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-ENGLISH TRANSLATION-

Ministry of Enterprise and Innovation

Nord Stream 2 AG
Represented by:
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Application for a permit under Section 15a of the Continental Shelf Act (1966:314) to lay two pipelines for transportation of natural gas on the continental shelf within the Swedish exclusive economic zone in the Baltic Sea

The Government's decision

Pursuant to Section 15a of the Continental Shelf Act (1966:314), the Swedish Government grants a permit for Nord Stream 2 AG (the company), for the route stated in the company's application, see annex, to lay two pipelines on the continental shelf within the Swedish exclusive economic zone for the transportation of natural gas.

The measures required for the laying of the pipelines (the operation) must be completed no later than 1 March 2024. The permit will lapse with respect to parts of the operation for which such measures have not been taken before that date.

The pipelines must be placed in accordance with the coordinates, which the Geological Survey of Sweden (SGU) will establish in accordance with the assignment, which the authority has this day received from the Government.

The following conditions apply to the permit:
In order to protect the possibility of using and repairing already existing underwater cables and pipelines on the continental shelf, the company must consult owners of existing cables and pipelines regarding technical aspects of the pipelines' crossing of the cable and pipeline concerned. Consultation shall take place in good time before the pipelines are laid. The company shall give owners of existing cables and pipelines the opportunity to submit comments on the technical aspects and as far as possible observe these.

In addition to this, the company has made the following commitments regarding precautions, restrictions and protective measures.

a) Unless otherwise indicated below, the activity must be designed and operated in principal agreement with what the company has stated in the application and in other documents on the matter.

b) The company must inform the Swedish Maritime Administration, the Swedish Coast Guard and the Swedish Armed Forces at least one (1) month before the construction works begin. The company must then continuously keep the Swedish Maritime Administration, the Swedish Coast Guard and the Swedish Armed Forces informed about the progress of the construction work and when the work will be completed, in order to enable the Swedish Maritime Administration to keep shipping informed by international established methods such as NtM (Notices to Mariners), ENC (electronic navigational charts) and navigational warnings. This also applies to maintenance work, where such information must be provided one (1) month in advance. If this is not possible, information must be provided as soon as possible.

   Information to the Swedish Maritime Administration must be submitted to the following address:

   The Swedish Maritime Administration
   Ufs/Ba1tico
   601 78 Norrköping
   Tel.: +46 (0)771 630605
   E-Mail: ufs@sjofartsverket.se

c) The company must, at least one (1) month before the construction work of laying each pipeline begins in the deep water shipping channel south of Norra Midsjöbanken and Hoburgs Bank, consult the Swedish Maritime Administration, the Swedish Transport Agency, the Swedish Coast Guard and the Swedish Armed Forces as to the measures required to protect shipping against disruptions and for the safety of passing vessels in the deep water shipping channel. The cost of these measures must be borne by the company, and the company must follow the instructions issued by the Swedish Maritime Administration, the Swedish Transport Agency, the Swedish Armed Forces and the Swedish Coast Guard.

d) After each pipeline has been laid, the company must inform the SGU, the Swedish Maritime Administration, the Swedish Coast Guard, the Swedish Meteorological and Hydrological Institute (SMHI), the Swedish Armed Forces and relevant fisheries organisations (bottom-trawling and pelagic fishery) of the precise route and contact with the seabed of each pipeline along the route on the Swedish continental shelf. Information must be presented in the coordinate system requested by each authority.

e) The company must establish a monitoring programme for the monitoring of the operation during the construction and operation phases. The monitoring programme must be developed in consultation with the Swedish Coast Guard, the SGU, the Swedish Environmental Protection Agency, the Swedish Maritime Administration, the Swedish Transport Agency, the Swedish Agency for Marine and Water Management and the SMHI. The monitoring programme must be the object of review and if necessary be revised. Performed surveys, studies, etc. performed in accordance with the monitoring programme must be made available to each authority.

f) The monitoring programme shall include, amongst other things, the issue of sediment dispersion and spread of environmental toxins in conjunction with the trenching works and the environmental impact of this, for example in the form of effects on mussel banks.

g) Turbidity from the trenching works must be monitored in relation to the offshore banks of Hoburgs bank and Norra Midsjöbanken and form part of the monitoring programme. The method of measurement and procedure must be regulated in the monitoring programme. Turbidity due to the trenching works at the border of each offshore bank (according to the previous delineation of the respective area as a Natura 2000 site) must not exceed 15 mg/l. If the stated value is exceeded as a result of the trenching works in the project, measures must be taken to reduce the dispersion and to reduce the risks of a future exceedance.

h) The construction works in the extended Natura 2000 area Hoburgs bank and Midsjöbankarna must be avoided during the period June to August.

i) A detailed construction plan for the construction works in the extended Natura 2000 area of Hoburgs Bank and Midsjöbankarna must be presented to the Swedish Coast Guard, the Swedish Agency for Marine and Water Management, the County Administrative Board of Gotland and the Swedish Environmental Protection Agency at least one (1) month before the

construction works in the area mentioned begins.

j) 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.

k) Official shipping lanes must be used for transportation to and from the laying vessel as far as possible. Areas marked on Swedish sea charts as “areas to be avoided” must be avoided. If vessels involved in the project pass between Hoburgs bank and Norra Midsjöbanken, the vessels must follow the pre-determined route that has been established in consultation with the Swedish Coast Guard.

l) Waste, both solid and liquid, must be separated at source and kept in accordance with a waste management plan prepared by the company and brought ashore for disposal in accordance with current regulations for the waste concerned.

m) If mines or other unexploded ordnance are encountered during the construction works, in accordance with the company's “chance-finds procedure”, the company will be responsible for these objects being avoided or cleared if there is a need based on a safety perspective. If clearance is necessary, the Swedish Coast Guard and the Swedish Maritime Administration must be informed before clearance is carried out and suitable protective measures must be taken. A time for clearance must, as far as possible, be chosen so that environmental impact is minimised.

n) The company must draw up contingency plans for the construction phase (potential accident situations in the construction work) and for the operation phase. The contingency plans must be developed in consultation with the Swedish Coast Guard. The contingency plans must contain action plans to minimise the effect of potential accidents in accordance with Helsinki Commission (HELCOM) guidelines.

o) In the event of decommissioning of the operation of the pipelines, the company must inform the Government of its intentions in good time before the pipelines are taken out of service, and in connection to this submit a plan for the decommissioning of the operation of the pipelines to the Government. The operation shall be considered to have been discontinued if the company has chosen not to continue transportation of natural gas through

the pipelines during a consecutive two-year period.

The Government recalls that it follows from Section 2a of the Continental Shelf Act (1966:315) that the Swedish Coast Guard exercises supervision of compliance with Section 15a of the Continental Shelf Act and conditions notified pursuant to that section.

The Government also recalls the Swedish Armed Forces' assessment that clearance of military relics may be required. If clearance is necessary, the Swedish Coast Guard and the Swedish Maritime Administration must be informed before clearance is carried out and suitable protective measures must be implemented.

The Government additionally recalls that other permits may also be needed.

The matter

The application

On 16 September 2016, the company applied to the Government for a permit under Section 15a of the Continental Shelf Act to lay two pipelines for the transportation of natural gas on the Swedish continental shelf in the Baltic Sea, along routes more closely specified in the annex, within a corridor of 200 metres along the respective route. The pipelines (Nord Stream 2) are planned to run largely parallel with the existing Nord Stream pipelines but for the most part east of them.

The application relates to the Swedish part of a pipe network consisting of two pipelines of approximately 1,200 kilometres each for the transportation of natural gas through the Baltic Sea from the Russian Baltic Sea coast, near Ust-Luga west of Saint Petersburg, to the landfall in Germany, near Greifswald. The route runs more or less parallel with the existing Nord Stream pipelines and will have separate landfill facilities in Russia and Germany. The pipelines will be laid on the continental shelf outside the territorial limit of Finland, Sweden, Denmark and Germany and on the continental shelf within the territories of Russia, Denmark Germany.

The company will be responsible for the development and laying of the pipelines on the bottom of the Baltic Sea and will also be responsible for the operation of the pipelines. According to the company, the laying works and the activity will be operated as follows.

The route covered by the application for the respective pipeline consists of a corridor of 200 metres to 400 metres on either side of the respective route coordinates, within which the respective pipeline will be placed. The pipelines will be laid in principle

parallel, with a distance between the pipelines normally of 100 metres. The reason why the application covers a corridor is to enable the laying to be adjusted if necessary to avoid objects that have appeared on the bottom after the seabed survey was carried out, and to be able to limit impacts on harbour porpoise and other species sensitive to sound. Three alternative routes have been identified and evaluated during the design and planning of Nord Stream 2, based on technical criteria, environmental criteria and socioeconomic criteria, as well as a zero alternative. The selected alternative lies east of the existing Nord Stream pipelines, further away from the Natura 2000 sites Hoburgs Bank and the Norra Midsjö Bank, but closer to the deep-water channel.

Nord Stream 2 will be designed, constructed and operated in accordance with the internationally recognised standard DNV-OS-F101. The company has further stated that the individual steel pipes of the pipelines are approximately 12.2 metres in length. The thickness of the steel pipes varies along the route between 26.8 mm and 41.0 mm, depending on where the pipes will be laid. The reason for the difference in thickness is the pressure in the pipelines. The pressure will be higher at the Russian landfall than at the German, justifying an increased thickness for the walls of the pipes. The pipes will be coated internally with an epoxy-based material to increase the rate of flow in the pipes. The pipes will be provided externally with an anti-corrosion coating. This coating in turn will be coated with reinforced concrete to provide extra weight for the pipelines so that they rest firmly on the seabed. The concrete coatings will be 60-110 mm thick. The thickness varies depending on the stability conditions along the route. In addition, the pipelines will be provided with cathodic protection in the form of sacrificial anodes, for example an aluminium alloy activated by indium, which is a further protective measure to guarantee the quality of the pipes.

The pipelines will be laid using three different types of laying vessels which are either manoeuvred, moved or positioned using anchors or vessels held in position by what is known as dynamic positioning (by GPS and propellers). The choice of vessel depends, among other things, on availability and on any requirements for a particular type of vessel to be used within a particular area. For example, it is advantageous in laying the pipelines in the southern part of the Swedish exclusive economic zone that laying is done using vessels that use dynamic positioning (partly in view of the fact that the new pipelines should preferably be placed as close as possible to the two existing pipelines), while further north it is possible that the company will also use anchor-positioned pipe-laying vessels to lay the pipelines. The individual pipes will be delivered to the pipe-laying vessel, where they will be welded together to form a continuous pipeline. The joined pipelines will then be released over the stern of the pipe-laying vessel and lowered to the bottom as the vessel moves forwards.

As the seabed is uneven, for certain parts of the route intervention works will be required in the form of trenching or rock placement to keep the pipelines in place. Rock placement can be performed before laying of the pipelines or during the later phase of the project, based on the technical requirements of the pipelines. Rocks that are used will be clean and free of clay, sludge, lime and contamination such as heavy metals that are soluble in water. Rock placement will be a controlled process where fall pipes are used with an outlet located close to the seabed so as to ensure precise placement of rock material. Trenching is another alternative for stabilising the pipes on the seabed.

Trenching work will be carried out after pipe-laying using a plough which is controlled and towed by a specially constructed support vessel. The plough will cut down to a depth of approximately 1.5 metres in the seabed in a V-shape, the sediment being moved up along the sides of the plough. It is estimated that trenching work in the Swedish exclusive economic zone will be necessary for approximately 72 kilometres per pipeline along six sections of the route. Rock placement is generally the preferred choice for shorter sections in deep waters, while trenching is preferred for longer distances in shallow waters. Within the Swedish exclusive economic zone, this means that rock placement is planned mainly for the northern part of the route, while trenching is planned for the southern part of the route.

Intervention works may also be required where other cables or pipelines that have been identified on the Swedish continent shelf (for example the existing Nord Stream pipelines) are crossed. A total of seven active power and telecommunications cables and two pipelines (the existing Nord Stream pipelines) will be crossed along the route of the pipelines on the Swedish continental shelf. The company intends to make use of well-established methods to deal with these crossings. What are known as flexible mattresses will most probably be used at the cable crossings to keep the pipelines and cables permanently separated. This method was also used in the Nord Stream project.

In laying the pipelines, a protection zone will be established to keep the pipe-laying work separate from other shipping in the area. The same protection zones as were applied in the Nord Stream project will probably be applied, that is to say a protection zone of around three kilometres when an anchor-positioned pipe-laying vessel is used. The protection zone around the vessel will probably be two kilometres for a dynamically positioned pipe-laying vessel. In addition, what is known as a notice to mariners will be prepared and submitted to the National Maritime Administration and will be available for all vessels sailing the Baltic Sea. Both the National Maritime Administration and the Swedish Coast Guard will be kept continuously informed

about the laying work. Once the pipelines have been laid, there will no longer be a protection zone, and future surveys or extraction of natural resources close to the pipelines will therefore not be prevented.

Before the pipelines enter service, the company will perform tests on the pipes. There are two principal different methods for checking the pipelines before they enter service: either by a dry test method or by pressure-testing with water. The latter method was used for the existing Nord Stream natural gas pipeline system. This method involves what is known as a pressure test with filtered seawater, to which an oxygen-reducing substance is added to prevent pipeline corrosion (naturally occurring in the water). In addition, water may be illuminated with ultraviolet light to reduce quantities of bacteria in the water. When the pressure testing is finished, the water is returned to the sea. The “dry” test method, on the other hand, means that the pipelines will not be pressure-tested with water but will instead be checked using special inspection devices. However, this method presupposes that the pipelines can be laid in such a way that no water penetrates the pipelines.

The operation of the pipeline system will be monitored and checked from a control room which will probably be located in Zug (Switzerland) or in the surrounding area in Switzerland. The pipeline system is designed in principle to be maintenance-free. Internal and external inspections of the pipelines will, however, be performed regularly to discover any damage to or premature wear on the pipeline system. External inspections include monitoring of the position of the pipelines, the conditions on the seabed and the cathodic protection system. Internal inspections will be carried out using technically advanced inspection devices, known as pipeline inspection gauges. These inspection devices are equipped with measuring equipment capable of detecting very small irregularities. If damage to, or wear on, the pipelines is detected, repair actions will be taken.

The company has stated that it has had extensive environmental studies performed and has prepared an environmental report equivalent to an environmental impact assessment regarding the project and its potential impact on the environment in the Baltic Sea. Among other things, the company has studied and assessed the potential impact of the project on the seabed and bottom-living organisms (through turbidity and dispersion of sediment during the laying phase), fish, fish spawning, marine mammals, protected sites, shipping, extraction of natural resources, etc. Nord Stream 2, as far as the design of the pipes, the construction work and the environmental conditions where the project will be implemented are concerned, is in principle identical to the previous Nord Stream project. This means that there are a number of

investigations, surveys and experiences regarding the potential environmental impact of the project.

In the Nord Stream project, an environmental control programme was established regarding implementation of the project in the Swedish exclusive economic zone. The control programme was established on the basis of the requirements in the Environmental Code and the Ordinance (1998:901) on self-inspection by operators, and in cooperation with the Swedish Environmental Protection Agency, the Swedish Agency for Marine and Water Management, SMHI, SGU and the Swedish Coast Guard. The control programme included monitoring of potential effects from clearing of ordnance and effects of laying and operation on the presence of fish along the pipelines (reef effects), bottom fauna, water quality, the hydrological conditions of the Bornholm Basin, the ecotoxicological effect on mussels and presence of fish within the Natura 2000 sites Hoburgs Bank and Norra Midsjöbanken, etc. In addition, the control programme included monitoring of the potential impact of the project on shipping, fisheries and the cultural environment.

The company notes that an issue highlighted in connection with the Nord Stream project was the risk of sediment dispersion, particularly in relation to the nearby Natura 2000 sites Hoburgs Bank and Norra Midsjöbanken. Water quality was tested before, during and after the construction work (which included trenching), and it was found that the assumptions the company had made regarding sediment dispersion in the environmental report were conservative. The modelling done ahead of the project showed that sediment would not be dispersed to the margins of the Natura 2000 sites, which was also to be confirmed when the water quality was actually tested. In addition, studies were conducted regarding bottom fauna, presence of fish, etc. before, during and after the laying works at these banks. The results showed that the laying works did not have any impact on these sites. It further follows from the environmental control reports that no accidents or incidents in relation to shipping, including fishing vessels, occurred during the laying of Nord Stream, and that the actual impact on shipping in the area was only small and of short duration. To summarise, the company notes on the basis of the environmental monitoring carried out that the impact of the Nord Stream project was at most local, of short duration and insignificant, and that the previous environmental assessments in the project were cautious.

A section of approximately 140 kilometres of the pipelines will pass through an area between Norra Midsjöbank and Södra Midsjöbank, which it has now been decided constitutes a Natura 2000 site. The proposal also encompasses the existing Natura 2000 sites of Hoburgs Bank and Norra Midsjöbank. Trenching will take place in this sensitive area for approximately ten days for either pipeline. It is estimated that 2.5

kilometres of pipeline could be laid per day, which means that the pipe-laying will continue to take place over a period of 56 days for each pipeline in the area. The Natura 2000 sites are to a varying degree sensitive to noise, sediment dispersion, physical disturbance and oil spills. Hoburgs Bank also offers protection for harbour porpoise. The areas are also marine protection areas, due to their importance for wintering birds. Fleeing distances differ among bird species and are estimated to be a few hundred metres for long-tailed duck and black guillemot. Disturbance from vessel traffic will not have any permanent impact but may have a temporary impact when food is being searched for and may also have an impact on stopover sites for migrating birds. To avoid unnecessary disturbance for birds and harbour porpoise, major shipping lanes will be used insofar as is practicable. Seabed intervention works, such as trenching, rock placement and the use of anchor vessels, will lead to mechanical impacts on the seabed and a change in water visibility depth. According to the company, results from the modelling show that no sediment dispersion with levels in excess of 10 mg/l will reach into the areas with shallow banks that are protected under Natura 2000. The flora living on the seabed is sensitive to a decrease in the light that reaches down, which in turn affects organisms such as fish species and mussels, which constitute food for the seabirds and marine mammals that are protected through application of the Natura 2000 provisions. It can be assumed that most adult fish will move away from unsuitable conditions. Fish roe and fish fry are more sensitive to increased concentrations of sediments, and the period of exposure is therefore critical.

The airborne noise generated in laying the pipelines is comparable to other shipping in the Baltic Sea. Intervention works on the seabed, such as trenching, rock placement, pipe laying, anchor handling and commissioning works, in conjunction with laying of a pipeline on the seabed, causes sediment to be suspended and reach the water mass, which may temporarily have a detrimental effect on water quality and increase turbidity. The increased shipping traffic and presence of laying vessels cause visual disturbance and generate noise that may disturb birds. Temporary underwater noise will occur as a consequence of rock placement, primarily at the northern boundary of the proposed Natura 2000 extension. Temporary disturbance from the increased shipping traffic will also occur. The laying work moves forward at 2.5 kilometres per day, however, and it is likely that birds, fish and mammals will move away from the construction work and return when the work is finished. Mitigation measures in order to avoid certain areas and channel shipping traffic will be implemented.

Noise will be generated both in the air and in the sea during the laying of Nord Stream 2 and to some extent also during operation (maintenance inspections). This may have potential effects that may be harmful to both humans and animals. For marine animals, both underwater and airborne noise may cause behavioural responses such as

disrupted communication between animals, but also have the potential to cause damage to hearing and tissues. Porpoises often hunt at night and move at depths where there is complete darkness. Consequently, harbour porpoises are not sensitive to deterioration in visibility caused by sediment plumes. In recent years, new information has emerged regarding the distribution of harbour porpoise in the Baltic Sea and marine mammals' sensitivity to underwater noise. Underwater noise could impact marine mammals in several different ways. The most common of these are physical injury and damage to organs of hearing, disturbance of animal behaviour, and masking of other sounds. The impact will, however, be temporary, localised and of low intensity. The significance of the impact for harbour porpoise and grey seal is assessed as being low.

Geophysical surveys have been carried out along the whole of the proposed route, first within a corridor of 1.6 kilometres and then in more detail within a 130-metre-wide corridor, partly with the aim of identifying potential munitions on the seabed close to the route of the pipelines. Three munition objects were identified in the northern part of the route north-east of Gotland. If munitions are encountered along the route in the Swedish exclusive economic zone, the route will be realigned around such objects locally, where appropriate and feasible. Clearance of munitions by on-site detonation within the Swedish exclusive economic zone is therefore not planned. If clearance of munitions nevertheless becomes necessary, suitable protective measures will be taken in order to protect marine mammals against damage and injury. This will be done in consultation with relevant authorities.

The assets in the Natura 2000 sites which could be affected by the laying, operation and decommissioning of the pipelines mainly comprise biological aspects. Based on clearance of munitions not taking place in the Natura 2000 site now established, the impact of noise in Natura 2000 sites will be of medium intensity, local extent and temporary duration. The magnitude of the impact on protected areas both above and below water is estimated to be zero or insignificant.

With protective measures, the overall consequences for birds, harbour porpoise, grey seal and protected habitats in the Natura 2000 sites of Hoburgs Bank and Norra Midsjöbank are estimated to be zero or negligible.

Based on the geophysical survey, eight distinct wrecks and six possible wreck spills have been found within 50 metres from the pipeline corridor. Further studies of identified cultural artefacts using remotely operated underwater vehicles (ROVs) will be done to establish more specific distances for certain wrecks. The pipeline route will be optimised to avoid the crossing of valuable cultural heritage sites. The final list of

cultural artefacts will be notified to national cultural heritage authorities together with preliminary proposals to protect or preserve cultural artefacts. Protection zones will be defined around the wrecks that have been identified as cultural heritage or possible cultural artefacts.

When the predicted technical lifetime of the pipelines has been reached, the flow of natural gas will be shut off and the system will be decommissioned. The decommissioning of the pipeline will take place either through the pipelines being removed from the seabed or through these being left on the seabed after the pipes have been emptied of gas, cleaned and then filled with water. The prevailing view at present is that it is environmentally most advantageous to leave large-diameter pipelines on the seabed. The final assessment must, however, be made in accordance with the standards for environmental protection in force at the time when the pipelines are decommissioned and taking account of the technical solutions on available at the time.

The company has proposed conditions, precautions and restrictions based on experience from the testing and implementation of the Nord Stream project over the period 2007 to 2012 (ref. No N2008/00147/FIN).

With regard to conditions with which the permit may be associated, the company has requested that conditions aimed at ensuring that the use of, or the possibility of repairing, existing underwater cables and pipelines is not made more difficult or prevented be formulated as follows.

The company will consult owners of existing cables and pipelines on the continental shelf regarding technical aspects of the crossing of each cable and pipeline by the pipelines. Consultation will take place in good time before the pipelines are laid. The company will give owners of existing cables and pipelines the opportunity to submit comments on the technical aspects and as far as reasonable to observe these.

The reason why the condition should be formulated as a requirement for consultation, according to the company, is that it has been difficult in the Nord Stream project to bring about agreement with all the pipe and cable companies affected.

Administration of the matter

Referral for comment

The Government of Sweden Offices (Ministry for Enterprise, Energy and Communications) on 7 April 2017 referred the application to Swedish authorities, including affected county administrative boards, as well as municipalities and

organisations for expressions of opinion by 5 June 2017. The application was referred for comment to the Swedish Species Information Centre, the National Board of Housing, Building and Planning, Chalmers University of Technology, the Armed Forces Radio Establishment, the Swedish Armed Forces, the Swedish Agency for Marine and Water Management, the Swedish Institute for the Marine Environment, the Legal, Financial and Administrative Services Agency, the Swedish Coast Guard, Linnaeus University, Lund University, Blekinge County Administrative Board, Gotland County Administrative Board, Kalmar County Administrative Board, Skåne County Administrative Board, Stockholm County Administrative Board, Södermanland County Administrative Board, Östergötland County Administrative Board, the Swedish Civil Contingencies Agency, the Swedish Environmental Protection Agency, the National Maritime Administration, the Swedish Police Service, the National Heritage Board, the National Maritime Administration, the Swedish Energy Agency, the Swedish Geotechnical Institute (SGI), the Swedish Board of Agriculture, the Swedish National Maritime Museum, Stockholm University, the Stockholm University Baltic Sea Centre, the Swedish Geological Survey (SGU), the Swedish University of Agricultural Sciences/Institute of Aquatic Resources, SMHI, the Swedish Defence Research Agency, the Swedish Transport Administration, the Swedish Transport Agency, Uppsala University/Gotland Campus, World Maritime University, the Municipality of Borgholm, the Municipality of Bromölla, the Municipality of Kalmar, the Municipality of Karlshamn, the Municipality of Karlskrona, the Municipality of Kristianstad, the Municipality of Mönsterås, the Municipality of Mörbylånga, the Municipality of Norrköping, the Municipality of Nyköping, the Municipality of Nynäshamn, the Municipality of Oxelösund, the Municipality of Oskarshamn, Region Gotland, the Municipality of Ronneby, the Municipality of Simrishamn, the Municipality of Söderköping, the Municipality of Södertälje, the Municipality of Sölvesborg, the Municipality of Torså, the Municipality of Trosa, the Municipality of Valdemarsvik, the Municipality of Västervik, the Municipality of Ystad, Bird Life Sweden, the Swedish Shipowners' Association, Greenpeace, the Marine and Coastal Fishermen's Producer Organisation, the Swedish Society for Nature Conservation, the Swedish Pelagic Federation, the Ports of Sweden, the Swedish Association of Professional Fishermen and the Worldwide Fund for Nature WWF.

Comments of the consulted bodies

Several consulted bodies including the Swedish Agency for Marine and Water Management, the Legal, Financial and Administrative Services Agency, the Swedish Coast Guard, Stockholm County Administrative Board, the Swedish Civil Contingencies Agency, the National Maritime Administration, the Swedish Energy

Agency, the Swedish National Maritime Museum, SGU, the Swedish University of Agricultural Sciences, SMHI, the Swedish Transport Administration, the Swedish Transport Agency and the Swedish Shipowners' Association have supported or not had any objection to the application or to the Government granting a permit. The National Board of Housing, Building and Planning and Greenpeace have recommended rejection of the application. Comments on various aspects of the project have, however, been submitted by several referral bodies. Some referral bodies have also proposed that a permit be associated with conditions or commitments by the company.

The referral bodies have principally stated as follows:

The Swedish Species Information Centre: It is very important that new knowledge of the ecology of harbour porpoise in the Baltic Sea is taken into account in the permit process. The pipelines are also potential corridors for the spread of alien species. The Swedish Species Information Centre is looking for a longer-term perspective with regard to follow-up of the environmental impact of the pipelines. It is unclear in the application firstly what impact the laying and operation phase will have on harbour porpoise and secondly how maintenance of the pipes during operation will signify physical impact on the surrounding seabed.

National Board of Housing, Building and Planning: The project is not in line with the objectives and policies the EU has set for the development of the natural gas market and signifies further exploitation of a significant part of the bed of the Baltic Sea. The pipelines will be partly laid in an extended Natura 2000 site, and some negative environmental impact can be expected during construction. Furthermore, the project has adverse consequences for other pipe routes and for any bottom trawling and may affect the opportunities of shipping to anchor. The project should not be implemented.

The Swedish Armed Forces: Like the National Maritime Administration, the Swedish Armed Forces wish to be informed at least one month before the laying works begin and wish to take part in the consultation which is to take place at least one month before the laying works begin in the deep-water channel south of Norra Midsjö Bank/Hoburgs Bank. The importance of continued analysis of the security and defence policy consequences for Sweden is emphasised.

Swedish Agency for Marine and Water Management: The authority does not have any objection to the project as such and the proposed route, provided the following opinions are taken into account. A number of protective measures, combined with environmental monitoring, must be taken to minimise the risk and also to enable any

environmental impact to be controlled. The company must have a control programme for monitoring of the activity during the laying period and the operation phase for the pipeline concerned. Spawning fish in a part of the Bornholm Basin must be protected by the laying works primarily not being permitted in the area from 1 May until 31 October, or not being permitted during June and July, when the spawning period for cod culminates. In order to protect harbour porpoise within the now extended Natura 2000 site south of Gotland, laying works should be avoided during the most sensitive period for harbour porpoise (April to October). With regard to impacts on the Natura 2000 sites Hoburgs Bank and Norra Midsjö Bank, the company's control programme must include monitoring of sediment dispersion during the laying phase. The laying of gas pipes should be designed so that it does not obstruct fisheries after the laying has been carried out, and the company should conduct a dialogue with the Swedish Pelagic Federation and affected fishermen's producer organisations to minimise disruption during laying and operation. No adverse environmental impacts ought to arise during the operation phase, provided no serious accidents occur. A permit review under the rules on Natura 2000 sites should be conducted.

The Legal, Financial and Administrative Services Agency: There is a risk that the project may have a significant impact on the extended Natura 2000 sites of Hoburgs Bank and the Midsjö Banks, and a permit should therefore be preceded by a review according to the rules applicable to Natura 2000 sites. A permit must be associated with conditions to prevent, restrict and control pollution from the pipelines under the United Nations Convention on the Law of the Sea, Montego Bay, of 10 December 1982 and the agreement on implementation of Part XI of this convention (the UN Convention on the Law of the Sea), and based on the application it appears possible to implement time restrictions for the construction works during the period from April to October in relation to the Natura 2000 site.

Swedish Coast Guard: The Swedish Coast Guard does not have any objection to the project and judges that it will not have any extensive impact on the authority's maritime surveillance or rescue service tasks. The laying phase and operation phase will be monitored by the Swedish Coast Guard within the framework of its ordinary monitoring activity. The Swedish Coast Guard wishes to receive information on the laying works or planned maintenance measures at least one month before the works begin and then be kept continuously informed. The contingency plan should also cover handling of chemical warfare agents, and it would be preferable for the contingency plan for Nord Stream 2 to be coordinated with the plan for existing Nord Stream system. The Swedish Coast Guard does not have any comments on the company's proposals for conditions aimed at ensuring that the use of, or the possibility of

repairing, existing underwater cables or pipelines is not made more difficult or prevented.

Blekinge County Administrative Board: The planned natural gas system is important both for the EU and for Sweden before entirely fossil-free alternatives have been developed and are in use. It is important that the areas where laying works need to take place are described accurately, and in the event that the laying route has to be changed further investigations must be carried out from the points of view of biology and cultural history. Dynamically positioned vessels should be used in consideration of cultural relics and bottom-living organisms. It is desirable for the pipelines to be overtrawlable, and compensation must be paid if the project leads to fishing restrictions. The laying works in and around the Bornholm Deep should be avoided from May to August in order to protect spawning cod. A permit should address the issue of the removal of the pipes and restoration of the seabed, and financial security or a fund for decommissioning of the pipelines would be appropriate.

Gotland County Administrative Board: Nord Stream 2 does not contribute to fulfilling the national and international environmental objectives Sweden has adopted. Sweden has the single greatest responsibility for the continued survival of the population of harbour porpoise in the Baltic Sea. The area around Hoburgs Bank and Norra Midsjö Bank is the most important area for harbour porpoise during the mating, calving and suckling periods. The harbour porpoise may be affected by noise from the pipe-laying work, which may mean that harbour porpoises avoid the area for example during the mating season (from June to August). It is important that the monitoring programme contains checking of sediment dispersion, spread of heavy metals and organic pollutants. Sediment dispersion south of Gotland must be monitored, and this monitoring should take place from fixed stations and be carried out by an independent third party. The application documents lack certain information concerning modelling of oil spills and associated risk appraisal on the route closest to the Gotland coast, Gotska Sandön and in the Natura 2000 site. The project must comply with the Ballast Water Management Convention to avoid the spreading of alien species. The project contributes to cumulative effects on pollution in the Baltic Sea. Despite a lack of sufficiently good data, impacts due to the project cannot be assessed as low or negligible.

Kalmar County Administrative Board: Nord Stream 2 will have a huge environmental impact, and Swedish has the single greatest responsibility for the population of Baltic Sea harbour porpoise. Monitoring of underwater noise must be performed to limit impacts on harbour porpoise, and the control programme must include monitoring of sediment dispersion within the Natura 2000 sites. Ship noise in the vicinity of the

Natura 2000 sites may have an impact on seabirds and harbour porpoise. A permit should contain requirements for some form of compensatory measure, for example in the form of active support for the development of renewable energy or financial support to reduce phosphorus and nitrogen leaking to the Baltic Sea,

Skåne County Administrative Board: The results of the Static Acoustic Monitoring of the Baltic Sea Harbour Porpoise report (the SAMBAH report) should be taken into account in the laying works. It is important that the project takes precautionary measures in relation to harbour porpoise (particularly if munitions clearance will be required). An analysis is needed if the pipelines in operation, due to noise, may have a possible barrier effect on patterns of movement and spread of the various species. It would be preferable for the pipelines to be overtrawlable and located close to the existing pipes. Any restrictions on fisheries should be compensated for. Time restrictions for the laying works must be applied with respect to spawning fish, and the laying works in the Bornholm Deep must firstly be avoided during the period from 1 May to 31 October and secondly during the period from June to July.

Östergötland County Administrative Board: It is very important that defence and security policy matters are taken into account in reviewing the application.

Swedish Environmental Protection Agency: The sensitivity of seabirds is great in the Baltic Sea. Particular account needs to be taken of long-tailed duck and other bird species that have wintered on the banks south of Gotland and that are sensitive to the ecotoxicological effect of sediment dispersion. The company has not, to the necessary extent, reported safety measures to prevent pollution that can affect seabirds. The company must have a control programme for monitoring activity during the laying period and the earlier part of the operation phase, like the first Nord Stream project. A final plan for the construction works at Hoburgs Bank and the Norra Midsjö Bank must be presented before the construction works begin, any turbidity and pollutants from affected sediments must be minimised through precautionary measures and monitored, and turbidity caused by laying of the pipelines at the boundary of the Hoburgs Bank and Norra Midsjö Bank areas should not exceed a maximum guide value of 15 mg/l. The possibility of setting requirements for permits under the provisions on Natura 2000 are not clear, but such a review would be consistent with rules set out in the UN Convention on the Law of the Sea. In order to issue such a permit, there needs to be a petition for this, and the company has not applied for a Natura 2000 permit. A permit under the Continental Shelf Act should in any case address the issue of the impact on the interests that exist in the extended Natura 2000 site and should be associated with conditions to prevent, limit and control pollution

that may be caused by pipelines. The concept of pollution must be interpreted broadly and cover all types of impact, including noise, on the surrounding environment that may be caused by both laying and operation of the pipelines.

National Heritage Board: A permit must contain requirements to clarify whether relics are affected by the planned activity, and the relics encountered, mostly various kinds of vessels, should be examined by experts in marine archaeology, and it is appropriate to try to adjust the route of the pipeline if any relic is encountered in the planned area of construction. The presence of any relics should be clarified by sonar mapping, mapping of larger areas of seabed should be done so that sufficient coverage is achieved, and the assessment of any relics, identified by archaeological expertise, should be more closely examined by divers or with a camera mounted on a remotely operated vehicle.

National Maritime Administration: The conditions and risk assessments provided by the company fulfil reasonable requirements. The information to the National Maritime Administration should be provided through a consultation meeting. A ‘dynamically positioned pipe-laying vessel’ is advocated from the point of view of marine safety. It is important that the project is planned and implemented so that shipping is not disturbed in terms of manoeuvrability, availability and safety.

Swedish Energy Agency: The agency supports the application and notes that the project will not have any adverse impact in any area of national interest for energy production or the planned wind park at the Södra Midsjö Bank.

Swedish Geotechnical Institute (SGI): The geotechnical issues and conditions to be met have not been addressed in more than outline form in the documentation. SGI has noted, however, that historical earthquakes have occurred north of the corridor applied for and that depressions with differences in level occur. It is therefore important that the stability conditions are investigated, as a local earthquake may be of significance to safety. Leakage as a result of an earthquake may lead to accidents and a risk to the environment.

Swedish Board of Agriculture: The application must be supplemented by data and any experience for all fishing methods (including fishing by midwater trawling), as well as an economic impact assessment for the fishing industry and proposals for distribution of responsibility in any future incidents or accidents.

National Maritime Museum: Satisfactory documentation has been provided of all indications of possible ship and cultural relics which may be affected by the works.

The authority therefore does not have any comments on the project.

Geological Survey of Sweden (SGU): The planned pipelines will affect the geological environment in the area of the route to a limited extent, and the physical loss of seabed is small. Impact may occur during laying in fine-grain sediments as a result of these and any environmental toxins in the sediments being suspended and dispersed, and the pipelines, including rock placement, may halt natural sediment transport. There is a risk of the pipelines sinking down or changing position after being laid, and if sediment from the construction is dispersed to the sampling stations this may affect the results measured at the stations. Based among other things on the supplementation provided by the company and the results of the company's studies and previous control programmes, however, SGU expects the effects to be limited (in both extent and time) and considers the pipelines not to affect the possibility of extracting natural resources from the seabed.

Swedish University of Agricultural Sciences: The university agrees with the company's assessment, namely that the project will have little or negligible effect on fish fauna and fishery, including locally. An assessment of the effects on non-commercial fish species is, however, lacking and the possibility of the project increasing the spread of the invasive species round goby cannot be ruled out. Nor has the company described how increased sedimentation may affect turbot. Cod roe may be affected if the pipe-laying vessel uses dynamic positioning. Furthermore, the conclusions from the previous project on reef effects around Hoburgs Bank and Norra Midsjö Bank can be questioned, as cumulative account has not been taken of the additional pipes.

Swedish Meteorological and Hydrological Institute (SMHI): Supplementary studies and investigations on bottom flows in the Bornholm Basic are not considered necessary as the new pipeline system Nord Stream 2 will be designed in the same way and have the same profile above the seabed as the existing Nord Stream pipeline system. As the pipes are to follow the same route as Nord Stream, there is the same risk of impact on the hydrographic conditions relating to bottom flows as for Nord Stream. SMHI would appreciate data from other future studies ahead of the laying and during the operation of Nord Stream 2 being made available in the same way as has happened for Nord Stream. Long-term commitments to fossil-free energy use in Europe are preferable to further commitments to natural gas.

Swedish Defence Research Agency: Great changes in security policy have taken place since the first Nord Stream project, on which the Agency commented in 2006. The

negative trends observed in 2006 and 2007 have intensified, and several global problems are more difficult to predict. The project represents a Russian interest, and national security interests, particularly with respect to the Baltic Sea, must be taken into account in the process. It is important that Sweden has the right to free movement and activity and can monitor and inspect the project, during laying, operation and periods of maintenance.

Swedish Transport Agency: The authority has no objection to the application from the point of view of shipping. The proposed route is the best alternative in consideration of the need for emergency anchoring of vessels, and the authority supports the proposal for conditions and the proposed commitments on precautionary measures, restrictions and protective measures, as well as the risk mitigation measures for shipping traffic described by the company.

Municipality of Kristianstad: In the first Nord Stream project, the municipality advocated the planned pipelines being located east of Bornholm, which is where the pipelines are now laid.

Municipality of Mörbylånga: The obligation of the company to report accidents and incidents and what remedial measures the company takes to reduce or eliminate the risks should be regulated in the permit.

Region Gotland: The region would rather see a focus on other types of energy sources than fossil fuels. Continuing studies and investigations during the laying and operation phases are crucial in being able to establish any adverse changes in the marine environment and facilitating assessment of suitable precautions. The company should undertake to finance compensatory measures for the pipelines, through a fund or equivalent.

Municipality of Sölvesborg: It is reasonable to set requirements for the pipelines to be taken up and disposed of when the pipeline is decommissioned and to set aside a particular proportion of future returns for future decommissioning of the pipeline and for environmental assessments that benefit the marine environment in the area.

Greenpeace: The organisation opposes the project. The activity would have serious adverse effects on the environment, particularly for the unique ecosystems in the Baltic Sea and adjoining land areas, and would tie the European energy system more closely to fossil fuels. As the pipeline will run through a Natura 2000 site, its effects must be evaluated in accordance with EU law. There are deficiencies in the documentation with regard to the impacts on affected Natura 2000 sites and in the environmental impact assessment.

Swedish Shipowners' Association: The project entails both advantages and drawbacks, but the advantages will dominate provided consideration is given to the needs of shipping and these are taken into account during the planning, laying and operation phases.

Swedish Fishermen's Producer Organisation: The organisation has entered into an agreement with the company concerning deep-sea fishery and the existence of the pipelines and therefore does not have any objections to the project.

A reply has also been received from the Swedish Pelagic Federation Producer Organisation, which in the main has stated as follows. The organisation does not recommend the project. The application lacks a complete impact assessment principally for large-scale pelagic fishery and information on the issue of responsibility for damage to fishing gear and/or pipelines, etc. The planned project will lead to economic harm to pelagic fishing. It is unclear whether the pipelines will cope with physical contact with a pelagic trawl, and there may be a risk of the trawls accidentally damaging the pipelines and of them completely avoiding the area with the pipelines, leading to losses in the form of lost fishing opportunities.

Södermanland County Administrative Board, the Municipality of Södertälje and the Municipality of Trosa gave notice they would not be submitting comments.

The Municipality of Borgholm, the Municipality of Kalmar, the Municipality of Karlshamn, the Municipality of Karlskrona, the Municipality of Mönsterås, the Municipality of Norrköping, the Municipality of Nyköping, the Municipality of Nynäshamn, the Municipality of Oxelösund, the Municipality of Ronneby, the Municipality of Simrishamn, the Municipality of Torsås, the Municipality of Valdemarsvik, the Municipality of Ystad, Chalmers University of Technology, Linnaeus University, the Stockholm University Baltic Sea Centre, Uppsala University – Gotland Campus, the World Maritime University, the Swedish Institute for the Marine Environment, Bird Life Sweden, the Marine and Coastal Fishermen's Producer Organisation, the Swedish Fishermen's Association, Swedish Ports, the Swedish Society for Nature Conservation, the Economic Association of Swedish Professional Fishermen and the World Wide Fund for Nature (WWF) have not replied to the referral sent out.

The company's response to the referral bodies' comments

The company has been given an opportunity to respond to the views expressed by the

referral bodies. The company has done so in an opinion received by the Government of Sweden Offices (Ministry for Enterprise, Energy and Communications) on 6 September 2017, together with further expert assessments from Ramböll, IVL Swedish Environmental Research Institute, DCE – National Centre for Environment and Energy and FOGA (Fishermen's Information of Oil and Gas Activities).

After further analysis of necessary intervention works and optimisation, the company has provided an update on the project which signifies that planned laying works in the Swedish exclusive economic zone will be reduced in both time and extent. In doing so, the company has principally stated as follows: The quantity of sediment affected by ploughing, for example, is estimated to be around 200,000 m^3 per pipeline, instead of 450,000 m^3 per pipeline. The main contractor for the construction work has proposed that the pipe-laying be carried out using dynamically positioned pipe-laying vessels. Rocks for stabilising rock placement will mainly be obtained from Finland, thus reducing transportation through the Natura 2000 sites. As a reserve alternative, rock material can be obtained from Sweden via Oskarshamn. If an empty test pressurisation concept is used, 300,000 m^3 of rock will be needed instead of the estimated 900,000 m^3. In the extended Natura 2000 site of Hoburgs Bank and Norra Midsjö Bank, it is expected to be possible to carry out necessary intervention works for two days per pipeline instead of ten days, due to higher average speed of the ploughing work and reduced sections where ploughing is deemed to be necessary. The average rate of pipe-laying is estimated to be 3.8 kilometres per day, instead of 2.5 kilometres per day. This means that the time spent in the extended Natura 2000 site is sharply reduced from 56 days to 37 days per pipeline. The impact on harbour porpoise consists in disturbance of the animals' pattern of movement due to vessel sounds. There is a potential risk of masking of ecolocation and communication between harbour porpoise locally around the vessel. The affected area is, however, insignificant in relation to the whole extended Natura 2000 site and the effect of the already existing underwater sound from vessels in the shipping lanes. The conclusions in the investigation obtained by the company are that Nord Stream 2 will not have a lasting negative impact on harbour porpoise but at most a possible temporary avoidance reaction from pipe-laying vessels or intervention works. It will not be possible to detect any significant harmful effects of loss of habitat, and it is deemed to be almost out of the question that an effect on the harbour porpoise population will occur.

With regard to the risk of introducing invasive species, the company has stated that these are mainly spread through discharges of ballast water and that the company and

its contractors will comply with the IMO's Ballast Water Management Convention (BWMC) from 2004, which among other things states that no discharges of ballast water from vessels in the Baltic Sea are permitted without prior treatment of the water.

The company has further stated as follows. The risks of bottom instability have been carefully analysed and assessed during detailed project design. Necessary intervention works have been considered in relation to the issue of risks of land slips on the seabed. The conclusion from the analysis is that any instability on the seabed on the Swedish continental shelf is not a risk to be taken into account for pipelines that fulfil established and verified design criteria. The issue will be addressed in the continued detailed project design, including for each stabilisation measure on the seabed.

The company's response to the opinions has been referred for comment to the National Board of Housing, Building and Planning, the Swedish Defence Radio Establishment, the Swedish Armed Forces, the Swedish Agency for Marine and Water Management, the Legal, Financial and Administrative Services Agency, the Swedish Coast Guard, Blekinge County Administrative Board, Gotland County Administrative Board, Kalmar County Administrative Board, Skåne County Administrative Board., Östergötland County Administrative Board, the Swedish Civil Contingencies Agency, the Swedish Environmental Protection Agency, the National Heritage Board, the National Maritime Administration, the Swedish Energy Agency, SGI, the Swedish Board of Agriculture, SMHI, the Swedish Defence Research Agency, the Swedish Transport Agency, the Municipality of Kristianstad, the Municipality of Mörbylånga, Region Gotland, the Municipality of Sölvesborg, Swedish Shipping, the Swedish Fishermen's Producer Organisation and the Swedish Pelagic Federation Producer Organisation.

Further comments of the referral bodies

The referral bodies have in the main added the following.

Swedish Armed Forces: The company has responded to the authority's previously submitted views, and the authority consequently does not present any further comments.

Swedish Agency for Marine and Water Management: There is a need for conditions regarding time restrictions within the extended Natura 2000 site of Hoburgs Bank and the Midsjö Banks during the period from April to October to avoid a risk of significant impact on harbour porpoise. As there is no consensus on the extent to which harbour porpoise are affected by vessel traffic, the precautionary principle should apply. The authority considers that the pipe-laying works within a part of the Bornholm Basin

should not be carried out during the period from July to August (adjustment since the Agency's first opinion), but the company's commitment to “as far as possible” avoid laying works in the Bornholm Deep is too vaguely formulated. The Agency’s comments on control programmes for monitoring sediment dispersion have been respected by the company.

Gotland County Administrative Board: The project does not contribute to fulfilling any of the environmental objectives adopted by Sweden. Sweden has the single greatest responsibility for the survival of the population of the acutely endangered harbour porpoise in the Baltic Sea, and the laying phase overlaps important periods of time in the harbour porpoise life cycle. It is positive that the Natura 2000 site is avoided in June to July and is as far as possible avoided in August, but the period can be expanded to May to October when calving and suckling take place. As each individual harbour porpoise is valuable, it is important to apply the precautionary principle. Long-tailed duck and black guillemot are also sensitive to disturbance from vessel traffic. Environmental monitoring should take place from fixed stations along the boundary to the particularly sensitive areas and should be carried out by an independent third party.

Skåne County Administrative Board: Swedish fisheries may also be operated in the waters of other states, and information to relevant fishing organisations (bottom-trawling and pelagic fishing) regarding the precise route and contact with the seabed of the pipeline concerned should also cover these waters.

Swedish Environmental Protection Agency: Wintering seabirds are assessed as being highly sensitive. Conditions should be set for control of environmental disturbance, which should include sediment dispersion and spread of environmental toxins in connection with the laying works and the environmental impact of this, for example in the form of effects on mussel beds and wintering populations of seabirds (particularly long-tailed duck), as well as the impact of the whole project on flora and bird, fish and mammal populations occurring within and alongside the area of activity. In the light of the company's reported estimates of the disturbance to seabirds from vessel traffic during the pipe-laying work, the Swedish Environmental Protection Agency has assessed the disturbance as temporary and of low significance. The company has not, however, reported to a sufficient extent what effects any spread of environmental toxins to the protected banks may have on Baltic Sea populations of long-tailed duck. Sampled sediments from two areas next to Hoburgs Bank and Norra Midsjö Bank must be reported before a decision is made on the permissibility of the activity. In addition, commitments pertaining to the contents of the control programme with regard to the trenching works should be formulated as binding conditions, and the

authority has presented proposals for adjusted wording. Final security must be pledged by the company for the costs of removing the gas pipelines and other restoration measures in conjunction with a future decommissioning of the activity.

Geological Survey of Sweden (SGU): SGU takes a positive view of the company's commitment to establish an environmental monitoring programme for the activity, which is to be drawn up in consultation with SGU, among others, where the impact of the pipelines on sediment dynamics will be followed up and has nothing further to add.

Swedish Pelagic Federation Producer Organisation: Rejection of the application is recommended with reference to the fact that the proposal lacks a complete impact assessment concerning the catch for professional fishery, principally large-scale pelagic fishery. The company has shown that the pipeline tolerates continued pelagic fishery, but it is difficult to estimate the losses of a changed pattern of fishing caused by the pipeline. The damage can be minimised by using electronic equipment at a cost of SEK 1-2 million per trawl.

The company's response to the referral bodies' further comments and conclusion of case

The company has responded to the referral bodies' comments and concluded its case in an opinion received by the Government of Sweden Offices (Ministry of Enterprise, Energy and Communications) on 7 November 2017. The company has stated as follows. The majority of referral bodies questioned did not have any comment on the project, and only three had objections to the permissibility of the project. Issues raised mainly concern commitments and conditions, national security and the extended Natura 2000 site of Hoburgs Bank and the Midsjö Banks. The company has proposed that approval of the application be associated with previously given commitments with modifications and a number of further commitments stated in the opinion based on the comments and wishes presented during the referral procedure. The company then presented its final opinion to the Government of Sweden Offices (Ministry of Enterprise, Energy and Communications) on 19 December 2017 regarding control programmes and analytical results.

Administration under the Espoo Convention

The Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention) contains provisions on environmental impact assessments and transboundary consultation for activities which may be assumed to have significant harmful transboundary environmental impact. All the Baltic Sea states are parties to

this convention, with the exception of Russia. Alongside the national referral procedure, consultations have taken place between the affected parties around the Baltic Sea under the convention, in relation to the project concerned, Russia has also been involved in these consultations. Sweden, through the Swedish Environmental Protection Agency, has informed all the other countries around the Baltic Sea (Finland, Russia, Estonia, Latvia, Lithuania, Poland, Germany and Denmark) about the gas pipeline project where all the countries asked to be allowed to take part in the environmental assessment process. The Swedish Environmental Protection Agency forwarded the special environmental impact assessment, an 'Espoo report', which Nord Stream 2 had prepared for the whole route of the project through the Baltic Sea, to other countries for comments from these countries regarding how they are affected by the route within the Swedish EEZ. Comments were received from all the countries except Russia.

The comments that were received and concerned Sweden were subject of separate communications from the company. Finland, Germany, Latvia, Lithuania and Poland were given an opportunity to comment on these responses. Lithuania also requested a special consultation meeting with Sweden that took place in December 2017. Poland further requested information on Natura 2000 within the Swedish exclusive economic zone, which was forwarded and was commented on by Poland.

Sweden has also forwarded comments through the Swedish Environmental Protection Agency from Swedish authorities, etc. to Russia, Finland, Poland, Denmark and Germany regarding the routes of the pipelines intended in the respective countries.

Permit examination in other countries

The company has also applied for equivalent permits in Russia, Finland, Germany and Denmark. The authorities concerned in Germany granted a permit on 31 January 2018 with regard to the part of the gas pipeline that affects German territory, and on 27 March 2018 for the part of the pipeline that affects the German exclusive economic zone. The Finnish Government on 5 April 2018 granted a permit for the part of the pipeline that passes through the Finnish exclusive economic zone, and on 12 April 2018 the Finnish authority concerned granted an environmental permit.

Grounds for the Government's decision

The company has applied for permit under Section 15a of the Continental Shelf Act to lay two pipelines for the transportation of natural gas on the Swedish continental shelf in the Baltic Sea along a route shown in *annexes.*

The company intends to lay the pipelines concerned on the continental shelf within the Swedish exclusive economic zone. The pipelines will thus not affect Swedish territorial waters. The exclusive economic zone is not part of Swedish territory but is an area of international waters. As the Government’s assessment must fall within the framework set by the UN Convention on the Law of the Sea and international law in general for the rights and obligations of a coastal state, the Government's scope for action in assessing the application is significantly more limited than in cases within Swedish territorial waters.

The application is assessed under Section 15a of the Continental Shelf Act, which is applicable to the continental shelf outside the Swedish territorial limit and is based on Article 79 of the UN Convention on the Law of the Sea.

Article 79 of the UN Convention on the Law of the Sea gives all states the right to lay pipelines on the continental shelf of a coastal state within the exclusive economic zone. With reservation for the right to take special measures to explore the continental shelf, extract its natural resources and to prevent, limit and control pollution from pipelines, the coastal state may not prevent laying or retention of pipelines. The route of a pipeline must, however, be approved by the coastal state under the convention. When pipelines are laid, it follows from the UN Convention on the Law of the Sea that states have to take proper account of existing pipes or pipelines. In particular, opportunities to repair these must not be adversely affected.

In assessment of a permit application under Section 15a of the Continental Shelf Act, the basic principle is thus that laying pipelines on the continental shelf outside the territorial limit is permitted. This right is not, however, unconditional. A permit must be associated with the conditions required to 1) make possible exploration of the continental shelf and extraction of its natural resources, 2) prevent, limit and control pollution from pipelines, and 3) protect the possibility of using and repairing already existing underwater cables and pipelines. Setting conditions over and beyond this, which certain referral bodies have asked to be done, is not consistent with the Continental Shelf Act. The same applies to questions regarding whether the company has to pledge security, make provisions or take other compensatory measures, for example decommissioning costs or investments that benefit the marine environment, which some referral bodies have raised. In a permit decision, the route of the pipeline on the continental shelf to which the permit relates must be stated and the Government must assess whether the route applied for is appropriate.

Under the UN Convention on the Law of the Sea, coastal states have a general and clear obligation to protect and preserve the marine environment with a special responsibility of the coastal state to prevent harmful environmental impact in its

exclusive economic zone and on its continental shelf, which has to be taken into account in assessing the company’s application.

During preparation of the case, the company addressed the referral bodies’ comments and made commitments to respond to the referral bodies’ comments. The company's commitments are presented under the heading of the Government’s decision.

In the Government's judgement, the company’s application can be considered on the basis of existing documentation.

Natural environment

The referral bodies have presented a number of comments on the impact of the pipelines on the natural environment, for example their impact on flora, bird, fish and mammal populations and mussels occurring within or alongside the area of activity. The Swedish Environmental Protection Agency has stated that a permit must be associated with conditions to prevent, limit and control pollution from the pipelines, which also includes disturbance of the surroundings from the planned laying work in the form of sediment dispersion and dispersion of environmental toxins, among other things. The Swedish Agency for Marine and Water Management, Kalmar County Administrative Board and Gotland County Administrative Board have also presented similar comments and have highlighted in particular the importance of protecting the acutely endangered harbour porpoise and that monitoring of underwater noise should be carried out with the aim of limiting impact on harbour porpoise. Further questions which have been touched upon are the risk of the pipelines becoming potential corridors for the spread of invasive species and the importance of investigating stability conditions on the seabed, as a local earthquake may be of significance to safety.

The company has judged that impacts from the project are small, but has stated that it is important to monitor turbidity and dispersion of sediment in intervention work. The company has additionally made adaptations to the plan for implementation, meaning that planned laying works in the Swedish exclusive economic zone will be reduced in both time and extent. For example, the quantity of sediment affected by ploughing is reduced by more than half per pipeline in comparison with the original calculations. It is further planned that the pipe-laying will be carried out with dynamically positioned pipe-laying vessels, which means that anchoring will not be used. The company has made a commitment that turbidity from trenching works will be monitored at the banks of Hoburgs Bank and Norra Midsjö Bank and be part of the control programme developed for the activity. According to the company there are no mussel reefs along

the route, and sediment dispersion is assumed to settle within 24 hours for most scenarios. The company has further stated that the Natura 2000 site is already affected by other vessels in and with the existing shipping channels and that individual birds may be affected by the pipe-laying work, but the effects will be local and temporary. In addition, according to the company, there will not be any impact from the project on population level, as all the studies show that affected bird species are concentrated on the shallow banks at Hoburgs Bank and the Midsjö Banks and not on the route of the pipelines. Based on the investigation obtained, the company has also made the assessment that the pipelines will not have a lasting adverse impact on harbour porpoise, at most a possible temporary reaction of avoiding pipe-laying vessels or intervention work. With regard to the issue of preventing, limiting and controlling pollution from the pipelines, the company has stated that in the event of an accident due to fracture of the pipelines leading to discharges of methane gas, the risk to humans and the environment is low, as methane gas is not toxic but can be ignited. The company has further stated that a contingency plan should be prepared that includes information to shipping about confirmed leaks and that a repair system for emergency situations should be provided.

Regarding the issue of protection for fish and harbour porpoise, further protective measures in certain areas have been requested by the referral bodies. The Swedish Marine and Water Management Agency and the county administrative boards of Skåne, Blekinge and Gotland, among others, have stated that laying works should not be permitted during certain parts of the year in the Bornholm Deep, in order to protect spawning fish, and within the extended Natura 2000 site of Hoburgs Bank and the Midsjö Banks, in order to avoid a risk of significant impact on harbour porpoise.

In this respect the company has made the following adjustments to the implementation plan. It is expected that it will be possible for necessary intervention work in the extended Natura 2000 site of Hoburgs Bank and the Midsjö Banks to be carried out over a period of two days per pipeline instead of ten days, due to the higher rate of the ploughing works and reduced sections were ploughing is considered necessary. It is estimated that the average rate of pipe-laying can be up to 3.8 kilometres per day, instead of 2.5 kilometres per day, which means that the time spent in the extended Natura 2000 site is reduced from 56 days to 37 days per pipeline. The company has further accepted not to carry out construction work in the extended Natura 2000 site of Hoburgs Bank and the Midsjö Banks during the period from June to August and has made a commitment not to carry out intervention work and to try to avoid pipe-laying works in the Bornholm Deep in July and August.

The Government notes that consultation under the Espoo Convention has taken place.

The Government makes the assessment that the natural environment in the area affected by the application will only be affected to a very limited extent during a very limited time in connection with the laying works. It is evident from the investigation of the matter that turbidity, sediment dispersion and noise can occur in particular in the laying works. The route applied for means that the shortest distance between Hoburgs Bank and the pipelines is five kilometres. The shortest distance between Northern Midsjö Bank and the pipelines is four kilometres. The distance between the pipelines and the banks that are sensitive from an environmental point of view is therefore somewhat longer than for the existing Nord Stream pipelines and, in the Government's assessment, is so great that the effects of the laying works ought not to lead to any significant adverse impact on the natural assets at the banks concerned. Approval of the application is therefore, in the Government's assessment, consistent with Sweden's obligation to protect and preserve the marine environment in the exclusive economic zone. In making this assessment, the Government has also taken account of the commitments made by the company to control and minimise the impact of the activity on the environment, including the commitment not to carry out certain works within the extended Natura 2000 site of Hoburgs Bank and the Midsjö Banks and in the Bornholm Deep during specified summer months.

Shipping

The National Maritime Administration and the Swedish Shipowners' Association have emphasised the importance of the project being planned and implemented so that shipping is not disturbed for example with respect to flow of traffic and safety. The Swedish Transport Agency has not had any objection to the application. The commitments on consultation and information proposed by the company are judged by the Government to be an appropriate way to handle the interests of shipping in the project.

Cultural environment

The National Heritage Board has stated that a permit must contain requirements to clarify whether ancient relics are affected by the activity and that encountered ancient relics should be studied more closely. In addition, the National Heritage Board has stated that the route of the pipelines should be adjusted if any ancient relic is encountered in the area. The National Maritime Museum considers satisfactory documentation to have been produced for all indications of possible ship and cultural relics in the laying areas and therefore does not have any comments to make on the

project. The company has stated that a large number of very detailed studies of the seabed have been carried out along the proposed route. The studies have covered a corridor width of around 1,500 metres. Six wrecks have been identified within the Swedish exclusive economic zone within 250 metres from the pipeline concerned. As a dynamically positioned pipe-laying vessel will be used, this means that the risk of damage to ancient relics through anchors and anchor chains is avoided. The company has made a commitment to examine in more detail the six wrecks that have been identified before and after the laying of the pipelines and to include these in the company's control programme. On this basis, the Government judges that the consequences for the cultural environment of the laying the pipelines are acceptable, but stresses that in the event that new ship and cultural relics are discovered in connection with the company's work, this must be taken into account under the terms of the Cultural Environment Act (1998:950).

Fisheries

Some referral bodies, including the Swedish Marine and Water Management Agency, have stated that the pipelines should be designed so that they do not obstruct fishing. The National Board of Housing, Building and Planning has cited the risk of adverse impacts of any bottom trawling. The Swedish Fishermen's Producer Organisation has not had any objection to the application in view of the fact that the company has entered into an agreement on compensation for the damage caused by the company's activities to Swedish demersal fishery, for example bottom trawling. The Swedish Pelagic Federation Producer Organisation, on the other hand, has recommended rejection of the application. The organisation has stated that a gas pipeline is an obstacle that must be avoided in pelagic fishing, for example midwater trawling, leading to loses in the form of lost fishing opportunities. According to the organisation, the losses could be remedied with electronic equipment attached to the trawls. Compensation from the company is needed for this. The organisation argues that it is unclear what liability applies in the event of damage caused by a trawl striking a pipeline. The Swedish Board of Agriculture has taken the view that the application has been based on bottom trawling and should be supplemented with data on midwater trawling and that an economic impact assessment needs to be made for all fishing. The company has stated that the pipelines are overtrawlable and designed to withstand unintended collisions and impacts for example from fishing equipment and has referred to the Duty of Compensation Act (1996:518) in the event of damage to underwater cables and pipelines, etc. with regard to the issue of compensation for damage. The company has also supplemented the application with further analysis of the impact of the project on pelagic fishery in particular.

In light of this, particularly in consideration of the fact that the pipelines have been designed in such way as to be overtrawlable and that the surface of the bed of the Baltic Sea occupied by the pipelines is extremely limited, the Government considers that the impact that the pipelines may have on pelagic fishery is also acceptable.

Natura 2000 permit

Some referral bodies, such as the Marine and Water Management Agency, the Swedish Environmental Protection Agency and the Legal, Financial and Administrative Services Agency have addressed the issue of Natura 2000 permits. In the Marine and Water Management Agency's view, permit review must be conducted according to the rules on Natura 2000. According to the Swedish Environmental Protection Agency it is not clear whether the provisions on Natura 2000 permits are applicable to laying of pipelines under Section 15a of the Continental Shelf Act, but such a review would be consistent with the rules contained in the UN Convention on the Law of the Sea. The Legal, Financial and Administrative Services Agency has stated that there is a risk that the project may have a significant impact on the extended Natura 2000 site of Hoburgs Bank the Midsjö Banks, and the project must therefore be preceded by a review under the rules applicable to the Natura 2000 sites. The Government notes in this respect that the issue of the need for a permit under the rules set out in Chapter 7 of the Environmental Code on special protected areas is dealt with by the county administrative board in the county concerned.

Summary assessment

In light of the above, the Government finds in an overall assessment that the route applied for by the company can be approved and that a permit is to be granted. The permit must, however, be associated with conditions that are needed to fulfil the requirements set out in the Continental Shelf Act. To safeguard the possibility of using and repairing already existing underwater cables and pipelines, the company is required to consult owners of such cables and pipelines on the technical aspects of the design of the places where the pipelines cross each other and as far as possible to adapt the solutions to the comments submitted. With regard to the possibility of preventing, limiting and controlling pollutants from the pipelines, the Government, partly in view of what has been stated concerning the potential harmful effects of a gas leak and the company's planned inspections to detect wear or damage to the pipes, deems some particular conditions in this respect not to be necessary.

It is crucial that the area of establishment can be restored if the pipelines are

decommissioned. A risk of future pollution through breakdown of the pipelines cannot be ruled out, in the Government's assessment. It should be ensured that the pipelines can be removed and that the seabed can be restored to as close to its original condition as possible, if this is deemed to be the best method in the event of decommissioning. When the pipelines are taken out of service, a position should be adopted on the extent to which the pipelines are to be removed by the company and what other measures are required to restore the seabed to as good a condition as possible.

The Government has today instructed SGU, on the basis of the company's application, to establish the precise coordinates for the permitted location of the pipelines on the seabed. The pipelines are then to be positioned in accordance with the coordinates established by SGU.

On behalf of the Government

Mikael Damberg

Karin Eckerdal

Copies to:

Prime Minister's Office/SAM
Ministry of Foreign AffairsRS, GA, FMR, EC and EU NORD Ministry of Defence/RS, SI, SUND and MFI
Ministry of Justice /SSK
Ministry of Finance/BA
Ministry for Enterprise, Energy and Communications/RS, FJR, SUBT, SUN and MRT
Ministry of the Environment and Energy/ME and EE Ministry of Culture/KL
Swedish Species Information Centre
National Board of Housing, Building and Planning
Chalmers University of Technology
Armed Forces Radio Establishment
Swedish Armed Forces
Swedish Institute for the Marine Environment
Swedish Agency for Marine and Water Management
Legal, Financial and Administrative Services Agency
Swedish Coast Guard
Linnaeus University
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Blekinge County Administrative Board
Gotland County Administrative Board
Kalmar County Administrative Board
Skåne County Administrative Board
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Södermanland County Administrative Board
Östergötland County Administrative Board
Swedish Civil Contingencies Agency
Swedish Environmental Protection Agency
Swedish Police Service
National Heritage Board
National Maritime Administration
Swedish Energy Agency
Swedish Geotechnical Institute (SGI)
Swedish Board of Agriculture
Swedish National Maritime Museum
Stockholm University, Stockholm University Baltic Sea Centre
Geological Survey of Sweden
Swedish University of Agricultural Sciences/Institute of Aquatic Resources
Swedish Meteorological and Hydrological Institute
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Uppsala University (Campus Gotland) World Maritime University

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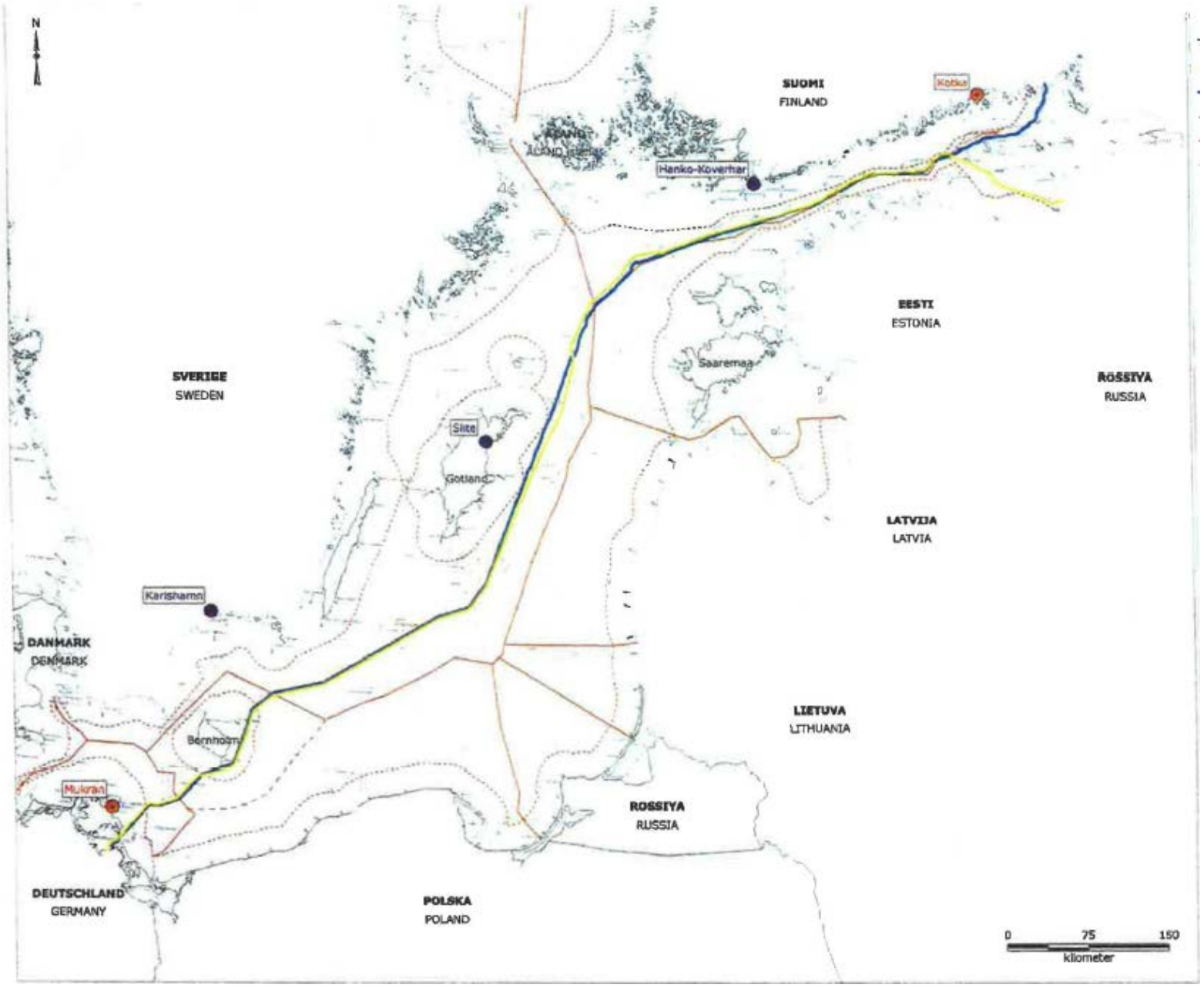
Municipality of Valdemarsvik
Municipality of Västervik Municipality of Ystad
Bird Life Sweden
Swedish Shipowners' Association
Greenpeace
Marine and Coastal Fishermen's Producer Organisation
Swedish Society for Nature Conservation,
Marine and Coastal Fishermen's Producer Organisation
Swedish Society for Nature Conservation,
Swedish Association of Professional Fishermen
Swedish Pelagic Federation Producer Organisation
Worldwide Fund for Nature WWF



Key to symbols:

- NSP2
- NSP
- Territorial limit
- Boundary of EEZ
- Mid-line between Denmark and Poland

Planera

Planned shore facilities:

- Facility for weight coating of pipes/parking area for pipes (storage)
- Planned shore facility; parking area for pipes (storage)

Version: 06
Date: 16.08.2016
Prepared by: MSTB
Checked by: KAMTSE

PR-01

Planned NSP2 route and placements on shore

Annex to Decision I 2 at Cabinet meeting held on 7 June 2018, N2016 / 05812 / FÖF

Annex — Coordinates of the routes

Annex: Coordinates of the mid-line of the routes of Pipe A and Pipe B. The placement corridor is +/- 200m from the mid-lines below.

Pipe A - Sweden - Z34					
Control point	**Coordinates ETRS89 UTM34N / WGS84 Lat/Long**				
	Easting	**Northing**	**LAT.**	**LONG.**	**Radius**
START SWE	468482.386	6528696.099	N 58° 53' 48.69"	E 20° 27' 10.96"	
TG' V.1	467711.493	6528034.956	N 58° 53' 27.11"	E 20° 26' 23.14"	
V.1	466981.599	6527408.974	N 58° 53' 6.67"	E 20° 25' 37.89"	5000
TG" V.1	466535.949	6526556.921	N 58° 52' 39"	E 20° 25' 10.52"	
TG' V.2	456446.248	6507266.096	N 58° 42' 12.1"	E 20° 14' 54.09"	
V.2	456252.396	6506895.465	N 58° 42' 0.05"	E 20° 14' 42.31"	7500
TG" V.2	456100.958	6506505.577	N 58° 41' 47.39"	E 20° 14' 33.18"	
TG' V.3	455014.005	6503707.152	N 58° 40' 16.52"	E 20° 13' 27.68"	
V.3	454967.103	6503586.4	N 58° 40' 12.6"	E 20° 13' 24.85"	5000
TG" V.3	454914.011	6503468.239	N 58° 40' 8.76"	E 20° 13' 21.64"	
TG' V.4	451199.565	6495201.344	N 58° 35' 40.05"	E 20° 09' 37.55"	
V.4	450938.828	6494621.047	N 58° 35' 21.18"	E 20° 09' 21.85"	7500
TG" V.4	450584.073	6494092.958	N 50° 35' 3.97"	E 20° 09' 0.3"	
TG' V.5	448956.495	6491670.144	N 58° 33' 44.96"	E 20° 07' 21.5"	
V.5	448275.549	6490656.487	N 58° 33' 11.9"	E 20° 06' 40.2“	6000
TG" V.5	448044.967	6489457.312	N 58° 32' 33.04"	E 20° 06' 26.92"	
TG' V.6	447349.23	6485839.037	N 58° 30' 35.76"	E 20° 05' 46.91"	
V.6	447103.981	6484563.587	N 58° 29' 54.42"	E 20° 05' 32.82"	5000
TG" V.6	447510.481	6483330.024	N 58° 29' 14.72"	E 20° 05' 58.95"	
TG' V.7	449467.618	6477390.906	N 58° 26' 3.54"	E 20° 08' 4.5"	
V.7	449736.7	6476574.351	N 58° 25' 37.26"	E 20° 08' 21.73"	5000
TG" V.7	449717.579	6475714.815	N 58° 25' 9.46"	E 20° 08' 21.23"	
TG' V.8	449614.349	6471074.432	N 58° 22' 39.39"	E 20° 08' 18.53"	
V.8	449597.955	6470337.484	N 58° 22' 15.56"	E 20° 08' 18.1"	7500
TG" V.8	449438.4	6469617.829	N 58° 21' 52.23"	E 20° 08' 8.85"	
TG' V.9	447631.117	6461466.273	N 58° 17' 27.93"	E 20° 06' 24.32"	
V.9	447557.596	6461134.664	N 58° 17' 17.18"	E 20° 06' 20.08"	7500
TG" V.9	447454.401	6460811.058	N 58° 17' 6.67"	E 20° 06' 14"	
TG' V.10	445957.463	6456116.84	N 58° 14' 34.25"	E 20° 04' 46.05"	
V.10	445893.753	6455917.054	N 58° 14' 27.77"	E 20° 04' 42.31"	7500
TG" V.10	445841.306	6455714.02	N 58° 14' 21.18"	E 20° 04' 39.27"	
TG' V.11	438288.981	6426477.316	N 57° 58' 32.4"	E 19° 57' 24"	
V.11	438076.219	6425653.667	N 57° 58' 5.66"	E 19° 57' 11.82"	7500
TG" V.11	437684.391	6424898.594	N 57° 57' 41.05"	E 19° 56' 48.7"	

Pipeline A - Sweden - Z34					
Control point	Coordinates ETRS89 UTM34N / WGS84 Lat/Long				
	Easting	Northing	LAT.	LONG.	Radius
TG' V.12	424307.693	6399120.997	N 57° 43' 40.25"	E 19° 43' 44 52"	
V.12	423977.512	6398484.721	N 57° 43' 19.48"	E 19° 43' 25.29"	5000
TG" V.12	423839.401	6397761.307	N 57° 42' 56.65"	E 19° 43' 17.75"	
TG' V.13	423655.101	6396842.648	N 57° 42' 26.19"	E 19° 43' 7.69"	
V.13	423515.903	6396133.695	N 57° 42' 3.19"	E 19° 43' 0.09"	5000
TG" V.13	423181.705	6395493.147	N 57° 41' 42.28"	E 19° 42' 40.64"	
TG' V.14	420775.666	6390881.562	N 57° 39' 11.69"	E 19° 40' 20.83"	
V.14	420630.399	6390603.134	N 57° 39' 2.6"	E 19° 40' 12.4"	5000
TG" V.14	420451.436	6390345.07	N 57° 38' 54.14"	E 19° 40' 1.91"	
TG' V.15	417958.167	6386749.794	N 57° 36' 56.3"	E 19° 37' 35.97"	
V 15	417533.246	6386137.061	N 57° 36' 36.21"	E 19° 37' 11.12"	7500
TG" V.15	417237.287	6385452.658	N 57° 36' 13.89"	E 19° 36' 54 13"	
TG' V.16	376820.749	6291989.699	N 56° 45' 20.07"	E 18° 59' 7.12"	
V.16	376590.52	6291457.295	N 56° 45' 2.64"	E 18° 58' 54.49"	7500
TG" V.16	376281.166	6290966.623	N 56° 44' 46.49"	E 18° 58' 37.15"	
TG' V.17	374775.534	6288578.513	N 56° 43' 27.85"	E 18° 57' 12 78"	
V,17	374429.42	6288029.535	N 56° 43' 9.78"	E 18° 56' 53.4"	7500
TG" V.17	374182.751	6267429.264	N 56° 42' 50.13"	E 18° 56' 39.95"	
TG' V.18	371411.651	6280685.768	N 56° 39' 9.46"	E 18° 54' 9.22"	
V.18	371280.928	6280367.653	N 56° 38' 59.05"	E 18° 54' 2.12"	7500
TG" V.18	371121.64	6280062.837	N 56° 38' 49.04"	E 18° 53' 53.33"	
TG' V.19	370813.256	6279472.711	N 56° 38' 29.67"	E 18° 53' 36.3"	
V.19	370538.493	6278946.922	N 56° 38' 12.4"	E 18° 53' 21.13"	5000
TG" V.19	370394.397	6278371.435	N 56° 37' 53.65"	E 18° 53' 13.72"	
TG' V.20	369963.178	6276649.244	N 56° 36' 57.56"	E 18° 52' 51.55"	
V.20	369842.822	6276168.569	N 56° 36' 41.91"	E 18° 52' 45.37"	7500
TG" V.20	369660.273	6275707.907	N 56° 36' 26.84"	E 18° 52' 35.5"	
TG' V.21	368307.267	6272293.59	N 56° 34' 35.12"	E 18° 51' 22.46"	
V.21	368212.928	6272055.526	N 56° 34' 27.33"	E 18° 51' 17.38"	7000
TG" V.21	368101.447	6271024.992	N 56° 34' 19.77"	E 18° 51' 11.27"	
TG' V.22	367499.074	6270579.326	N 56° 33' 38.9"	E 18° 50' 38.29"	
V.22	367266.031	6270097.411	N 56° 33' 23.09"	E 18° 50' 25.54"	4000
TG" V.22	367167.905	6269571.177	N 56° 33' 5.98"	E 18° 50' 20.77"	
TG' V.23	367109.249	6269256.61	N 56° 32' 55.75"	E 18° 50' 17.92"	
V.23	366833.182	6267776.104	N 56° 32' 7.62"	E 18° 50' 4.49"	5000
TG" V.23	365785.353	6266694.362	N 56° 31' 31.59"	E 18° 49' 5.22"	
TG' V.24	363795.591	6264640.2	N 56° 30' 23.14"	E 18° 47' 12.74"	
V.24	363460.21	6264293.964	N 56° 30' 11.6"	E 18° 46' 53.79"	6500
TG" V.24	363179.57	6263902.045	N 56° 29' 58.64"	E 18° 46' 38.13"	
TG' V.25	351434.746	6247500.141	N 56° 20' 55.8	E 18° 35' 45.42"	

Pipeline A - Sweden - Z34					
Control point	Coordinates ETRS89 UTM34N / WGS84 Lat/Long				
	Easting	Northing	LAT.	LONG.	Radius
V.25	350350.317	6245985.713	N 56° 20' 5.64"	E 18° 34' 45.41"	5500
TG" V.25	348568.825	6245441.87	N 56° 19' 46.02"	E 18° 33' 2.9"	
TG' V.26	321901.207	6237300.938	N 56° 14' 49.67"	E 18° 07' 31.99“	
V.26	321386.533	6237143.821	N 56° 14' 43.9"	E 18° 07' 2.51"	5000
TG" V.26	320917.077	6236880.788	N 56° 14' 34.77"	E 18° 06' 35.91"	
UTM 34-33	313921.23	6232961.06	N 56° 12' 18.49"	E 18° 00' 0"	

Table 1a: Coordinates of pipeline A, in Z34

Pipeline A - Sweden - Z33					
Control Point	Coordinates ETRS89 UTM33N / WGS84 Lat/Long				
	Easting	Northing	LATITUDE	LONGITUDE	Radius
UTM34-33	686078.77	6232961.06	N 56° 12' 18.49"	E 18° 00' 00"	
TG' V.1	680484.097	6229152.07	N 56° 10' 23.2"	E 17° 54' 26.45"	
V.1	680253.332	6228994.959	N 56° 10' 18.44"	E 17° 54' 12.7"	5000
TG" V.1	680006.511	6228864.514	N 56° 10' 14.56"	E 17° 53' 58.09"	
TG' V.2	677857.931	6227728.987	N 56° 09' 40.78"	E 17° 51' 50.95“	
V.2	677397.289	6227485.537	N 56° 09' 33.54"	E 17° 51' 23.7"	5000
TG" V.2	676996.735	6227152.347	N 56° 09' 23.31"	E 17° 50' 59.71"	
TG' V.3	674700.447	6225242.247	N 56° 08' 24.65"	E 17° 48' 42.28"	
V.3	674515.613	6225088.498	N 56° 08' 19.93"	E 17° 48' 31.22"	5000
TG" V.3	674316.88	6224953.193	N 56° 08' 15.82"	E 17° 48' 19.4"	
TG' V.4	655897.317	6212412.424	N 56° 01' 53.51"	E 17° 30' 7.13"	
V.4	655450.608	6212108.287	N 56° 01' 44.2"	E 17° 29' 40.71"	5000
TG" V.4	655079.2	6211715.725	N 56° 01' 31.95"	E 17° 29' 18.46"	
TG' V.5	653251.915	6209784.364	N 56° 00‘ 31.65"	E 17° 27' 29.04“	
V.5	652664.905	6209163.92	N 56° 00' 12.27"	E 17° 26' 53.92"	5000
TG“ V.5	651905.219	6208773.526	N 56° 00' 0.52“	E 17° 26' 9.31"	
TG' V.6	646662.587	6206079.396	N 55° 58' 39.33"	E 17° 21' 1.66"	
V.6	646388.663	6205938.63	N 55° 58' 35.08"	E 17° 20' 45.6"	5000
TG" V.6	646134.086	6205765.311	N 55° 58' 29 76"	E 17° 20' 30.58"	
TG' V.7	593005.707	6169594.866	N 55° 39' 47.79"	E 16° 28' 42.52"	
V.7	592675.322	6169369.936	N 55° 39' 40.74"	E 16° 20‘ 23.34"	5000
TG" V.7	592313.4	6169200.347	N 55° 39' 35.5"	E 16° 28' 2.43"	
TG' V.8	588395.998	6167364.73	N 55° 38' 38.77"	E 16° 24' 16.22"	
V.8	588082.094	6167217.641	N 55° 30' 34.21"	E 16° 23' 58.1"	5000
TG" V.8	587750.895	6167115.278	N 55° 38' 31.12"	E 16° 23' 39.05"	
END SWE	546689.83	6154424.575	N 55° 32' 1.08"	E 15° 44' 23.08"	

Table 2a: Coordinates of pipeline A, in Z33

Pipeline B - Sweden - Z34					
Control point	Coordinates ETRS89 UTM34N / WGS84 Lat/Long				
	Easting	Northing	LATITUDE	LONGITUDE	Radius
START SWE	468498.245	6528637.243	N 58° 53' 46.79"	E 20° 27' 11.98"	
TG' V.1	467830.086	6528064.207	N 58° 53' 28.09"	E 20° 26' 30.54"	
V.1	467025.515	6527374.181	N 58° 53' 5.56"	E 20° 25' 40.65"	5500
TG" V.1	466535.002	6526434.571	N 58° 52' 35.05"	E 20° 25' 10.53"	
TG' V.2	457730.218	6509568.439	N 58° 43' 26.99"	E 20° 16' 12.3"	
V.2	457628.154	6509372.929	N 58° 43' 20.64"	E 20° 16' 6.09"	7500
TG" V.2	457537.755	6509171.76	N 58° 43' 14.1"	E 20° 16' 0.61"	
TG' V.3	451247.826	6495174.457	N 58° 35' 39.2"	E 20° 09' 40.56"	
V.3	450987.13	6494594.318	N 58° 35' 20.34"	E 20° 09' 24.86"	7500
TG" V.3	450632.465	6494066.363	N 58° 35' 3.13"	E 20° 09' 3.32"	
TG' V.4	449008.392	6491648.767	N 58° 33' 44.29"	E 20° 07' 24.73"	
V.4	448327.445	6490635.109	N 58° 33' 11.24"	E 20° 06' 43.42"	6000
TG" V.4	448096.863	6489435.933	N 58° 32' 32.37"	E 20° 06' 30.15"	
TG' V.5	447405.937	6485842.681	N 58° 30' 35.91"	E 20° 05' 50.41"	
V.5	447160.689	6484567.232	N 58° 29' 54.56"	E 20° 05' 36.32"	5000
TG" V.5	447567.188	6483333.67	N 58° 29' 14.86"	E 20° 06' 2.45"	
TG' V.6	449522.816	6477399.121	N 58° 26' 3.83"	E 20° 08' 7.9"	
V.6	449791.897	6476582.567	N 58° 25' 37.54"	E 20° 08' 25.13"	5000
TG" V.6	449772.776	6475723.032	N 58° 25' 9.75"	E 20° 08' 24.63"	
TG' V.7	449669.215	6471067.804	N 58° 22' 39.2"	E 20° 08' 21.91"	
V.7	449652.821	6470330.856	N 58° 22' 15.37"	E 20° 08' 21.49"	7500
TG" V.7	449493.266	6469611.201	N 58° 21' 52.04"	E 20° 08' 12.24"	
TG' V.8	447684.271	6461451.928	N 58° 17' 27.49"	E 20° 06' 27.59"	
V.8	447610.75	6461120.319	N 58° 17' 16.73"	E 20° 06' 23.35"	7500
TG" V.8	447507.555	6460796.713	N 58° 17' 6.23"	E 20° 06' 17.28"	
TG' V.9	446010.327	6456101.586	N 58° 14' 33.78"	E 20° 04' 49.31"	
V.9	445946.617	6455901.8	N 58° 14' 27.3"	E 20° 04' 45.57"	7500
TG" V.9	445894.17	6455698.766	N 58° 14' 20.71"	E 20° 04' 42.52"	
TG' V.10	438340.671	6426457.518	N 57° 58' 31.78"	E 19° 57' 27.16"	
V.10	438127.909	6425633.869	N 57° 58' 5.05"	E 19° 57' 14.99"	7500
TG" V.10	437736.081	6424878.796	N 57° 57' 40.44“	E 19° 56' 51.86"	
TG' V.11	424360.143	6399102.663	N 57° 43' 39.69"	E 19° 43' 47.71"	
V.11	424029.962	6398466.387	N 57° 43' 18.92"	E 19° 43' 28.48"	5000
TG" V.11	423891.851	6397762.972	N 57° 42' 56.09"	E 19° 43' 20.94"	
TG' V.12	423707.54	6396824.255	N 57° 42' 25.63"	E 19° 43' 10.87"	
V.12	423568.342	6396115.302	N 57° 42' 2.63"	E 19° 43' 3.28"	5000

Pipeline B - Sweden - Z34					
Control point	Coordinates ETRS89 UTM34N / WGS84 Lat/Long				
	Easting	Northing	LATITUDE	LONGITUDE	Radius
TG" V.12	423234.144	6395474.754	N 57° 41' 41.71"	E 19° 42' 43.83"	
TG' V.13	420822.747	6390852.899	N 57° 39' 10.79"	E 19° 40' 23.7"	
V.13	420677.475	6390574.461	N 57° 39' 1.7"	E 19° 40' 15.27"	5000
TG" V.13	420498.504	6390316.389	N 57° 38' 53.24"	E 19° 40' 4.79"	
TG' V.14	418006.495	6386722.962	N 57° 36' 55.47"	E 19° 37' 38.91"	
V.14	417581.558	6S86110.212	N 57° 36' 35.38"	E 19° 37' 14.06"	7500
TG" V.14	417285.591	6385425.787	N 57° 36' 13.06"	E 19° 36' 57.08"	
TG' V.15	376729.042	6291638.581	N 56° 45' 8.63"	E 18° 59' 2.33"	
V.15	376506.544	6291124.053	N 56° 44' 51.79"	E 18° 58' 50.13"	7500
TG" V.15	376210.03	6290648.318	N 56° 44' 36.13"	E 18° 58' 33.52"	
TG' V.16	374697.475	6288221.53	N 56° 43' 16.24"	E 18° 57' 8.81"	
V.16	374475.509	6287865.401	N 56° 43' 4.52"	E 18° 56' 56.39"	5000
TG" V.16	374316.008	6287477.256	N 56° 42' 51.82"	E 18° 56' 47.7"	
TG' V.17	371517.891	6280668.054	N 56° 39' 9"	E 18° 54' 15.49"	
V.17	371354.538	6280270.535	N 56° 38' 55.99"	E 18° 54' 6.62"	7500
TG" V.17	371146.845	6279894.278	N 56° 38' 43.62"	E 18° 53' 55.11"	
TG' V.18	370923.796	6279490.201	N 56° 38' 30.34"	E 18° 53' 42.75"	
V.18	370609.086	6278920.073	N 56° 38' 11.6"	E 18' 53' 25.32"	5000
TG" V.18	370450.91	6278288.354	N 56° 37' 51.03"	E 18° 53' 17.18"	
TG' V.19	369944.237	6276264.816	N 56° 36' 45.12"	E 18° 52' 51.14"	
V.19	369859.708	6275927.228	N 56° 36' 34.12"	E 18° 52' 46.79"	5000
TG" V.19	369729.227	6275604.605	N 56° 36' 23.57"	E 18° 52' 39.73"	
TG' V.20	368172.924	6271756.532	N 56° 34' 17.63"	E 18° 51' 15.58"	
V.20	368051.362	6271455.96	N 56° 34' 7.79"	E 18° 51' 9.01"	7000
TG" V.20	367902.536	6271167.912	N 56° 33' 58.33"	E 18° 51' 0.83"	
TG' V.21	367608.814	6270599.422	N 56° 33' 39.66"	E 18° 50' 44.68"	
V.21	367338.305	6270075.859	N 56° 33' 22.47"	E 18° 50' 29.81"	4000
TG" V.21	367230.284	6269496.528	N 56° 33' 3.63"	E 18° 50' 24.56"	
TG' V.22	367171.491	6269181.215	N 56° 32' 53.38"	E 18° 50' 21.7"	
V.22	366903.653	6267744.762	N 56° 32' 6.68"	E 18° 50' 8.67"	5000
TG" V.22	365904.444	6266678.594	N 56° 31' 31.2"	E 18° 49' 12.21"	
TG' V.23	363398.421	6264004.637	N 56° 30' 2.19"	E 18° 46' 50.72"	
V.23	363173.186	6263764.309	N 56° 29' 54.18"	E 18° 46' 38.02"	5000
TG" V.23	362981.424	6263496.511	N 56° 29' 45.33"	E 18° 46' 27.32"	
TG' V.24	351480.831	6247435.784	N 56° 20' 53.78"	E 18° 35' 48.23"	
V.24	350396.403	6245921.366	N 56° 20' 3.61"	E 18° 34' 48.22"	5500

Pipeline B - Sweden - Z34					
Control point	Coordinates ETRS89 UTM34N / WGS84 Lat/Long				
	Easting	Northing	LATITUDE	LONGITUDE	Radius
TG" V.24	348614.92	6245377.525	N 56° 19' 44"	E 18° 33' 5.71"	
TG' V.25	321930.825	6237231.562	N 56° 14' 47.47"	E 18° 07' 33.87"	
V.25	321416.151	6237074.445	N 56° 14' 41.7"	E 18° 07' 4.4"	5000
TG" V.25	320946.696	6236811.412	N 56° 14' 32.57"	E 18° 06' 37.8"	
UTM 34-33	313917.392	6232872.94	N 56° 12' 15.64"	E 18° 00' 00"	

Table 3a: Coordinates of pipeline B, in Z34

Pipeline B - Sweden - Z33					
Control point	Coordinates ETRS89 UTM33N / WGS84 Lat/Long				
	Easting	Northing	LATITUDE	LONGITUDE	Radius
UTM34-33	686082.608	6232872.94	N 56° 12' 15.64"	E 18° 00' 0"	
TG' V.1	680522.841	6229087.716	N 56° 10' 21.07"	E 17° 54' 28.54"	
V.1	680292.076	6228930.605	N 56° 10' 16.31"	E 17° 54' 14 79"	5000
TG" V.1	680045.255	6228800.16	N 56° 10' 12.43"	E 17° 54' 0.18"	
TG' V 2	677899.885	6227666.33	N 56" 09' 38.7"	E 17° 51' 53.22"	
V.2	677439.243	6227422.88	N 56° 09' 31.46"	E 17° 51' 25.97"	5000
TG" V.2	677038.688	6227089.69	N 56° 09' 21.23"	E 17° 51' 1.99"	
TG' V.3	674745.416	6225182.098	N 56° 08' 22.65"	E 17° 48' 44.74"	
V.3	674560.576	6225028.344	N 56° 08' 17.92"	E 17° 48' 33.68"	5000
TG" V.3	674361.836	6224893.035	N 56° 08' 13.81"	E 17° 48' 21.86"	
TG' V.4	655046.361	6212355.128	N 56° 01' 51.6"	E 17° 30' 9.84"	
V.4	655499.645	6212050.988	N 56° 01' 42.29"	E 17° 29' 43.42"	5000
TG" V.4	655128.232	6211658.421	N 56° 01' 30.04"	E 17° 29' 21.17"	
TG' V.5	653297.59	6209723.512	N 56° 00' 29.63"	E 17° 27' 31.55"	
V.5	652710.58	6209103.068	N 56° 00' 10.25"	E 17° 26' 56.43"	5000
TG" V.5	651950.894	6206712.674	N 55° 59' 58.51"	E 17° 26' 11.82"	
TG' V.6	646700.973	6206014.799	N 55° 58' 37.2"	E 17° 21' 3.75"	
V.6	646427.049	6205874.033	N 55° 58' 32.95"	E 17° 20' 47.68"	5000
TG" V.6	646172.471	6205700.713	N 55° 58' 27.63"	E 17° 20' 32.67"	
TG' V.7	593042.957	6169529.495	N 55° 39'45.65"	E 16° 28' 44.57"	
V.7	592712.572	6169304.565	N 55° 39' 38.6"	E 16° 28' 25.39"	5000
TG" V.7	592350.65	6169134.976	N 55° 39' 33.36"	E 16° 28' 4.48"	
TG' V.8	588548.201	6167353.224	N 55° 38' 30.29"	E 16° 24' 24.91"	
V.8	588234.248	6167206.112	N 55° 36' 33.74"	E 16° 24' 6.79"	5000
TG" V.8	587902.995	6167103.74	N 55° 38' 30.65"	E 16° 23' 47.73"	
END SWE	546771.984	6154392.399	N 55° 32' 0.01"	E 15° 44' 27.75"	

Table 4a: Coordinates of pipeline B, in Z33