



To the Point of Contact of the Espoo Convention in Sweden
Mr. Richard KRISTOFFERSSON
Policy Implementation Department
Swedish Environmental Protection Agency
SE-106 48 STOCKHOLM
Sweden

Office/Department
Centre for Subsoil
Resources and Risk
Preparedness

Date
2. September 2019

J no. 2019 - 86445

/ksc

Consultation in accordance with the Espoo Convention on Environmental Impact Assessment in a Transboundary context for the Nord Stream 2 gas pipeline project – South-Eastern route on the continental shelf in Denmark

Your letter of July 15, 2019 (NV-03441-13)

Thank you very much for your comments regarding the consultation May 8, 2019 according to the Espoo convention art. 4 and 5 on the Nord Stream 2 gas pipeline project – South-Eastern route on the continental shelf in Denmark.

We have carefully reviewed your comments and have also – according to our understanding of the procedures – given Nord Stream 2 AG (as developer) an opportunity to comment on your statements.

The Danish Energy Agency has prepared a summary of your comments and a summary of the answers from the Nord Stream 2 AG (as developer) regarding the issues in your letter that is of relevance to a transboundary environmental impact into Sweden caused by an activity taking place in relation to the Danish section of the pipeline project. The summary, containing both comments and answers, can be found in appendix 1. Each section in the appendix is followed by a comment from the Danish Energy Agency. Two comments (no. 5 and 7 in annex 1) are covered in the letter Denmark forwarded to Sweden the 9 of February 2018 and the 22 of February 2019 and there is no additional specific comment concerning the South-eastern route on the Danish continental shelf which needs an additional response. The letters from the 9 of February 2018 and the 22 of February 2019 are attached to this letter.

The Danish Energy Agency is at present finalising the environmental and safety evaluation of the Nord Stream 2 pipeline project – South-Eastern route on the continental shelf in Denmark. Comments received in the Espoo-procedure will be taken into consideration in the evaluation. Should you have further comments/questions concerning the South-Eastern route on the continental shelf in Denmark, then please do not hesitate to contact us as soon as possible and not later than the **25 of September 2019**.

Danish Energy Agency
Carsten Niebuhrs Gade 43
DK-1577 Copenhagen V

Niels Bohrs Vej 8
DK-6700 Esbjerg

P: +45 3392 6700
E: ens@ens.dk

www.ens.dk

Any further comments should be sent by e-mail to the Danish Ministry of Environment (mst@ens.dk) and Karin Annette Pedersen (kaape@mst.dk).

Further information about the project can be found on the Danish Energy Agency's website:

<https://ens.dk/ansvarsomraader/olie-gas/offentliggoerelser-om-olie-gas>

Best regards

Katja Scharmman

Appendix 1

1. Comments from Bromölla Municipality

Effect on halocline and transport of sediment contaminants

Statement

Page 9 - The halocline is expected to keep sediment and any sediment contaminants in place during the intervention works.

Comment: An “expectation” is vague. A more detailed description is needed here with reference to studies of similar intervention works, where it is been possible to demonstrate significantly that the halocline is actually capable of keeping “sediment contaminants in place” under the effects of different weather conditions and seasons.

Summary of the answer of Nord Stream 2 AG

The suspension and subsequent transport of seabed sediments (and any associated contaminations) was evaluated in the EIA based on environmental modelling. Input to the model included the forecasted sediment spill caused by construction related seabed intervention works, sediment conditions in the specific area and hydrographic data. The hydrographic input is based on hind cast analyses of the hydrographic regime for representative construction periods, i.e., conditions that have occurred in the past. The representative design periods were chosen such that they would be typical of different yearly current and stratification conditions:

- Summer (calm conditions / weak currents and high stratification)
- Normal conditions (average currents and stratification for an entire year)
- Winter (rough conditions / strong currents and low stratification)

Therefore, the effect to the degree of stratification (i.e., the presence and extent of haloclines and thermoclines) was taken into account in the modelling of sediment spread to support the conclusion that the halocline will prevent seabed sediments and any associated contaminants to spread upwards into the water column during construction.

It should additionally be noted that validation of the modelling of sediment spread from inter-vention works was carried out in Danish waters in connection with the construction of the Nord Stream Pipeline (NSP) in 2011 and 2012. The results from both years were similar and showed that the assumptions and outcomes of the sediment spill modelling carried out as part of the Danish EIA were conservative. The actual increase sediment concentrations were lower than assessed. Similar monitoring carried out in Swedish waters yielded similar results; namely, that the actual increases in sediment concentrations were lower than assessed.

Answer from the Danish Energy Agency

The Danish Energy Agency has no further comments on this topic.

Discharge of aluminium and cadmium in spawning grounds and nursery areas

Statement

Page 9. Aluminium and cadmium will be discharged into the water around the gas pipeline (release from sacrificial anodes for rust protection).

Questions: Has account been taken of the total service life of the pipes and their local long-term effects in the assessments concerning the “insignificance” of aluminium and cadmium discharges? How are aluminium and cadmium discharges inside the spawning grounds and nursery areas viewed?

Summary of the answer of Nord Stream 2 AG

The impact from the release of metals is assessed in the EIA to be low and local over the entire operational life of the pipelines. Elevated metal concentrations (above PNEC values) are expected only in the very near vicinity (i.e., within a few metres) of the pipelines. Further-more, the amounts metals released from the anodes over the lifetime of the project will be insignificant compared with the existing rate of waterborne inflow of metals to the area. Therefore, the release of metals is assessed to have a negligible impact in Danish waters.

Given that the impacts are assessed only to be measurable in the water column in the immediate vicinity of the pipelines, it is considered unlikely that elevated concentrations of metals will be detectable in the water mass where cod and sprat spawning may take place, i.e. the reproductive layer.

Monitoring of potential impacts from the release of metals from anodes associated with the Nord Stream Pipeline was undertaken in Finnish waters in August 2012 (i.e., within the first year of operation). The results of monitoring showed that the metal concentrations were generally of the same order of magnitude between the sampling points and the reference station, and the PNECs for zinc and cadmium were not exceeded.

Answer from the Danish Energy Agency

The Danish Energy Agency has no further comments on this topic.

Chemical warfare munitions

Statement

Page 9. The description of how chemical munitions are dealt with needs to be developed: It is briefly mentioned that chemical munitions are “not expected to

be soluble in water”. Different scenarios are needed here with facts about how chemical munitions – whether water-soluble or not – are to be dealt with in intervention works of the type concerned, where there is a risk of the chemical munitions being dispersed for example in an important spawning ground for cod.

Summary of the answer of Nord Stream 2 AG

The EIA presents information on chemical warfare agents (CWA) in sediment on the basis of survey results from surface sediment sampling along the NSP2 route, including route variants V1 and V2. These surveys show which types of CWA and CWA degradation products are present along the route, and at what concentrations. The available data on CWA in the Baltic Sea suggest that they are poorly dissolvable in water and as such exist mainly as particulate material that will rapidly re-settle, if disturbed, on the seabed; consequently, within the immediate vicinity of the pipelines.

Furthermore, given that modelling has shown that the majority of released sediments and contaminants will remain in the lower 10 m of the water column, impacts will be limited to the deep, oxygen-depleted bottom water where fish and fish eggs/larvae are not present. Re-lease of sediments into water column is mainly associated with seabed intervention works such as rock placement and/or post-lay trenching (not planned for SE route). Therefore, the EIA concludes that there is no risk for contaminants associated with the seabed sediments to be dispersed over a wide area.

Answer from the Danish Energy Agency

The Danish Energy Agency has no further comments on this topic.

Important spawning ground for cod

Statement

The proposed NSP2 route runs across an important spawning ground for cod. The conclusion has been that based on the described physical disturbances (pages 10-11), the release of sediment, contaminants in the water column and underwater noise “are not expected to have any impact on cod spawning”.

Comment: There is a need to set a requirement that gas pipeline intervention works are not allowed to take place between 1 May and 31 October within the area that is protected from fishing. Only after the roe has hatched can it be said that the “fish can swim away” from the disturbances due to the intervention works.

Summary of the answer of Nord Stream 2 AG

No intervention works are planned in the spawning areas for cod. Assessment of impacts on fish, including impacts on cod spawning, has been performed in both the Swedish and Danish Environmental Impact Assessments (EIA). The

assessment also includes the life cycle of fish in the marine environment, i.e. eggs, larvae and adult fish as applicable. Particular consideration has been given to the section of the proposed NSP2 route that goes through the cod spawning area in the Bornholm Deep. The EIA has shown that neither release of sediments, contaminants into water column nor underwater noise or water movements from the thrusters will have a significant impact on fish and fish reproduction.

Based on the above, the EIA's conclude that overall cod reproduction in the spawning area will not be impacted by NSP2.

Answer from the Danish Energy Agency

The Danish Energy Agency can inform you that a permit will most likely contain a condition where the developer in planning the construction works, the company must attempt to avoid pipelaying in what is known as the Bornholm Deep during the period from July to August. No intervention works may be carried out during the period mentioned.

Decommissioning Statement

NSP2 is designed to operate for at least 50 years. The preferred option for decommissioning of NSP2 structures at sea can be expected to be to "leave them where they are".

Comment: The cost – of decommissioning, removal of installation and restoration of seabed – needs to be borne by the producer, in a large-scale "producer responsibility". In modern strategic marine planning, the Baltic Sea should not be regarded as an infinite waste tip. Producer responsibility of this magnitude needs to be covered by the responsibility of the gas pipeline owner for the whole life cycle of the installation, including disassembly and recovery of the pipeline materials.

Summary of the answer of Nord Stream 2 AG

The decommissioning programme will be developed in consultation with the relevant authorities at a later stage, when the pipelines near the end of their operational life to ensure that it takes into account the relevant legislation and guidance, good international industry practice as well as technical advancements and knowledge. Ultimately, the same criteria that guided planning and construction of Nord Stream 2, including environmental, socio-economic, technical and safety considerations will guide the development of the preferred decommissioning method. Regardless of the method chosen, Nord Stream 2 will comply with all applicable legal requirements for decommissioning at that time.

Answer from the Danish Energy Agency

It should be noted, that the permit will contain a condition, that well in advance of the expected decommissioning of the pipelines, the company must prepare a plan outlining its decommissioning and present the plan to the authorities.

The Danish Energy Agency may, after prior discussions with the company, demand that the company remove the pipeline installation included in this approval from the seabed completely or in part, within a specified time limit when the pipeline is no longer in use.

2. Comments from Swedish Agency for Marine and Water Management (SWAM)

Impacts on cod

Statement

The Agency is however concerned about how the cod stock can be adversely affected by including interference that sound and water streams that can arise both above and below the halocline. With reference to Sweden and Denmark common stock of fish and cod exposure the Agency considers that there is a need for time restrictions for the construction work during the main spawning period for cod which is between July and August.

Summary of the answer of Nord Stream 2 AG

No intervention works are planned in the spawning areas for cod. Assessment of impacts on fish, including impacts on cod spawning, has been performed in both the Swedish and Danish Environmental Impact Assessments (EIA). The assessment also includes the life cycle of fish in the marine environment, i.e. eggs, larvae and adult fish as applicable. Particular consideration has been given to the section of the proposed NSP2 route that goes through the cod spawning area in the Bornholm Deep. The EIA has shown that neither release of sediments, contaminants into water column nor underwater noise or water movements from the thrusters will have a significant impact on fish and fish reproduction.

Based on the above, the EIA's conclude that overall cod reproduction in the spawning area will not be impacted by NSP2.

Answer from the Danish Energy Agency

The Danish Energy Agency can inform you that a permit will most likely contain a condition where the developer in planning the construction works, the company must attempt to avoid pipelaying in what is known as the Bornholm Deep during the period from July to August. No intervention works may be carried out during the period mentioned.

3. Comments from Swedish Board of Agriculture

Statement

The Swedish Board of Agriculture considers that the environmental impact assessment must be clarified and supplemented in certain respects. Clarifications must be made both regarding which types of fisheries are taken into account in the impact assessment and regarding the ability of the pipeline to withstand the impact of interaction with fishing gear.

In addition, the impact assessment must be supplemented by who bears legal and financial responsibility in the event of accidents, incidents and damage (the issue of liability) and by an economic impact assessment for the fisheries industry of pipelines now being dispersed around Bornholm instead of running together with existing pipelines south of Bornholm, as the original proposal signified.

The Swedish Board of Agriculture also notes the absence of a proportionality assessment between, on the one hand, the choice of laying the pipeline on top of the seabed instead of burying it and, on the other, the risks and effects for pelagic fisheries in particular, resulting in changed catch patterns and landings.

Summary of the answer of Nord Stream 2 AG

All types of fishery have been considered in the EIA. However, most attention is given to bottom trawling (pelagic fishery), as this type of fishery has the greatest potential to be impacted by Nord Stream 2. Obstruction-related impacts will essentially be limited to bottom trawling activities, as the use of gear such as gill nets, pound nets, seine nets and longlines will allow for fishery in the area without the risk of incidence or obstruction. Pelagic fishery gear can over-trawl the pipelines. Trawling over the pipelines with pelagic fishing gear poses no threat to the pipeline or noteworthy obstacle for the pelagic fishing vessels or their trawl gear.

A study concerning bottom trawling in the Swedish EEZ with the purpose to map commercial fisheries above and around the existing Nord Stream pipelines, before and after the construction of the pipelines, has shown that no changes in bottom trawling activities as a result of the pipeline system could be seen. NSP2 is designed in the same way as the already existing Nord Stream pipeline, and both pipeline systems are confirmed to be overtrawlable. Avoiding the pipeline route is not necessary. The experience from eight years of operation of the Nord Stream pipeline show that fishermen and the pipeline can co-exist and the pipeline does not have an impact on the fishermen's livelihood. There have been no incidents and no fishery gear has been reported to be damaged or lost due to interaction with the pipeline.

As for the Nord Stream Pipeline, Nord Stream 2 AG will apply for an exemption from the ban on the use of bottom trawling equipment in protection zones to remove the fishery restriction enforced around pipelines in Danish waters during operation of the pipeline to allow fishing activities during the operation of the pipeline.

Answer from the Danish Energy Agency

Concerning the comment that who bears the responsibility in the event of accidents, incidents and damage concerning it should be noted that the permit will contain a condition where Nord Stream 2 AG shall take out insurance for compensation of damage caused by the activities exercised in accordance with the permit, even if the damage is incidental.

4. Comments from County Administrative Board Kalmar

Spawning grounds for cod

Statement

The second comment concerns spawning grounds for cod, the county administrative board emphasising that it is important that all tests in spawning grounds for cod stocks take account of the problems faced by cod in the Baltic Sea.

Answer from the Danish Energy Agency

The Danish Energy Agency can inform you that a permit will most likely contain a condition where the developer in planning the construction works, the company must attempt to avoid pipelaying in what is known as the Bornholm Deep during the period from July to August. No intervention works may be carried out during the period mentioned.

Harbour porpoise

Statement

The county administrative board points out that the Baltic harbour porpoise may be affected during the construction phase, and that intervention works should be avoided between July and August.

Summary of the answer of Nord Stream 2 AG

Baltic Sea harbour porpoises are known to occur in Danish waters but are not known to breed in the Danish sector of the Baltic Sea. The recent SAMBAH project showed that the Baltic Sea population of harbour porpoise has the most important breeding area in Swedish waters, near the Midsjö banks where they breed in summer. The proposed NSP2 route thus does not cross important breeding areas or known migration routes for marine mammals in Danish

waters. Overall, it is assessed as highly unlikely that the short-term nature of Nord Stream 2 construction activities in Danish waters at any location would affect migration or breeding patterns for marine mammals.

It has been shown that neither release of sediments and contaminants into water column nor underwater noise will have a significant impact on marine mammals or their long-term behavior.

In addition, according to the construction schedule, as presented in the EIA, pipe-lay in Danish waters is planned to be undertaken in Q1 and Q2 2020, with post-lay intervention works (if deemed necessary) occurring during Q2 2020 outside the summer breeding period.

Answer from the Danish Energy Agency

The Danish Energy Agency has no further comments on this topic.

5. Comments from County Administrative Board Skåne

Statement

The county administrative board has previously presented its views regarding harbour porpoise, fisheries and cod spawning. The county administrative board maintains that these are the most important issues from the point of view of Skåne. The county administrative board has nothing further to add to the views previously presented under the Espoo consultation.

Summary of the answer of Nord Stream 2 AG

The statements was been covered by the answers given in connection with the South-Eastern route in Danish territorial waters and the North-Western route and there is no additional South-eastern specific comment which needs an additional response.

Answer from the Danish Energy Agency

It is noted that the comments from the County Administrative Board Skåne has been answered in item 3 in the letter forwarded to Sweden the 9 February 2018 and in item 8 in the letter forwarded by Denmark to Sweden the 22 of February 2019. There is no additional specific comment related to the South-eastern route on the continental shelf which needs an additional response. Both letters are attached to this letter.

6. Comments from Geological Survey of Sweden (SGU)

Sediment suspension

Statement

SGU wishes to state that, during the construction and laying of the gas pipeline, including the work to eliminate munitions through explosions, there is a risk that the sediments in these basins will be disturbed and become suspended and subsequently dispersed across administrative boundaries. This suspended material, which may also contain anthropogenic environmental toxins which are now bound to the sediment, may be remobilised and transported, and then subsequently accumulated in other areas, including the seabeds of other nations. SGU considers that the greatest caution should be exercised and that possible measures should be taken to minimise dispersal of the contaminated sediments. SGU believes that such an approach would limit these environmental impact factors in terms of both time and space.

Summary of the answer of Nord Stream 2 AG

The South-Eastern route, including the two variants, has been designed based on extensive and detailed survey. The routes are designed such that there is no planned clearance of munitions through in situ detonation or interaction with chemical munitions.

In the very unlikely scenario that a munition is encountered during the construction of the pipeline, then a chance find procedure will be implemented whereby the first action is to avoid i.e. re-route to locate the pipeline away from the munition.

NSP2 has implemented measures to minimise the dispersal of potentially contaminated sediments through detailed survey to engineer the route, use of a dynamically position pipelay vessel (no anchors disturbing the seabed) and use of a fall-pipe vessel for rock placement.

Further as described in the transboundary impact assessment in the EIA (section 14), only negligible local impacts on the seabed and the marine benthos in the Swedish EEZ are expected as a result of the release of sediments and sedimentation during pipe-lay in Denmark, close to the EEZ border between Denmark and Sweden. No seabed interventions are planned in the area close to the Swedish EEZ, and as illustrated by the sediment spread modelling results, pipe-lay will result in negligible sediment spread. The impacts are assessed to be highly localised at the EEZ border and of negligible significance.

Answer from the Danish Energy Agency

The Danish Energy Agency has no further comments on this topic.

7. Comments from the geotechnical Institute (SGI)

Statement

Based on the geotechnical viewpoints, we believe that the gas pipeline project can mainly have local consequences during the construction phase.

According to the modelling performed, sediment will be disturbed during the construction phase, but settle again after a few hours.

The halocline will also prevent pollutants from spreading to the surface water. The conclusion therefore is that impact will be temporary and local around the pipeline. The documents also state that rock dumping work is planned at five different locations (a total of 11.3 km) to provide support and cover for parts of the pipeline. But SGI can find no information on whether the rock dumping is included in the modelling, and how it will affect the spread of polluting sediment. SGI also wants information on how much stone will be used. Large volumes of rock dumping can cause the sediment to be compressed, forcing out pore water (with pollution in the loose phase), causing the spread of pollutants as a result. The SGI would like to see the reasoning behind this.

Summary of the answer of Nord Stream 2 AG

The statement was covered by the answer given in connection with the North-Western route and there is no additional South-eastern specific comment which needs an additional response.

Answer from the Danish Energy Agency

It is noted that the comment has been answered in item 5 in the letter forwarded by Denmark to Sweden the 22 of February 2019.

8. Comments from State and Maritime Transport Historical Museums (SMTM)

Analysis of geophysical mapping

Statement

SMTM has no objections to the Nord Stream 2 AG EIA. SMTM consider, however, that any future geophysical mapping should be analysed by experts in marine archaeology. Irrespective of where in the Baltic Sea the gas pipeline is planned, it is SMTM's assessment that geophysical surveys should be designed so that they can provide the basis for examination of impact on the cultural environment.

Summary of the answer of Nord Stream 2 AG

A recognised marine archaeology agency (under the Danish Agency for Culture and Palaces) has performed screening of the geophysical survey results collected along the pipeline corridor. Exclusion zones have been established for a number of identified objects. Results of the screening are being discussed

with the Danish Agency for Culture and Palaces. The pipe-lay contractor will be informed of all agreed exclusion zones.

Answer from the Danish Energy Agency

The Danish Energy Agency has no further comments on this topic.