NSP2 V2. Based on these distances, it is considered to lie outside the range of potential environmental impacts caused by the Nord Stream 2 project.

The distance to the Swedish and Polish Natura 2000 sites is greater than 20 km; hence, they therefore (see above) lie outside the range of impacts and no transboundary impacts have thus been identified on protected areas within Poland and Sweden. As regards Germany, the pipeline route passes through a designated German Natura 2000 site and is situated 6 km from a second such site, designated DE1552401 and DE1251301 respectively on Figure 3. Impacts from the construction works in the Danish EEZ in Germany will be very localised in the area around the EEZ border, and are considered to be insignificant. Furthermore, the distance between the construction works on the seabed in the Danish EEZ and the border with the German EEZ is at least 9 km. For this reason, any anticipated impacts have been assessed as being temporary, local and of low intensity, and no significant impacts on the German Natura 2000 sites have been identified linked to activities in the Danish sector.

With regard to potential impacts on habitat types in Adler Grund and Rønne Banke, including from the dispersal of sediments and pollutants in the water column, the dispersal of chemical warfare agents and subsequent sedimentation (e.g. from trenching following pipe-laying), it is concluded that there will be no risk of any significant impact on the designated habitat types in the Danish Natura 2000 sites as a result of the construction and/or operation of Nord Stream 2.

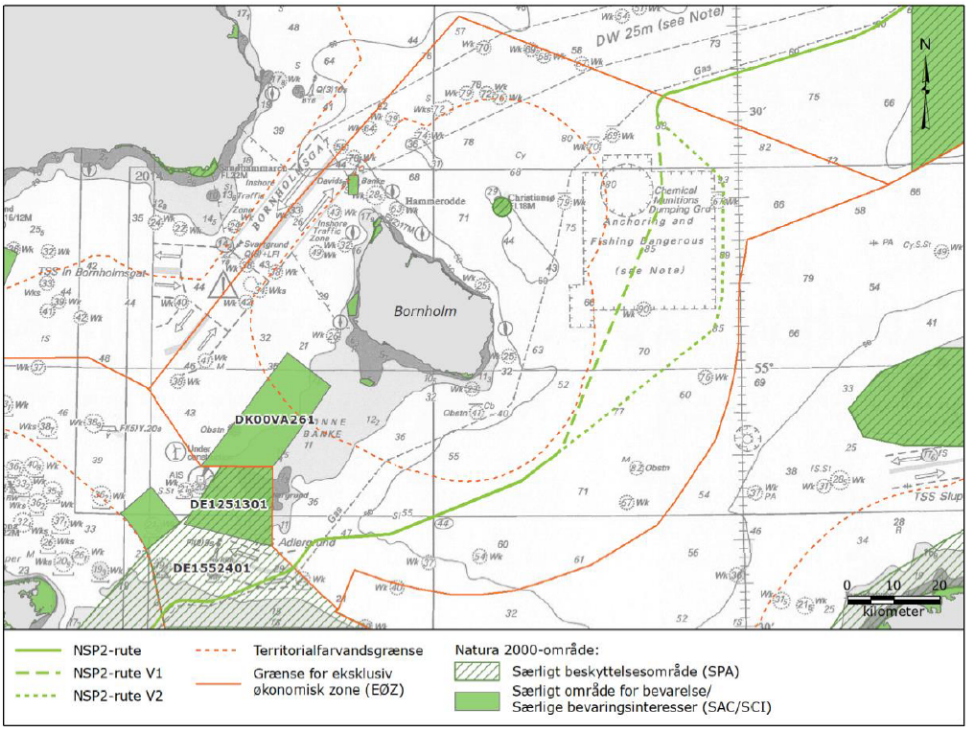

Figure 3 *Source: Figure 7-54, "Nord Stream 2 Environmental Impact Report, Denmark, Southeastern Route", April 2019*

Annex IV species

According to the environmental impact report for the project, the only marine Annex IV species in Danish waters are marine mammals, including harbour porpoise. The potential impacts on marine mammals during the construction and operation phase for Nord Stream 2 is considered to be insignificant, whether individual or in combination, and none of the planned impacts of Nord Stream 2 is considered to contribute to a breach of the conservation targets for Annex IV species in Denmark.

2.7.10. Cultural Heritage

According to the application, no wrecks have been identified within NSP2, NSP2 V1 or NSP2 V2. Investigations have been carried out to identify cultural heritage objects along these route alternatives.

According to the local museum (Bornholms Museum), submerged Stone Age settlements and ancient forests may be encountered in marine areas which are lower than around 40 m in the coastal area around Bornholm. The areas which are most likely to contain the remains of Stone Age settlements are situated in the coastal waters southwest of Bornholm. As NSP2, NSP2 V1 and NSP2 V2 do not pass through these areas, it is extremely unlikely that submerged Stone Age settlements will be encountered close to the route of the pipelines; see section 7.17.1 of the environmental impact report.

According to the application, the laying of pipelines, trenching following pipe-laying, and rock placement could damage cultural heritage objects (CHOs) or render them inaccessible for archaeological investigations.

To ensure the preservation of objects of cultural historical value, investigations are being carried out with the aim of identifying potentially valuable objects along the proposed route. These investigations include investigations of the seabed using multi-beam echo sounding, sidescan sonar, sub-bottom profiles and magnometer. Visual inspections using a remotely controlled underwater vehicle (ROV) will be carried out in order to confirm the finds. The need for further inspection and mitigation measures will be agreed in consultation with the relevant Danish authorities (the Agency for Culture and Palaces).

Exclusion zones will be defined around identified CHOs. The final protection zone will be agreed with the relevant authorities once the final route has been established and the type of laying vessel has been confirmed.

Finds of unexpected objects during construction will be managed in accordance with the procedure for chance finds prepared by Nord Stream 2 AG, which includes notification of national cultural heritage authorities in accordance with national laws and international conventions. CHOs identified in the pipeline corridor will be avoided, insofar as is possible, by re-routing the pipelines locally. In the event that a CHO is located in a position which cannot be avoided by re-routing the pipeline due to other constraints, a specific management plan will be prepared for the object.

The long-term presence of the pipelines and installations on the seabed have the potential to alter sedimentation patterns and/or cause erosion around protected wrecks due to local changes in currents. It is stated that the route has been established in order to avoid possible CHOs, and a minimum separation distance will be established where required.

Not all objects which are considered to be of potential cultural importance are identifiable in the geophysical data, and even the highest standard of geophysical survey may not identify every single archaeological object. For this reason, a procedure is being implemented to manage chance finds of objects which could prove to be cultural heritage objects or munitions. The procedure will specify instruction notifications with a view to notifying national cultural heritage authorities of the finds, the contractors' roles, administrative measures, areas of responsibility and lines of communication.

3. Environmental Impact Assessment (EIA)

Nord Stream 2 AG has prepared an environmental impact assessment report for the project, which the Danish Energy Agency received as a final version in April 2019. The environmental conditions concerning the pipeline project covered by the application are described in:

- Environmental Impact Assessment (EIA) in Denmark:
  - Nord Stream 2 AG Environmental Impact Report, Denmark, Southeastern Route, including Non-Technical Summary
  - Nord Stream 2 AG Environmental Impact Report, Denmark, Southeastern Route, Atlas.
- Documentation in accordance with the Espoo Convention:
  - Nord Stream 2, Transboundary impacts, Environmental Impact Report, Denmark - Southeastern Route
  - Nord Stream 2, Non-Technical Summary, Environmental Impact Report, Denmark, Southeastern Route

The Danish Energy Agency has reviewed the report and found that the report fulfils the requirements of Section 20 of the Environmental Impact Assessment Act.

The company's environmental assessment of the pipeline project covered by the application was prepared pursuant to the Continental Shelf Act, the Environmental Impact Assessment Act, and Executive Order No. 434 of 2 May 2017 on impact assessment regarding international nature protection areas and the protection of certain species in connection with preliminary investigations, exploration and recovery of hydrocarbons, underground storage, pipelines, etc. offshore (the Offshore Impact Assessment Executive Order).

Before the environmental impact report was distributed for public consultation (see below), the Danish Energy Agency obtained remarks from relevant national authorities. In connection with this, the following authorities submitted consultation responses to the Danish Energy Authority:

Danish Working Environment Authority
Danish Ministry of Defence Estate Agency
Danish Environmental Protection Agency
Agency for Culture and Palaces
Danish Maritime Authority
Royal Danish Navy Diving Service

Where relevant, remarks from the authorities were incorporated into the environmental impact assessment report or included as part of the Danish Energy Agency's case processing, and have in some cases led to the incorporation of conditions in the permit.

The environmental impact report was then distributed for consultation amongst the Danish authorities involved, amongst organisations and amongst the general public from 15 May 2019 to 10 July 2019. This is in accordance with the requirement of a minimum consultation period of eight weeks; see Section 35(4) of the Environmental Impact Assessment Act. The Danish Energy Agency held a public meeting concerning the pipeline project covered by the application on 19 June 2019 in Rønne on Bornholm.

During the public consultation, the Danish Energy Agency received eight consultation responses from:

Danish Working Environment Authority
Regional Municipality of Bornholm
Danish Ministry of Defence Estate Agency
Gaz-System S.A.
OMW
Agency for Culture and Palaces
Danish Maritime Authority
Wintershall Dea GmbH

The Espoo part of the environmental impact report was prepared on the basis of the Espoo Convention (Convention on Environmental Impact Assessment in a Transboundary Context), see Executive Order No. 71 of 4 November 1999 pursuant to the Convention of 25 February 1991 on assessment of impacts across national borders.

In accordance with Article 3 of the Espoo Convention, in 2013, Denmark notified the Baltic Sea countries with regard to the Nord Stream 2 project that an environmental impact assessment would probably be carried out in accordance with the Convention if the project was carried out. The project was covered by point 8 (large-diameter oil and gas pipelines) in Appendix I to the Convention, which covers projects which must be expected to have a marked harmful impact on the environment across national borders. According to this procedure, Germany, Denmark, Sweden and Finland were considered to be parties of origin under the Convention. The Russian Federation is a signatory, but not a party, to the Espoo Convention. However, Russia has acted and functioned as a party of origin insofar as is possible in accordance with its legislation. All nine Baltic States, including Estonia, Latvia, Lithuania and Poland, were considered to be affected parties under the Espoo Convention.

In the notification, the countries were asked to state whether they intended to participate in the EIA procedure (now referred to as the 'environmental impact assessment process'), and submit any remarks relating to transboundary

environmental impacts on their EEZ and territory, along with any comments they have received from the general public in their country.

Nord Stream 2 AG has used the remarks that have been received in connection with the notification in conjunction with the preparation of the environmental impact report for the project.

On the basis of the above and pursuant to Article 5 of the Espoo Convention, the Espoo documents, which include an assessment of the transboundary environmental impacts from the section of the pipelines which are to be laid in Danish waters according to the application, were distributed for public consultation in the countries surrounding the Baltic Sea (Estonia, Finland, Latvia, Lithuania, Poland, Russia, Sweden and Germany) during the period 15 May 2019 to 17 July 2019. The countries were asked whether they considered that the Danish part of the pipeline project could have a significant transboundary impact on the environment in their respective territories.

During the consultation of the countries concerning the transboundary environmental impacts, remarks were received from:

Estonia
Finland
Latvia
Lithuania
Poland
Sweden
Germany
ClientEarth
Joint consultation response from:
- Both ENDS, Netherlands
- Environmental activist, Russia
- Finance & Trade Watch, Austria
- Urgewald, Germany
- Milieudefensie, Netherlands
- Det Fælles Bedste - netværk af grønne foreninger, Denmark
- Vendsyssel Energi – og Miljøforening, Denmark
- NOAH - Friends of the Earth Denmark, Denmark

The Danish Energy Agency forwarded the responses received through the consultation to the company, and Nord Steam 2 AG commented on them as requested by the Danish Energy Agency.
During the processing of the case, Denmark submitted written responses, including responses from Nord Stream 2 AG to the countries' remarks, which the Danish Energy Agency considered to be relevant in relation to transboundary environmental impacts within the countries concerned. The countries were given

the opportunity to submit further remarks concerning Denmark's response by 25 September. Germany notified Denmark that the responses were satisfactory, whilst Sweden and Poland submitted further remarks. The Danish Energy Agency has concluded that the further remarks from Sweden were addressed in the first response, while clarifications of Denmark's previous response have been given to Poland.

The remarks which, in the opinion of the Danish Energy Agency, relate to transboundary environmental impacts have been taken into account in connection with the consideration of the application and the preparation of the permit, and have in some cases led to conditions being incorporated into the permit; see section 1.2 and Appendix 3.

A summary of the remarks received is presented in Appendixes 2 and 3.

On the basis of the environmental impact report and assessments of the materiality of the environmental impacts that have been identified, the adequacy of the proposed mitigation measures, national consultation responses and international consultation responses, the Danish Energy Agency's overall conclusion is that the Nord Stream 2 project can be constructed and operated without any unacceptable impacts on humans, the environment, society, etc., if the framework for construction and operation of the project as described in the submitted application and the environmental impact report of April 2019, including the mitigation measures described in the environmental impact report, are implemented and the conditions for the permit (see section 1.2) fulfilled.

The Danish Energy Agency finds that the environmental impact assessment of the part of the pipeline project which according to the application is to be laid in Danish waters has been completed with satisfactory results.

The Danish Energy Agency's conclusion is partly based on remarks, information and assessments from the competent authorities.

In connection with the decision in relation to the environmental aspects, the Danish Energy Agency placed special emphasis on the following considerations:

<u>General considerations relating to Natura 2000 sites and Annex IV species</u>
The environmental impact report includes an assessment of the project in relation to the protection considerations regarding the Natura 2000 sites which are situated at distances of up to 20 km from the project area, as it is considered that areas which are situated further away will not be affected by the project. According to the report, this distance was chosen on the basis of a professional assessment and experience of construction and operating activities gained through Nord Stream.

The Danish Energy Agency does not consider there to be any cross-border impacts on protected areas inside Poland and Sweden, as the distance is more than 20 km; hence it is outside the range of any impacts.

The Danish Energy Agency concurs with Nord Stream 2 AG's conclusion that impacts on German Natura 2000 sites will be temporary and of local and low intensity, and that there will be no significant impact on German Natura 2000 sites as a result of activities in the Danish sector. This is because the impact will be very localised in the area around the EEZ boundary, and because the distance between the construction works on the seabed in the Danish EEZ and the border with the German EEZ is at least 9 km, which is outside the range of any impacts of the Danish activities during the construction and operating phases.

In accordance with the provisions of the Offshore Impact Assessment Executive Order, an assessment has been carried out based on the submitted material, which is presented in section 4.7.9 of this permit.

The conclusion on the basis of both the assessments referred to above and the environmental impact report is that the project will not harm the species and habitat types which were used as a basis for designating the Natura 2000 sites.

There are a number of special protected species (Annex IV species) in the area within which the gas pipelines are planned. Impacts on these species will be avoided by carrying out mitigation measures in connection with rock placement; see condition 10.

The environmental impact report and the Agency's assessment under the Offshore Impact Assessment Executive Order also show that the project will not intentionally disturb Annex IV species in their natural distribution area, particularly during periods when the animals are breeding, rearing, overwintering or migrating, and will not damage or destroy breeding or staging areas in the natural distribution areas of the animal species listed in Annex IV to the Habitats Directive.

4. The authorities' remarks and assessment

This permit has been distributed for consultation between relevant Danish authorities with a view to an assessment of the project covered by the application. The authorities' remarks have been inserted under the relevant topics. Any remarks and assessments from the Danish Energy Agency regarding the individual topics are also presented. The topics are the same as those in Nord Steam 2 AG's application, see section 2.

4.1. Applicant

The Danish Energy Agency has no further remarks regarding the matter.

4.2. Application documents

The Danish Energy Agency finds that the application documents which have been submitted by Nord Stream 2 AG are satisfactory, and therefore has no further remarks regarding this topic.

4.3. The Nord Stream 2 project

The present permit shall lapse in the event that Nord Stream 2 AG abandons the project either in its entirety or in part. Nord Stream 2 AG shall notify the Danish Energy Agency if the pipeline project is not carried out in accordance with the application (condition 3).

The permit does not cover necessary permits, approvals, etc. pursuant to any other legislation, nor does it exempt Nord Stream 2 AG from the obligation to obtain the necessary permits and approvals pursuant to other legislation.

Nord Stream 2 AG shall take out insurance to cover any damage that is caused by the activity that is carried out pursuant to the permit, even if the damage is accidental (condition 8).

4.4. Location of the Danish part of the pipeline project

Based on information from Danish Defence concerning the impacts associated with route variant NSP2 / NSP2 V1 and NSP2 / NSP2 V2 in relation to chemical and conventional munitions (see section 4.7.7), permission is solely granted through the present permit to establish the pipelines for NSP2 / NSP2 V1 (condition 1).

The coordinates for the precise placement of NSP2 / NSP2 V1 in Danish waters are given in Annex I to the application. It will only be possible to determine the final coordinates for the position of the pipelines and therefore the kilometre points once the pipelines have been laid.

In its consultation response concerning the northwestern route, the Danish Geodata Agency stated that the Danish Geodata Agency expects Nord Steam 2 AG to apply for a permit for a hydrographic survey and to fulfil the general

conditions for such a survey. See http://gst.dk/soekort/soeopmaaling/privat-soeopmaaling/

Amongst other things, the Danish Geodata Agency expects to receive coordinates for the gas pipeline (both planned and as-built) for use when adding the gas pipeline to sea charts.

The Danish Geodata Agency has confirmed that the above consultation response also applies to the southeastern route on the continental shelf.

In its consultation response, the Danish Ministry of Defence Estate Agency states that Danish Defence wishes to be informed of the final location of the natural gas pipelines following conclusion of the construction works.

Nord Stream 2 AG shall comply with the requirements laid down by the Danish Geodata Agency in connection with the execution of the project, and shall notify the Danish Geodata Agency of the projected coordinates, and the Danish Energy Agency, the Danish Ministry of Defence Estate Agency and the Danish Geodata Agency of the final coordinates (as-built) once they become available; see condition 21.

4.5. Schedule

With reference to section 4.7.4 concerning fisheries, the permit includes condition 11 regarding a time limit for construction activities in the months of July and August.

Nord Stream 2 AG will submit an updated schedule to the Danish Energy Agency prior to laying of the pipelines; see condition 4.

4.6. Technical information

4.6.1. Seabed intervention

Locations have been identified where additional stabilisation of the pipelines may be required. Localised rock will be placed along a total length of less than 1 km in connection with crossing of the Nord Stream pipeline installation. There is one location where either rock may be placed or the pipelines will be trenched following laying, along a total length not exceeding 4 km.

The Danish Energy Agency's assessment of the intervention works is based on the assumption that the scope (quantity and location) of the planned sections will not change significantly. The Danish Energy Agency shall be notified of all planned changes.

Once the pipelines have been laid, Nord Steam 2 AG will prepare an assessment of the pipelines, including a post-lay survey. The assessment will be approved by the Danish Energy Agency, which may impose conditions regarding additional

seabed intervention works, and depth data from the post-lay survey shall be sent to the Danish Geodata Agency (condition 20).

4.6.2. Crossing of infrastructure

In the application, Nord Steam 2 AG has identified four cables (two active and two which have been taken out of operation) and two pipelines which are crossed by the Nord Steam 2 AG pipelines. It is anticipated that the two active cables will be crossed by laying concrete mattresses on the seabed and the two pipelines through rock placement, and possibly a pre-installed concrete base if necessary. In relation to planned infrastructure, Nord Stream 2 AG states in the application that the proposed Nord Stream 2 route crosses the future route of the Baltic Pipe, and that Nord Stream 2 AG will not prevent future crossings.

Nord Stream 2 AG shall ensure that an agreement is established with the owners of the infrastructure that is crossed (condition 5), and then submit a design and method for execution of the crossing and submit the crossing agreement for approval by the Danish Energy Agency prior to commencement of the crossing (condition 6). Furthermore, Nord Stream 2 AG shall make provision for any future pipelines and cables to cross the natural gas pipelines, see condition 7.

4.6.3. Content of hydrocarbons and composition of the gas

In connection with previously submitted applications, Nord Stream 2 AG has specified the composition of the gas that will be transported in the pipelines. It is of decisive importance for the permit that the gas composition remains within the design specifications for the pipelines. Any significant changes to the composition must be approved by the Danish Energy Agency, see condition 25.

4.6.4. Design

A verifying third party shall issue a “Certificate of Compliance” (Certificate of Conformance for Installation) documenting that the installations fulfil applicable legislation, standards and Nord Stream 2 AG’s technical specifications. The Danish Energy Agency requests that a “Certificate of Compliance” be submitted to the Danish Energy Agency when it becomes available, but before the date of commissioning of the pipeline installation (condition 31).

The management system during the project phase prior to commissioning shall ensure and document compliance with Danish legislation and requirements and rules pursuant to such legislation in both normal and critical situations, including that suitable preparedness has been established for unintended events (condition 22). Changes to the preparedness shall be submitted to the Danish Energy Agency, and Nord Stream 2 AG shall annually submit the current plan for the established emergency preparedness to the Danish Energy Agency. The timing of the annual submission shall be agreed with the Danish Energy Agency.

Before each of the pipelines is commissioned, an Inspection Release Note (Certificate of Conformity of the Pipeline) shall be obtained from the verifying third party, which confirms that the pipeline has been designed, fabricated, installed and pre-commissioned in accordance with the applicable technical, quality and safety requirements. The Inspection Release Note shall be submitted to the Danish Energy Agency as soon as it becomes available (condition 32).

The Danish Energy Agency expects Nord Stream 2 AG to audit the Nord Stream 2 project according to a fixed schedule and, in connection with this, wishes to point out that the Danish Energy Agency shall be entitled at any time to request an updated list of audits and independent third party verification, where this is required or chosen as documentation for execution of the project (condition 33).

4.6.5. Laying and commissioning of the pipelines

Pipe-laying

It is assumed that the pipe-laying will be carried out using a lay vessel with dynamic positioning (DP vessel), see condition 19, due to the greater risk of contact with UXO if a lay vessel with anchors is used.

Commissioning

Once the commissioning activities have been completed, but before the pipelines are put into operation, Nord Steam 2 AG shall submit the results thereof to the Danish Energy Agency, see condition 30.

Operation and maintenance

The Danish Energy Agency assumes that Nord Stream 2 AG will continually monitor the flow and composition of the natural gas being transported to ensure that these remains within the design specifications for the pipeline, and that operation is carried out within the design specifications of the pipelines. It is assumed that maintenance and operation will comply with and follow the manufacturer's instructions and be implemented in Nord Stream 2 AG´s management system for maintenance, so that it be made subject to supervision by the authorities (condition 33).

The management system for integrity for operation, inspection and maintenance of the pipeline shall be prepared and implemented before the pipelines are brought into operation. The inspection plan should state the frequency and scope of visual inspections (fittings, marine vegetation growth, integrity of all types of seabed intervention, etc.) using a ROV, acoustic investigations, etc. with a view to monitoring the condition of both the pipelines and the seabed (condition 23).

The Danish Energy Agency notes that operation, inspection and maintenance must be re-assessed using a risk-based approach based on documented observations of the condition of the pipelines and the actual operating conditions of the pipelines.

Nord Stream 2 AG shall prepare a monitoring programme for inspection and maintenance for the operational phase. The monitoring programme shall encompass monitoring of the safety aspects. The monitoring programme must be approved by the Danish Energy Agency before the pipeline can be put into operation (condition 26).

4.6.6. Decommissioning

In the application, Nord Stream 2 AG states that the preferred option for decommissioning is to leave the pipelines in situ on the seabed. Nord Steam 2 AG also notes that decommissioning will take place in accordance with the applicable rules and standards at the time of decommissioning.

The Danish Energy Agency notes that the complete or partial decommissioning of the Nord Stream 2 pipelines in Danish waters will require the approval of the relevant Danish authorities and that at the present time it should be assumed that decommissioning will entail removal and complete clean-up, with the least possible intervention and impact on the marine environment (condition 34).

4.7. Safety and environment

4.7.1. Risk assessment

Management system for the design and installation phase

Before the pipelines may be brought into use, Nord Stream 2 AG shall submit documentation for a management system for the operation, inspection and maintenance of the pipelines. The management system shall ensure that operation and condition are regularly monitored on an ongoing basis with a view to ensuring that the integrity of the pipelines is maintained. The management system shall be re-assessed using a risk-based approach based on observations of the condition of the pipelines and the operating conditions of the pipelines (condition 23).

4.7.2. Route selection

The Danish Energy Agency has considered two applications: one for a route northwest of Bornholm and one southeast of Bornholm. Both routes are situated on the continental shelf.

On the basis of the environmental impact reports and the submitted consultation responses for the route southeast of Bornholm on the continental shelf and the route northwest of Bornholm on the continental shelf, amongst other things, the Danish Energy Agency has concluded that the route passing southeast of Bornholm is preferable to that passing northwest of Bornholm. This conclusion is particularly based on the impact on shipping in Bornholms Gat, which is a traffic separation system (TSS) with a very high traffic intensity, and the possible impact on the basis for designation of the Rønne Banke/Adler Grund Natura 2000 site. It should be noted that, if there is a reasonable alternative which does not pass through the Natura 2000 site, this route must be adopted unless other reasons are so compelling that a route through a Natura 2000 site is the only possibility. It has

therefore been concluded that the southeastern route on the continental shelf, for which a permit has been granted, is a reasonable alternative. Against this background, a permit is hereby issued for the NSP2 / NSP2 V1 route southeast of Bornholm on the continental shelf. See also Appendix 4.

The application for Nord Stream 2's northwestern route on the continental shelf is suspended with the issuing of this permit, and shall lapse when Nord Stream 2 AG commences laying of pipelines and related activities covered by the permit; see condition 2.

Nord Stream 2 AG has applied for two route variants southeast of Bornholm on the continental shelf. The company considers the safety-related risks for both route variants NSP2 / NSP2 V1 and NSP2 / NSP2 V2 to be acceptable and to have been reduced according to the ALARP principle to as low a level as reasonably practicable. The company also considers that the two route variants NSP2 / NSP2 V1 and NSP2 / NSP2 V2 are two equivalent alternatives, and that the Danish Energy Agency can decide whether a permit should be issued for the construction of either NSP2 / NSP2 V1 or NSP2 / NSP2 V2, once the environmental process has been concluded.

Based on information from Danish Defence concerning the impacts associated with route variant NSP2 / NSP2 V1 and NSP2 / NSP2 V2 in relation to chemical and conventional munitions (see section 4.7.7), permission is solely granted through the present permit to establish the pipelines for NSP2 / NSP2 V1 (condition 1).

4.7.3. Shipping safety

The Danish Maritime Authority has stated that they have no further remarks to make regarding the environmental impact report for the Nord Stream 2 route variants southeast of Bornholm.

The Danish Maritime Authority refers to Executive Order No. 1351 of 5 December 2013 on safety of navigation in connection with engineering works and other activities, etc. in Danish waters, and the assessment form 'Assessment of navigation safety in connection with works at sea'.

The Danish Energy Agency notes that Nord Stream 2 AG shall comply with the requirements established by the Danish Maritime Authority in connection with the execution, operation and decommissioning of the project (condition 14).

Prior to the public consultation process in connection with the consultation regarding the draft environmental impact report, the Danish Maritime Authority referred in its consultation response to its previous statement concerning the EIA for the route southeast of Bornholm in the territorial waters and on the continental shelf. Here, the Danish Maritime Authority states that although they consider all routes to be possible routes from a navigation safety perspective, they believe

there would be a need for more comprehensive risk analyses and mitigation measures (during both construction and operation) in the case of the route north of Bornholm than would be the case if routes south of Bornholm were chosen.

4.7.4. Fisheries

In its consultation response to Denmark, the Swedish Agency for Marine and Water Management stated that they believe that a condition should be incorporated in the Danish permit for the Nord Stream 2 pipelines which prohibits activities associated with laying during July or August, when cod fishing is prohibited in the Bornholm Basin out of consideration for the spawning period of Baltic Sea cod.

In connection with the consideration of previous applications from Nord Stream 2 AG, the Swedish Agency for Marine and Water Management submitted the same remarks to the Danish Energy Agency, where the Danish Energy Agency sent the Swedish consultation response to the Danish Fisheries Agency and the Danish Environmental Protection Agency for comment. The consultation response from the Danish Fisheries Agency states that the possibility that the construction works and associated noise, changes in water currents, etc. could have some negative impact on the spawning cod cannot be excluded. For this reason, the Danish Fisheries Agency supports Sweden's request for a condition concerning time restrictions on construction activities in July and August in Bornholm Basin in relation to the cod spawning period in a permit for construction of the Danish part of the Nord Stream 2 pipelines. As the route through the Bornholm Basin has not changed since the Danish Fisheries Agency and the Danish Environmental Protection Agency were consulted, the Danish Energy Agency concludes that the Danish Fisheries Agency's consultation response remains relevant.

For this reason, Nord Stream 2 AG shall, when planning the construction works, strive to avoid pipe-laying in the restriction zone for fisheries, which is known as the Bornholm Basin during the period July to August when cod spawn. No intervention works may be carried out during the aforementioned period; see (condition 11).

<u>Agreement between Danish Fishermen PO and Nord Stream 2 AG</u>

According to the application, an agreement between Danish Fishermen PO, Bornholms og Christiansøs Fiskeriforening and Nord Stream 2 AG is expected to be signed prior to construction.

The agreement must be sent to the Danish Energy Agency as soon as it becomes available, though no later than before laying of the pipelines is commenced; see condition 13.

4.7.5. Diving operations

The Danish Maritime Authority has stated that they have no further remarks to make regarding the environmental impact report for the Nord Stream 2 route variants southeast of Bornholm.

The Danish Maritime Authority refers to Executive Order No. 1351 of 5 December 2013 on safety of navigation in connection with engineering works and other activities, etc. in Danish waters, and the assessment form "Assessment of navigation safety in connection with works at sea".

The Danish Energy Agency notes that Nord Stream 2 AG shall comply with the requirements established by the Danish Maritime Authority in connection with the execution, operation and decommissioning of the project (condition 14).

4.7.6. Protection zone and safety zone

The Danish Maritime Authority has stated that they have no further remarks to make regarding the environmental impact report for the Nord Stream 2 route variants southeast of Bornholm.

The Danish Maritime Authority refers to Executive Order No. 1351 of 5 December 2013 on safety of navigation in connection with engineering works and other activities, etc. in Danish waters, and the assessment form "Assessment of navigation safety in connection with works at sea".

The Danish Energy Agency notes that Nord Stream 2 AG shall comply with the requirements established by the Danish Maritime Authority in connection with the execution, operation and decommissioning of the project (condition 14).

4.7.7. Munitions and military practice areas

The Danish Ministry of Defence Estate Agency states that they have no remarks regarding the environmental impact report, but notes that the advice and instructions issued by Danish Defence in connection with previous correspondence and meetings still applies.

Danish Defence has informed the Danish Energy Agency of the impacts that construction of the pipelines along the route variants NSP2 / NSP2 V1 and NSP2 / NSP2 V2 respectively could have in relation to chemical and conventional munitions, as well as military practice areas.

<u>Chemical and conventional munitions</u>

Danish Defence notes that route variant NSP2 / NSP2 V1 passes through an area east of Bornholm, where work on the seabed is not advised due to the risk of dumped chemical warfare agents being encountered. It is also noted that analyses carried out for this route variant show that the concentration of chemical warfare agents is greater than along other route variants. The working conditions for the establishment of preparedness for the handling of dumped chemical munitions shall be agreed with Naval Command before work is commenced in the restriction area. It is noted that Nord Stream 2 AG is aware of precautions for the identification and handling of remains of munitions or objects which could be dangerous (UXO).

Danish Defence has previously informed the Danish Energy Agency that it is Danish Defence's general experience that chemical munitions dumped following the First and Second World Wars and as recently as the 1960s which are encountered are best left in situ. Any risk of humans coming into contact with dumped chemical munitions during work on and in the seabed should be eliminated.

Danish Defence has since provided the Danish Energy Agency with more information on the impacts associated with the two route variants:

Route variant NSP2 / NSP2 V1 passes through an area east of Bornholm, where work on the seabed is not advised due to the risk of dumped chemical warfare agents. However, route variant NPS2 V2 lies outside the area where trawling is not advised, and also passes close to an 800 kg UXO. Route variant NPS2 V2 is thus associated with a greater risk of trawling exposing the pipeline to an 800 kg UXO compared with route variant NPS2 V1.

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Military practice areas

Danish Defence notes that activities are planned within the Ministry of Defence's firing areas. Access to the areas is prohibited in connection with firing; see BEK No. 64 of 30 January 2002. It is recommended that no activities be planned which could limit Danish Defence’s ability to train and practise in the areas. Information concerning specific firing exercises can be obtained via Danish Defence’s Operations Centre.

According to a consultation response from Bundesamt für Infrastruktur, Umweltschutz und Dienstleistungen der Bundeswehr, on behalf of NATO, the German Navy administers nine contiguous NATO submarine diving areas east of Bornholm, which are situated in the Danish, Swedish and Polish exclusive economic zones. Route variant NSP2 / NSP2 V2 passes through three submarine areas, whilst NSP2 / NSP2 V1 only passes through two submarine areas and the western peripheral part of the areas. Bundesamt für Infrastruktur, Umweltschutz und Dienstleistungen der Bundeswehr thus do not believe that the two route variants impact on the so-called "safe-bottoming areas", and therefore consider the construction and operation of the pipelines to generally be acceptable, and have on this basis no objections to either route variant NSP2 / NSP2 V1 or NSP2 / NSP2 V2. However, the German military note that, as the impact of NSP2 / NSP2 V1 on the submarine areas is even less significant, this variant should be preferred based on the views of the German armed forces.

The Danish Energy Agency's conclusions

Based on the consultation responses from Danish Defence concerning the impacts of route variants NSP2 / NSP2 V1 and NSP2 / NSP2 V2 respectively in relation to

chemical and conventional munitions, the Danish Energy Agency considers the most appropriate route from a safety perspective to be NSP2 / NSP2 V1.
In its assessment, the Danish Energy Agency placed particular emphasis on the following circumstances, where the first circumstance is accorded particular importance:

- NSP2 / NSP2 V1 is situated further away from the bottom mines, which were encountered across the NSP2 / NSP2 V2 route corridor, than NSP2 / NSP2 V2. If the pipeline is exposed to this, the bottom mines may compromise the integrity of the pipelines,
- The probability of the pipelines being exposed to trawling is less due to the existence of the zone where bottom trawling, anchoring and seabed intervention is not advised due to the risk of dumped chemical warfare agents; hence the risk of large UXOs being caught by trawlers and moved closer to a gas pipeline is reduced.
- Nord Stream 2 is aware of precautions regarding the identification and handling remains of munitions or objects which could be dangerous (UXO). This is important in the waters around Bornholm, but it is particularly important in relation to NSP2 / NSP2 V1, as the route passes through the area where bottom trawling, anchoring and seabed intervention is not advised due to the risk of dumped chemical warfare agents.
- DP vessels (dynamically positioned vessels) are used, which reduces the risk of encountering any UXOs on the seabed, including when the route passes through the area where bottom trawling, anchoring and seabed intervention is not advised due to the risk of dumped chemical warfare agents, and
- No seabed interventions are planned through the restriction zone, reducing the possibility of encounters with any UXOs.

Based on information from Danish Defence concerning the impacts associated with route variant NSP2 / NSP2 V1 and NSP2 / NSP2 V2 in relation to chemical and conventional munitions, permission is solely granted through the present permit to establish the pipelines for the NSP2 / NSP2 V1 route (condition 1).

Nord Stream 2 AG shall comply with Danish Defence's requirements and guidelines; see condition 15 stipulated in the permit.

4.7.8. Environment

The Danish Environmental Protection Agency has not submitted a consultation response during the public consultation.

Prior to the public consultation in connection with the consultation regarding the draft environment impact report, the Danish Environmental Protection Agency recommended in its consultation response that it can be ensured in any permit issued for the project that the extent of physical loss and physical disturbances to the seabed's overarching habitat types will be assessed, e.g. through the preparation of relevant documentation.

The Danish Environmental Protection Agency has since stated that the extent of physical loss and physical disturbance of the seabed's overarching habitat types must be evaluated, documented and reported to the Danish Environmental Protection Agency. Where possible, the extent of physical loss and physical disturbance shall be determined on the basis of the overarching habitat types defined in the Marine Strategy Framework Directive. Reporting of the extent of physical loss and physical disturbance of the seabed's overarching habitat types should take place no later than six months after completion of the construction works.

For this reason, Nord Stream 2 AG shall document the extent of physical loss, and physical disturbance of the seabed's overarching habitat types shall be evaluated, documented and reported to the Danish Environmental Protection Agency. Where possible, the extent of physical loss and physical disturbance shall be determined on the basis of the overarching habitat types defined in the Marine Strategy Framework Directive. Reporting of the extent of physical loss and physical disturbance of the seabed's overarching habitat types should take place no later than six months after completion of the construction works, see condition 24.

Ballast water

In connection with previous consultations, the Danish Environmental Protection Agency has noted that, in relation to the provisions of the Ballast Water Convention, which entered into force on 8 September 2017, it must be noted that all ships in excess of 400 tonnes gross must have a "BW management plan" and a "BW record book". Ships must also comply with the discharge requirements of the Convention. In the Baltic Sea, this means that a ship can continue discharging untreated ballast water until the ship in question complies with the so-called D-2 requirements and has a ballast water treatment system installed. The timing of this is partly determined by the timing of the ship's renewal inspection (and the IOPP certificate). The Danish Environmental Protection Agency and the Danish Maritime Authority can provide more information on this if required.

Preparedness plan

The Danish Environmental Protection Agency has furthermore noted that a plan for discharges from the pipeline in accordance with Section 33 of Executive Order No. 1033 of 4 September 2017 pursuant to the Act on protection of the marine environment (the Marine Environment Act) and Executive Order No. 909 of 10 July 2015 on preparedness in connection with pollution of the marine environment from oil and gas installations, pipelines and other platforms (the Preparedness Executive Order) must be submitted to the Danish Environmental Protection Agency for approval before the pipelines are brought into operation.

The Danish Environmental Protection Agency has also drawn attention to the provisions concerning the immediate reporting of spills in connection with the

pipeline in Section 2 of Executive Order No 874 of 27 June 2016 on reporting pursuant to the Act on protection of the marine environment.

Nord Stream 2 AG shall follow the requirements established by the Danish Environmental Protection Agency in connection with the execution and operation of the project, see condition 16 in the permit.

Monitoring programmes

Nord Stream 2 AG shall prepare monitoring programmes for the construction and operating phase, which shall encompass the environmental conditions and be approved by the Danish Energy Agency, before laying of the pipelines is commenced and before the pipelines are put into operation respectively (conditions 18 and 27).

The results of the monitoring programmes, which solely concern environmental conditions, shall be made publicly available annually, but only after they have been approved by Naval Command (condition 29).

In their consultation response, Bundesamt für Infrastruktur, Umweltschutz und Dienstleistungen der Bundeswehr stated that, if the Danish authorities require Nord Stream 2 AG to publish the results of monitoring programmes concerning the environmental conditions during the construction and operating phase within NATO's submarine exercise areas, the results must not be published for security reasons in relation to NATO partners and friendly nations, unless mutual agreement can be reached with the German Navy concerning the content of the material that is to be published. It shall be ensured that security-relevant and sensitive military data concerning NATO and friendly nations shall not be published.

The Danish Energy Agency has presented the German consultation response to Naval Command, which stated that they support Germany’s demand that data from the NATO submarine exercise areas must not be published without the express consent of the German military. Naval Command proposes that data for approval concerning the practice areas in the Danish EEZ be disseminated to the German military via Naval Command prior to publication.

For this reason, it is assumed that Nord Stream 2 AG will submit the data acquired from the construction and operational phase in the military practice areas to Naval Command; see condition 28. Data from the NATO submarine exercise areas may not be published or shared with third parties without the permission of Naval Command.

Naval Command reserves the right to place an inspector onboard ships which are to carry out monitoring within the practice areas in the Danish EEZ.

Nord Stream 2 AG shall comply with Danish Defence's requirements and guidelines; see condition 15 stipulated in the permit.

Environmental monitoring stations

In its consultation response to Denmark, Poland has noted that there is a considerable risk of environmental monitoring station HBP133 being damaged as a result of construction and operation activities, as route alternative NSP2 / NSP2 V1 is situated close to the monitoring station.

Nord Stream 2 AG has informed the Danish Energy Agency that, before the construction phase commences, they will consult with relevant authorities and/or organisations which operate stations situated close to the pipeline route.

For this reason, Nord Stream 2 AG will consult with the relevant authorities and/or organisations that operate environmental monitoring stations close to the pipeline route prior to laying of the pipelines; see condition 12.

Invasive species

The Danish Energy Agency has noted that the company has stated that rock from quarries on land will be used where it is necessary to use rock to stabilise the pipelines or around cable and pipeline crossings. Materials for stabilising the pipeline shall not damage the flora and fauna of the Baltic Sea, e.g. by introducing invasive species in connection with rock placement; see condition 9.

4.7.9. Nature protection areas and Annex IV species

Nature protection areas

The Danish Energy Agency concurs with Nord Stream 2 AG's assessment that nature protection areas situated more than 20 km from the proposed route alternatives will not be affected by activities during the construction and operating phases.

On the basis of the materiality assessment submitted for the Natura 2000 site Adler Grund and Rønne Banke and the distance of more than 18 km from the route alternatives to the area, the Danish Energy Agency believes that, based on the requisite underlying scientific data, there is no evidence to indicate that the project will significantly impact on the basis for designation of the nature protection area 'Adler Grund and Rønne Banke'. The Danish Energy Agency therefore concludes that an impact assessment should not be carried out for the area; see Section 4(4) of the Offshore Impact Assessment Executive Order.

The Danish Energy Agency furthermore concurs with Nord Stream 2 AG's conclusion that there will be no cross-border impacts on protected areas in Poland and Sweden, as the distance to these areas is greater than 20 km and the areas are therefore outside the range of any impacts.

The Danish Energy Agency concurs with Nord Stream 2 AG's conclusion that impacts on German Natura 2000 sites will be temporary and of local and low intensity, and that there will be no significant impact on German Natura 2000 sites as a result of activities in the Danish sector. This is because the impact will be very localised in the area around the EEZ boundary, and because the distance between the construction works on the seabed in the Danish EEZ and the border with the German EEZ is at least 9 km, which is outside the range of any impacts of the Danish activities during the construction and operating phases.

Annex IV species

In previous consultations relating to the Nord Stream 2 project, the Danish Environmental Protection Agency has considered that rock placement will not have a significant impact on harbour porpoise if measures such as lookouts for animals close to the ship and possibly deterrent measures using pingers are used before the rock is placed in situ.

The Danish Environmental Protection Agency has since stated that there may be a lack of clarity regarding the use of pingers, as these are sometimes confused with seal scarers. However, seal scarers are much more powerful and must not be used. For this reason, the Danish Environmental Protection Agency proposes that a more detailed specification of pingers be approved by the Danish Energy Agency before rock placement is carried out.

Prior to rock placement, a lookout for animals shall be kept from the ship and deterrent measures shall be implemented using "pingers" in order to protect marine mammals; see condition 10. A more detailed specification of pingers shall be approved by the Danish Energy Agency prior to the placement of rock.

On the basis of the submitted assessment and the assumption that the above conditions are met, the Danish Energy Agency concludes that, during the construction phase and operational phase, the project will not intentionally disturb the animal species listed in Annex IV(a) to the Habitats Directive (meaning in the case of this particular project, harbour porpoise) in their natural distribution area, particularly during periods when the animals are breeding, rearing, overwintering or migrating, or damage or destroy breeding or staging areas in the natural distribution area of animal species listed in Annex IV(a); see Section 8 (1) and (2) of the Offshore Impact Assessment Executive Order..

4.7.10. Cultural Heritage

The Agency for Culture and Palaces notes that cultural heritage is described in the submitted consultation documents in an excellent way. In the same way, the consultation documents also present a good review of how the cultural heritage will be located, investigated and protected.

The Agency for Culture and Palaces furthermore notes that Nord Stream 2 AG shall ensure that the Viking Ship Museum in Roskilde is given the necessary opportunity to carry out a geophysical review and check seismic data, carry out marine archaeological preliminary investigations and any actual marine archaeological excavations/investigations/recovery along and adjacent to the alignment. Finally, the Agency for Culture and Palaces will adopt a stance on what is done, including giving written approval of the release of cultural heritage.

The Agency for Culture and Palaces has since informed the Danish Energy Agency that the Viking Ship Museum's investigations/field investigations for all three delineations have been completed and reported. Similarly, the results of the field investigations and the reports have been considered/approved by the Agency for Culture and Palaces. In relation to the cultural historical aspects of Danish waters, all three alignments are hereafter concluded, and Nord Stream 2 can commence construction and construction works within the approved alignments without any further measures being necessary.

Nord Stream 2 AG shall comply with the Agency for Culture and Palaces' requirements and guidelines; see condition 17 in the permit.

Appendix 1: Address list of central Danish authorities involved

Arbejdstilsynet (Danish Working Environment Authority) Landskronagade 33 2100 Kbh. Ø	Energistyrelsen (Danish Energy Agency) Carsten Niebuhrs Gade 43 1577 Copenhagen V
Danish Fisheries Agency (Danish Directorate of Fisheries) Nyropsgade 30 1780 Copenhagen V	Forsvarsministeriets Ejendomsstyrelse (Danish Ministry of Defence Estate Agency) Arsenalvej 55 9800 Hjørring
Geodatastyrelsen (Danish Geodata Agency) Lindholm Brygge 31 9400 Nørresundby Denmark Denmark	Miljøstyrelsen (Danish Environmental Protection Agency) Tolderlundsvej 5 5000 Odense C
Slots- og Kulturstyrelsen (Agency for Culture and Palaces) Fejøgade 1, 2. sal DK-4800 Nykøbing F	Søfartsstyrelsen (Danish Maritime Authority) Casper Brandts Plads 9 4220 Korsør
Søværnskommandoen Forsvarskommandoen (Naval Command Defence Command Denmark) Herningvej 30 DK-7470 Karup J	

Appendix 2: Summary of National Consultation Responses

Appendix 3: Summary of International Consultation Responses (the Espoo Convention)

Appendix 4: Assessment of NW route/SE route on the continental shelf

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