

**Regional Public Organization
"The Saint Petersburg Naturalists Society"**

Centre of expertise ECOM

PUBLIC ENVIRONMENTAL EXPERTISE

OPINION

**Of the Expert Commission of Public Environmental Expertise
of the Nord Stream 2 Project Documentation**

Saint Petersburg, December 23, 2017

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reviewed the documentation of the Nord Stream 2 project and issued the present Opinion.

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1. General provisions

1.1. Legal basis for performing of a public environmental expertise

The public environmental expertise (hereinafter - the PEE) of the project documentation of the Nord Stream 2 project was organized and performed in accordance with the Articles 20-25 of the Federal Law¹ "Environmental Expertise" [1-5]². Public environmental expertise is performed pursuant to the legislation of the Russian Federation, including the Federal Law "Environmental Protection" [1-6], "Regulations on the Procedure for Performing State Environmental Expertise" [3-1], "Regulations on Assessing the Impact of the Proposed Economic and Other Activity on the Environment in the Russian Federation" [4-1].

1.2. Organizer of the public environmental expertise, registration of the PEE

The public environmental expertise of the project documentation on Nord stream 2 is organized and performed by the Regional Public Organization "The Saint Petersburg Naturalists Society". Execution of the PEE is directly organized by the Expert Centre ECOM, which is a structural unit of the RPO SPNS, represented by the managing director of the Centre A.S. Karpov acting in compliance with POA.

The basis for performance of the PEE is a statement of a body of citizens with residence in Saint Petersburg and the Leningrad Region, including territories that may be directly affected by the planned activities on construction of the Nord Stream 2 pipeline and the related infrastructure.

The Public environmental expertise was registered by the District administration of the Primorsky District of Saint Petersburg on September 1, 2017 (letter No. 4184/17-1-1 of 28.09.2017) and by the Municipal unit administration of Kingissepsky municipal district of the Leningrad Region on October 4, 2017 (letter No. 01-4566/17-0-0-э of 04.10.2017) (**Annex 11**).

The order to execute the PEE was signed by the president of the RPO SPNS D.Y. Vlasov on October 6, 2017 (**Annex II**).

1.3. Subject of review

The PEE subject of review is the project documentation of the Nord Stream 2 project to the extent it was presented for the State Environmental Expertise (see Section 2.1). The initiator of the project Nord Stream 2 is Nord Stream 2 AG.

Nord Stream 2 AG is a legal body within the laws of Switzerland, registered in the Trade registry of the Canton of Zug on 15.07.2015, number CHE-444.239.548, registered address: Baarerstrasse 52, 6300 Zug, Switzerland.

Nord Stream 2 AG operates through the Branch of the Joint-Stock Company Nord Stream 2 AG in St. Petersburg, represented by the branch director Alexander Grigorievitch Khokhlov.

Information on the branch of the JSC Nord Stream 2 AG in St. Petersburg:

¹ Hereinafter, the Federal Laws are referred to as "FL".

² Hereinafter, double numbers in square brackets refer to regulatory acts and other sources in Appendix 1 to this expertise. The first digit of the number indicates the number of the Section in Appendix 1, and the second refers to the document number in the Section.

- Certificate of entry in the State Register of accredited branches and representative offices of foreign legal entities on letterhead 77 No. 016390326 of 02.03.2016, issued by the Moscow Interdistrict Inspectorate No. 47 for Moscow, the number of the accreditation record is 10160000280.
- Actual / Postal address of the branch: 196105, St. Petersburg, Reshetnikov street, 14 A.

The decision to develop the project documentation was made on the basis of the Agreement PO16-5102 of 07.06.2016 between Nord Stream 2 AG and Gazprom Projektirovaniye Ltd.

The developer of the project documentation is Gazprom Projektirovaniye Ltd.

1.4 Objective of the environmental expertise

The Public Environmental Expertise is performed to reach the following objectives:

- to establish if the subject of review - the project documentation of the Nord Stream 2 project - complies with environmental requirements established by legislation, regulations and technical guidelines in the field of environmental protection, in order to prevent the negative impact of such activities on the environment;
- to determine if the planned environmental protection measures at the construction and operation stages of the facility presented in the project documentation, are adequate and sufficient;
- to establish if the process of environmental expertise of the planned activities for the implementation of the Nord Stream project 2 complies with the principles of ensuring public participation in the discussion of the proposed activity (at all stages of the process).

1.5. Principles of production of the public expertise

Production of a public expertise is based on the principles of:

- presumption of potential environmental hazard of any planned economic and other activities;
- obligation to produce a state environmental expertise prior to the adoption of decisions on the implementation of the subject of environmental review;
- integrated assessment of impact on the environment of economic and other activities and their consequences;
- obligation to take into account, in the process of producing an environmental expertise, the environmental safety requirements;
- reliability and completeness of information submitted for the environmental expertise;
- independence of involved experts exercising their powers in the field of environmental expertise;
- scientific validity, objectivity and legality of the conclusions of the ecological expertise;
- publicity, participation of public organizations (associations), and due consideration of public opinion;
- responsibility of the participants of the environmental expertise and stakeholders for organization, production, and quality of the assessment.

1.6. Regulations of the public ecological expertise

The PEE is performed in accordance with the regulations approved by the President of the RPO SPNS D.Y. Vlasov on October 6, 2017.

The regulations determine, among other things, the procedure of organization of Public Environmental Expertise, creation of Expert Commission, delineation of the powers of PEE organizer and Expert Commission, rights and duties of members of PEE Expert Commission, procedure of work of Expert Commission, requirements for composition and content of individual expert opinions and the summary opinion of the Expert Commission.

2. Submittal

2.1. Submittal contents

The Nord Stream 2 project was submitted to the public environmental expert commission by its developer in form of 138 Volumes on an electronic medium. The list of the submitted materials regarding the project is given in Appendix 2 as table of contents.

2.2. Brief description of the scheduled activity according to the submittal

The materials submitted for the PEE hold 138 Volumes that contain a report on the engineering and environmental surveys, environmental protection measures and project documentation for the Nord Stream 2 facility. In accordance with Article 22 of the FL "On Environmental Expertise", the PEE [1-5] is carried out according to documentation that is identical to that submitted by the Customer for State Environmental Expertise.

As indicated in Volume 1.1.0, "Explanatory Note," the project Nord Stream 2 comprises construction of two lines of a sea gas pipeline with working pressure at 22.1 MPa. The capacity of the gas pipeline (for two strings) will be 55 billion cubic meters per year. The gas pipeline will have a constant internal diameter of 1153 millimeters (48 inches). The design life of the gas pipeline is 50 years.

The total length of the projected gas pipeline is about 1230 km. The route of the gas pipeline passes through the Baltic Sea from the Russian part of the southern coast of the Gulf of Finland in the Narva Bay region to the coast of Germany in the vicinity of Greifswald. The projected route itinerates the territorial waters of Russia, Denmark and Germany and passes through the exclusive economic zones (EEZs) of Russia, Finland, Sweden, Denmark and Germany.

The documentation submitted for expertise holds the design of the Russian Section of the Nord Stream 2 gas pipeline route within the territorial waters and the EEZ of Russia, with a length of about 114 km. The project of the Russian Section also includes a land Section of the gas pipeline with a length of about 3.7 km and a technological platform with a device for launching diagnostic and cleaning devices with associated facilities.

As follows from the submittal (Volumes 3.7.1 (p.43) and 3.7.2 (p. 8-15), laying of the gas pipeline on the coastal Section is planned to be performed using a trench method. Both 48" gas pipeline strings (route A and route B) will be laid in the same technical corridor parallel to each other all along their length. The distance between the axes of simultaneously laid parallel pipeline strings is 20.0 m, each trench 3.5 m wide. The laying is planned to be carried out by trailing the trench with a one-bucket excavator and backfilling with a one-bucket excavator and a bulldozer.

The coastal part of the pipeline route along the chosen route crosses the Protected Area (hereinafter - the PA), the State Nature Reserve (hereinafter - the SNR) of regional significance Kurgalsky. The linear part of the gas pipeline passes through the lands of the forest fund, through the territory of the Ust-Luga district forestry of the Kingisepp forest district. The forest sites are located within the boundaries of the territory of the Reserve of regional significance Kurgalsky (p. 5.6.3. of Volume 7.2.2).

3. Analysis and expert evaluation of the choice of alternatives to the gas pipeline route

3.1. Correspondence of the chosen version of the pipeline route to the land-use planning documents

The Nord Stream 2 gas pipeline is an object of federal importance. In accordance with the Urban Planning Code of the Russian Federation [1-12], the decision to locate objects of federal importance is made pursuant to the Territorial planning schemes of the Russian Federation.

The Territorial planning schemes of the Russian Federation in the part of federal transport (in the part of pipeline transport) (hereinafter, the Federal Scheme of Pipeline Transport) was approved by the Executive order of the Government of the Russian Federation of May 6, 2015, No 816-p [3-2]. The files holding the Territorial planning schemes are placed in the Federal State Information System for Territorial Planning (FGIS TP) <https://fgistp.economy.gov.ru/>.

This scheme provides the gas pipeline location options marked as "expansion of the Unified Gas Supply System to ensure supply of III and IV strings of the offshore gas pipeline system Nord Stream" (facility code PL IX). The southern version of PL IX contains two alternative routes: one goes through the Soykinsky Peninsula and the Kolganpya Cape and through the Narva Bay, passing onto the offshore part at the point near the village of Venekulya, south of Kurgalsky nature reserve.

The Federal scheme of pipeline transport was amended by the order of the Government of the Russian Federation of January 31, 2017 No 166-r [3-17], which, in particular, **enhanced** the options of possible placement of the pipeline with new alternatives designated as "Nord Stream 2 land Section 3.7 km long" (facility code PL XXXVII) and "enlargement of the Unified Gas Supply System to ensure gas supply to the Nord Stream-2 gas pipeline"(code PL L). It stands to mention that both above-noted objects coincide fully on the territory of the Kurgalsky SNR and at the point of the gas pipeline outlet to the sea side (to the Narva Bay) to the west of Khanike village. However, the route of PL XXXVII starts about 4 km off the coast, and the route of PL L passes through the territory of the Leningrad Region and the Vologda Region. This being said, it differs drastically from the route of the PL IX facility, including its part that is planned to go through the territory of Kingisepp district. Thus, the impact on the environment of the PL IX and PL L facilities differs not only in respect to the territory of the reserve (reserves), but also in relation to the previous Sections of the pipeline starting from the points of connection to the existing Sections of the Unified Gas Supply System.

By Executive Order of the Government of the Russian Federation of 31.01.2017 [3-17], the PL IX facility **was not withdrawn from the federal scheme and was not amended**. I.e., at the moment of preparation of the project documentation and performance of the PEE, the Federal Scheme of Pipeline Transport, there are three alternative routes for the "southern route" of the Nord Stream 2 pipeline:

- passing through Soykinsky Peninsula and Kolganpya Cape (PL IX facility);
- passing through the Narva Bay starting its offshore part near the village of Venekulya south of the Kurgalsky nature reserve (PL IX facility);

passing through the Narva Bay starting its offshore part to the west of the village of Khanike (PL XXXVII and PL L facilities).

At the same time, in the supporting materials of the Federal Scheme of Pipeline Transport found in the Federal Government Information System, there is no assessment of the possible impact of the planned federal objects on the complex development of the territory of the Kingisepp municipal district, which should be provided in accordance with Part 8 of Article 10 of the Urban Planning Code of the Russian Federation [1-12]. In accordance with Part 5 of Article 10 of the Urban Planning Code of the Russian Federation, a use-restricted zone was defined for the corridor of the pipeline route that match the PL II facility, but not for the PL XXXVII and PL L facilities. This indicates the possible specifying of the pipeline placement by the documentation developer at the phase of preparing of the linear facility design documentation (Vol. 1.3.1 - 1.3.7). However, this opportunity was not converted.

No information is given on approval of the Area planning scheme of the Russian Federation in the field of pipeline transport, in accordance with the Urban Development Code of the Russian Federation [1-12], by the executive authorities of the Leningrad Region, the local government bodies of the Kingisepp Municipal District and the Kuzemkinsky rural settlement in the Section of the initial permissive documentation ("other initial permissive documents established by legislative and other regulatory legal acts of the Russian Federation" in accordance with Paragraphs 34 and 10 of the Executive Order of the Government of the Russian Federation of February 16, 2008 No 87 [3-15]).

According to the current version of the regional planning documents (territorial planning scheme of the Leningrad region) [6-9], the municipal level (the territorial planning plan of Kingisepp municipal district [6-10], the general plan of the Kuzemkinsky rural settlement [6-11]) the location of the gas pipeline " Nord Stream-2 "is not provided. Thus, no alternative choice was made of location of an Object of federal significance that should be based on analysis of use of inter-settlement territories, settlement territories, possible ways of their development and projected limitations of their use, risk factor assessment required in accordance with Part 5 of Article 19 and Part 7 of Article 23 of the Urban Development Code of the Russian Federation. Nor were established the corresponding use-restricted zones and functional zones. Consequently, the documents of land use planning of regional and municipal level do not impose restrictions on location update of the pipeline route and the choice of options for its placement.

From the analysis of the current town planning documentation it appears that in the documents of the land use planning, the options for the gas pipeline to enter its offshore part south of the Kurgalsky nature reserve and through the Kolganpya Cape (PL IX facility) have been addressed in more detail than the option of the village of Khanike.

3.2. List of alternative implementation options in the presented documentation

Paragraph 1.1 of Article 14 of the FL "Environmental Expertise" [1-5] establishes that the State environmental expertise of the facilities specified in sub-paragraphs 7.1 of the said FL is carried out in case the submittal comprises the documentation subject to State environmental expertise. It should as well contain data on expertise of the facilities, construction, reconstruction or major repairs of which are supposed to be carried out on the lands of specially protected natural reservations, to the respective PA.

Requirements for the content of materials on the environmental expertise of the proposed activity are contained in the Annex "Typical content of materials of ecological expertise of a planned economic activity in investment design" to the Order of the State Committee for Ecology of the Russian Federation of May 16, 2000, No. 372 "Approval of the Regulation on ecological expertise of planned economic and other activities in the Russian Federation" [4-1].

In accordance with this regulatory act, materials on environmental expertise of planned economic and other activities should contain, at a minimum, the following information:

«5. Description of possible types of environmental impact of alternative options of planned economic and other activities.

6. Description of environment that may be affected by implementation of planned economic and other activities (on alternative options).

7. Assessment of environmental impact of planned economic and other activities realized alternative options, including an assessment of the reliability of the projected effects of the proposed investment activity. "

In the project submitted to the PEE, only two pipeline route options were considered:

Option 1 (Kolganpya) starting from **PL IX facility** - a compressor station site (hereinafter referred to as CS) located in the north of Soykinsky Peninsula, with access to the Koporskaya water area at the cape of Kolganpya. Distance from the CS site to the coastline is about 1 km. Location of diagnostic and treatment devices (hereinafter referred to as DTD) was considered at a distance of 200 m from the CS. The system was apparently supposed to be connected to the Unified Gas Supply System through the **PL L** facility north of the village of Kurovitsy (in the project documentation, description of the option is incomplete - see below).

Option 2 (Narva Bay) starting from **PL XXXVII and PL L** - the CS site is located south of the village of Bolshoye Kuzyomkino at a distance of about 10 km off the Bay shore. The route Section between the CS and the DTD is about six kilometers. The gas pipeline water outlet is planned for placement at the point of Khanike village to the west. This option affects The linear part of the gas pipeline in this option affects the Kurgalsky SNR.

Volumes 7.1.1. and 7.2.1 contain three incomplete pages (the text is identical in both Volumes), which ascertain, briefly and with no facts or substantiations, the choice of **option 2** (the route through the Narva Bay), no meaningful comparison to **option 1** (the route through Soykinsky Peninsula and Kolganpya Cape) given.

The option of routing the gas pipeline from PL IX passing to the offshore zone in the vicinity of the village of Venekulya, which does not affect the territory of the Kurgalsky nature reserve, was not considered on its own merits. This option is mentioned only once in Volume 10.11.04 "Report on Public Debate. Annexes L-U "as **route 5**: "an option of a NS2 route along the southern tip of the Kurgalsky nature reserve, using the micro tunneling method below the surface of the reserve at a distance of 1 km" (p. 72). The reasons why the route 5 was rejected are given only in the context of public discussion of the documents of Environmental Expertise: " In 2012-2013, Public Corporation Giprospeftgaz considered the option of passing through the territory of the Kurgalsky nature reserve in its southernmost part practically on the border with Estonia. The option was recognized as impossible due to lack of space suitable for construction of a compressor station (proximity to settlements, and extensive swamps with low bearing

capacity of soils)"(ibid., P. 72-73). It should be noted that the option of routing through the Kurgalsky nature reserve presented in the documentation under consideration, should also be recognized as impossible for the same reasons (for more details see Section 6.2.2 of the present document). In the project Sections related to the environmental expertise (Volumes 7.1.1, 7.1.2, 7.2.1, 7.2.2), "route 5" is basically not considered at all.

The Expert Commission believes that refusing to consider the "route 5" (passing onto the offshore part near the village of Venekulya) from pipeline transport facility PL IX, while keeping to consider the option 1 (the route through the Soykinsky Peninsula and the Kolganpya Cape) from the same facility leads to unreasonable and significant reduction of alternatives to the proposed activity and is a violation of requirements of the "Typical content of materials of ecological expertise of a planned economic activity in investment design"[4-1].

In the submitted materials, there is practically no assessment of other possible options of implementing the planned activities, in particular, of an option of crossing the Kurgalsky nature reserve in its southern part using trenchless method. They also lack specification of the federal facility (the gas pipeline) location that is stipulated by the Federal Scheme of Pipeline Transport, excluding its passage through the natural territories under special protection.

In Volume 1.1.0, *Explanatory Note* of the project, the following is indicated: "A comprehensive environmental expertise indicates a significant priority of the Narva Bay option over the Kolganpya option. In case of implementation of the variant Narva Bay, negative impact on the environment is expected to be lower than when implementing the investment project for the Kolganpya option. The negative impact on the environment will be temporary and compensated. Taking into account the unconditional necessity to minimize the negative impact on the environment during the implementation of investment projects, the companies PAO Gazprom and Nord Stream 2 AG made a joint decision on further elaboration and implementation of the investment projects "Development of gas transmission capacities of the UGSS of the North-West region, the Section Gryazovets– CS Slavyanskaya" and "Nord Stream 2" according to the Narva Bay option." However, the initial permissive documentation, this decision does not contain the said decision to choose the option of the pipeline route. It also lacks a Statement of work for developing the project documentation indicating the only selected version of the route.

Thus, the PEE submittal did not contain all alternative options that bring to achievement of the goal of the planned economic and other activities which are explicitly provided for by the territorial planning documents of the Russian Federation, as well as other options for tracing the pipeline in accordance with the current legislation of the Russian Federation.

3.3. Description of alternatives to the proposed activity in the presented documentation

The description of the proposed activity alternatives given in the PEE submittal is performed at a poor level. The Commission Experts characterize the information on the necessary engineering and environmental surveys and their results – both on alternative options the pipeline route, and on the route chosen in the project – as incomplete. A detailed explanation of the comments is given in **Annex 10** to the Expert Opinion. In particular, the experts note the following:

- there is no information on the results of floristic and geobotanical survey of the route Section of the option 1 through the Soykinsky Peninsula and the Kolganpya Cape (Section 1.3.2 of Volume 7.1.1) (10-1)³;
- in the statement of completed engineering and ecological surveys (Volume 1.6.19), there are no survey data of avifauna on the offshore side of the alternative pipeline route option through the Soykinsky Peninsula (10-2);
- in the project documentation of environmental expertise (Volumes 7.1.1 and 7.1.2) there is no description of marine mammals and no analysis of the impact on them for alternative routes of the Nord Stream2 gas pipeline (10-3);
- the substantial part of the conclusion on "significant priority of the Narva Bay option over the Kolganpya option" (Volume 7.1.1, p. 14) does not take into account the routes of feeding and spawning migrations of valuable anadromous species of fish passing through the Narva Bay (10-4).

In 2016, a more detailed text of a rationale for assessing the alternative routes for the Russian Section of the Nord Stream 2 gas pipeline was provided by EcoExpress-Service in their report "Comparative Environmental Expertise of Alternative Route Options for the Russian Section of the Nord Stream2 Gas Pipeline [8-1] (hereinafter, the Report) than the one in the submittal. In 2017, the Report became a subject of a separate public discussion. The reasons for choosing the route presented in this Report were made on the basis of incomplete, and in part predeterminedly false information. Thus, the information on flora and vegetation in the areas "Narva Bay" and "Kolganpya" given in the report make possible a conclusion of a much higher value of the site in Kurgalsky nature reserve chosen by the developer as an optimal option for pipeline construction, in botanical and environmental terms.

Comparative analysis of Figures 7.4.3 (Scheme of biologically valuable plant communities in the Kurgalsky Peninsula) and 7.4.7 (Scheme of biologically valuable plant communities in the area within the Soykinsky Peninsula) of the report in question indicates that at the proposed construction site on the Kurgalsky Peninsula, 40% of the area is taken by communities of high value, whereas in the area of the Soykinsky Peninsula, high value community area makes about 10%. Moreover, according to the considered materials (chapter of subsection 4.2.6.3., Rare and protected plant species (Volume 7.2.1, p. 83) the Kurgalsky nature reserve holds 53 rare species of vascular plants registered in Red Data Books of various levels, 36 species of bryophytes categorized as listed, specialis, indicator and rare, 5 rare and indicator lichen species, 24 species of fungi categorized as indicator and specialis, listed in the territory of Leningrad region This being said, the area of the route option on the Soykinsky Peninsula, according to the Report [8-1], "no sites of localization of plant species subject to protection were identified."

The Commission also made other substantial comments to the aforementioned Report provided by "EcoExpress-Service" [8-1], which are given in **Annex 10** to the present document. Thus, experts note that the Report did not take into account:

- data of the developer's own research on soil contamination along the route through the Narva Bay (10-5);
- actual data on habitats of the ringed seal (10-6);

³ Hereinafter, double numbers in parentheses refer to the specific comments of the experts of the PEE Commission, which are listed in the appendices to the present Expert Opinion. The first digit of the number indicates the number of the application, and the second the number of the comment.

- data on Vyajhe Ropsu, an archeological site of the Stone Age, and on military graves situated along the route through the Kurgalsky nature reserve (10-7);
- data on the naval zone to the west, south-west of the Bolshoi Tyuters island (10-8);
- data on actively used anchorage sites near Rauscher island and Hogland island (10-8);
- data on bathymetry up to 20 meters in depth of the coastal zone of the Kurgalsky Peninsula (10-8);
- data on location of the main established tectonic faults (10-9);
- data on underwater deposits of ferromanganese nodules along the Narva Bay route (10-10);
- comparative conditions of a potential ice gouging (10-11).

As indicated above, option 1 (through the Soykinsky Peninsula and the Kolganpya Cape– PL IX facility) and option 2 (through the Narva Bay with transition to the offshore part west of Khanike village – facilities PL XXXVII and PLP L objects), as well as "route 5" (via the Narva Bay with transition to the offshore part near Venekulya village south of the Kurgalsky nature reserve - PL IX facility) have different points of connection to the Unified Gas Supply System, so the choice of the option is based on the assessment of the environmental impact of all sections of the route from the connection point. However, the presented materials do not contain information on relevant studies.

3.4. Evaluation of the rationale for route choosing presented in the submittal

Nord Stream 2 AG chose the Nord Stream 2 route option through the SNR Kurgalsky despite the negative results of the ecological survey of the corridors of the SP2 route. The said survey regarded the area within the boundaries of the State natural complex regional reserve Kurgalsky and was performed by the experts of Lenoblpriroda Fund under the contract NPO12-1024 of 22.08.2012 concluded with Nord Stream-2 AG. According to the survey data, all the three options of the trench route of the Nord Stream 2 facility within the SNR Kurgalsky lead to hydrological upheaval and flooding of a large area of the reserve, as well as to destruction of key habitats of a large number of protected flora and fauna species, valuable natural complexes and elements of the reserve (Volume 10.11.2, p. 107, p. 14).

There is no evidence in the project documentation that the proposed economic activity on alternative options will have a greater negative impact on flora and fauna, in particular, flora species listed in the Red Data Book of the Russian Federation and the Red Data Book of the Leningrad Region, than implementing the option considered in project.

In view of the foregoing, **the conclusions presented by the developer stating that "a comprehensive environmental expertise indicates a significant priority of the Narva Bay option over the Kolganpya option, the negative impact on the environment in the case of implementation of the Narva Bay option is expected to be lower than when implementing the investment project under the Kolganpya option (Section 1.3.2 of Volume 7.1.1.), are invalid and inaccurate.**

4. Conformance review of project documentation to environmental legislation

4.1. Non-compliance with requirements of the Federal Law "Protected Areas"

As indicated above, in accordance with the chosen route the coastal part of the pipeline crosses the area of the SNR Kurgalsky.

According to p. 2.1 of the Regulations on the Kurgalsky nature reserve approved by the Resolution of the Government of the Leningrad Region No. 291 of July 25, 2017 "Amendments to the Decree of the Government of the Leningrad Region No. 82 of April 8, 2010, "Kurgalsky State Nature Complex Reserve"[6 -1], [6-2] (hereinafter referred to as the Regulations), the SNR was established in order to preserve the natural ecosystems of the Kurgalsky peninsula and the water area of the southeastern part of the Gulf of Finland and to maintain their natural biological diversity.

The objectives of creation of the SNR (p 2.2 of the Regulations) are:

- protection of migratory stop-over sites of waterfowl and semiaquatic birds on the spring and autumn migration;
- protection of places of mass nesting and moulting of waterfowl and semiaquatic birds;
- protection of haul-out, birth and feeding sites of the Baltic Ringed Seal and haul-out sites of the Baltic Grey Seal;
- protection of spawning grounds, areas of young growth and feeding of ichthyofauna species, as well as transit ways of migratory ichthyofauna species;
- protection of natural and long cycle forests of medium-, southern- and subboreal types and maintaining their natural dynamics;
- protection of wetland and coastal complexes (shallow water and coastal strip with coastal and sublittoral vegetation);
- protection of rare and endangered species of flora and fauna, and their habitats;
- maintenance of biological diversity on the territory of the Leningrad Region.

In Volume 7.2.2, p. 5.8.2 of the project, the developer states that "the main impact on the natural complex will occur during the period of pipeline linear part construction and will consist of:

- changes in habitats and destruction of species in the corridor of permanent or temporary land allocation;
- temporary infringement of breeding conditions or displacement of species from breeding sites and feed biotopes as a result of construction and operational activity;
- physical factors effect, including construction equipment noise;
- possible introduction into the construction site of species alien to the local ecosystem.

In p. 5.7 of Volume 7.2.2 the Regulation states that, as a general rule, practically any type of strong impact, i.e. forest cutting, fires, pollution, are the factors that destabilize natural complexes, in most cases this causes changes in the structure of soils zoocenoses reducing species diversity, causing a decrease in number and biomass of large saprophages and an increase in the number of herbivorous forms, i.e. the most adaptable species.

As shown in the materials of the present Opinion given in detail in Section 6.4, laying of the pipeline route using trench method will inevitably result in unavoidable unacceptable environmental impact to the Kurgalsky nature reserve.

Thus, construction of the gas pipeline through the Kurgalsky nature reserve and related activities, using the concepts and technologies provided by the project, will inevitably lead to destruction of habitat and migration routes of wildlife species, destruction of flora species, harm to natural complexes (natural landscapes), which is contrary to the objectives of the reserve.

The legal position of the Supreme Court of the Russian Federation [4-2], establishes a direct cause-and-effect relationship between damage to natural sites and complexes, on the one hand, and damage to PAs, on the other hand; according to the Supreme Court, construction and placement of linear facilities, as well as cutting of green plantings on forest plots intended for construction, reconstruction and operation of linear facilities, are impossible without causing damage to a specially protected natural area.

Paragraph 1 of Article 24 of the Federal Law "Protected Areas" [1-7] establishes that "on the territories of state nature reserves, all activities are permanently or temporarily prohibited or restricted if it conflicts with the objectives of establishing of state nature reserves or harming natural complexes and their components."

The above data indicate that the Nord Stream-2 project in part of the proposed technology of crossing the territory of the State nature regional reserve Kurgalsky does not meet the requirements of the Federal Law "Protected Areas" [1-7].

4.2. Non-compliance with requirements of the Federal Law "Fauna"

Volume 7.2.2 of the project states that the planned activities will have a significant impact on valuable plant and animal species including those listed in the Red Data Books of the Russian Federation and of the Leningrad Region. At this rate, point 5.7.1 of Volume 7.2.2. states that "in proximity of the southern boundary of the gas pipeline construction corridor, an inhabited nest of white-tailed eagle is situated. White-tailed eagle is a protected species listed in the Red Data Books of the Russian Federation and of the Leningrad Region (Status 3 – rare species) and the Red Data Books of the Baltic Region and of Eastern Fennoscandia (status 2 - vulnerable species). It's highly probable that, as a result of the work, the nest will be abandoned forever or for a period until the ecological situation stabilizes."

As shown in the materials of the present Opinion (see Sections 6.3 and 6.4 for details), laying of the pipeline route using trench method will make unavoidable and unacceptable impact on rare and protected fauna species, including species listed in the Red Data Books of the Russian Federation and the Leningrad Region.

The Federal Law of April 24, 1995 No. 52-FZ "Fauna" [1-8] (Article 24) ward off actions that may lead to death, population reduction or disturbance of habitat of fauna species listed in Red Data Books.

Thus, the gas pipeline construction within the habitats of species listed in the Red Data Books of the Russian Federation and of the Leningrad Region is a violation of the Federal Law "Fauna".

4.3. Violation of the Land Code of the Russian Federation

As shown in the materials of the present Opinion (see Sections 6.4 for details), laying of the pipeline route using trench method will make unavoidable and unacceptable impact on the environment of the Kurgalsky nature reserve.

According to Article 1 of the Land Code of the RF (hereinafter referred to as the LC RF) [1-2], the basic principles of land legislation include "priority of preserving the lands of special value and the lands of specially protected areas". The same article of the LC RF [1-2] establishes that "changing the designated use of ... the lands of specially protected natural areas ... for other purposes is limited or prohibited in accordance with the procedure established by federal laws ...".

According to Article 95 of the RF LC [1-2]:

- "1. Lands of specially protected natural areas are lands... of state nature reserves.
2. The lands of specially protected natural areas fall into the category of national heritage sites...
3. On the lands... of state nature reserves ..., which include especially valuable ecological systems and species for conservation of which a specially protected natural area was created, any activity that is not aiming at preservation and study of natural complexes and species and is not provided for by federal laws and laws of subjects of the Russian Federation. Within the lands of specially protected natural areas, changing land designation or termination of land title for needs that are contrary to their intended purpose, is not allowed. "

Thus, the gas pipeline construction on the territory of the Kurgalsky nature reserve performed according to the techniques proposed in the project, will violate the norms of the Land Code of the Russian Federation [1-2].

4.4. Violation of the Federal Law "Environmental Expertise"

In accordance with paragraph 3 of Article 22 of the Federal Law "Environmental Expertise" [1-5], public organizations (associations) carrying out public environmental expertise in accordance with the procedure established by the said Federal Law, have the right to receive documentation from the customer that is subject to environmental review as established in Article 14 of the said Federal Law.

Paragraph 1.1. of Article 14 of the Federal Law "Environmental Expertise" [1-5] establishes that the State Environmental Expertise of the facilities specified in subparagraphs 7.1 of the said Federal Law be carried out if the submittal holds the documents subject to state environmental review and containing materials for assessing the impact on the corresponding specially protected natural area of facilities, construction, reconstruction or major repairs of which is supposed to be carried out on the lands of specially protected natural areas.

The documents of the project do not contain part or Volume named "Environmental Expertise". The Volumes 7.1.1, 7.1.2, 7.2.1 and 7.2.2 of the project documentation contain certain relevant information, and also do the Volumes of the annexes thereto.

The absence of designated Volumes entitled "Environmental Expertise" does not meet the requirements of paragraph 1.1. of article 14 of the Federal Law "Environmental Expertise" [1-5] and makes it difficult to study and evaluate the documents of the project.

According to Article 3 of the Federal Law "Environmental Expertise" [1-5], an environmental expertise is based, in particular, on the following basic principles:

substantiality of environmental expertise of economic and other activities and their consequences;

compulsory adhering to environmental safety requirements when performing an environmental expertise;

reliability and completeness of information submitted for environmental review.

As demonstrated in detail in Section 6 of the present Opinion, the Experts Commission has revealed incompleteness and unreliability of the expertise documentation presented by the developer of the planned activities on the Kurgalsky nature reserve objects and natural complexes, as well as on rare and protected species of the biota and their habitats. Thus, the developer of the documentation violated the principle of integrated assessment of economic and other activities environmental impact and its consequences.

According to Article 1 of the Federal Law "Environmental Protection" [1-6]: "environmental safety is the state of protection of natural environment and of vital human interests from possible negative impact of economic and other activities, natural and man-made emergency situations and their consequences."

As shown in Section 6.2.2 of the present Expert Opinion, the design decisions violate the norms of SP 36.13330.2012 [5-4] which establishes minimum permissible distances from the projected gas pipeline to the nearest inhabited locality, village of Khanike. Therefore, in case of implementation of the planned activity, the state of protection of vital human interests from the possible negative impact of anthropogenic emergency situations and their consequences will not be provided. Thus, the developer of the documentation violated the principle of compulsory adhering to environmental safety requirements when performing an environmental expertise.

As demonstrated in detail in Sections 5 and 6 of the present Opinion, the project documentation under consideration, both in terms of performed engineering surveys and proposed design solutions, is incomplete, often unreliable and internally contradictory. It also contains a large number of technical errors. Thus, the developer does not respect the principle of reliability and completeness of information submitted for environmental review.

Therefore, for the abovementioned reasons, the documents submitted by the developer for State environmental expertise do not comply with the requirements of Article 3 of the Federal Law "Environmental Expertise" [1-5].

4.5. Violations of the Federal Law "Environmental Protection"

As demonstrated in detail in Section 4 of the present Expert Opinion, laying of the pipeline route using trench method will provoke unavoidable unacceptable impact on the natural objects and complexes of the Kurgalsky nature reserve.

This will violate a number of the most important principles of environmental protection, stipulated in Article 3 of the Federal Law "Environmental Protection" (hereinafter - FZ EP) [1-6], basing on which "economic and other activities should be carried out":

- priority of conservation of natural ecological systems, natural landscapes and natural complexes;
- conservation of biological diversity; prohibition of economic and other activities, consequences of which are unpredictable for the environment, as well as implementation of projects that can lead to degradation of natural ecological systems, ... depletion of natural resources and other negative changes in the environment. "

As demonstrated in detail in Section 6.4 of the present Expert Opinion, laying of the pipeline route using trench method will provoke inevitable destruction of rare and protected species of living organisms and their habitats, including those listed in the Red Data Books of the Russian Federation and the Leningrad Region. This will violate the following provisions of the FZ EP [1-6]:

- paragraph 2 of Article 59 of the Federal Law "Environmental Protection" [1-6]: "Economic and other activities that have a negative impact on the environment and lead to degradation and (or) destruction of natural sites that have a special nature conservation ... and other particular value and are under special protection, are prohibited".
- paragraph 1 of Article 60 of the Federal Law "Environmental Protection" [1-6]: "With the purpose of protection and registration of rare and endangered plants, animals and other organisms, the Red Data Book of the Russian Federation and the Red Data Books of the RF Subjects are established ... activities that lead to reduction in number of these plants, animals and other organisms and worsening their habitat, are prohibited."

4.6. Contradictions to Russian State Ecological Doctrine

The Russian State Ecological Doctrine [3-3] states the following as one of the "main tasks for preservation and restoration of natural environment": "conservation and restoration of landscape and biological diversity, sufficient to maintain the ability of natural systems to self-regulate and compensate consequences of anthropogenic activities." This requires:

- preservation and restoration of a complex of terrestrial, freshwater and marine natural systems that are optimal for sustainable development of the country and its particular regions;
- conservation and restoration of rare and endangered species of living organisms in their natural habitats ...;
- preservation of unique natural complexes;
- preservation and restoration of integrity of natural systems, including prevention of their fragmentation as a result of economic activity such as construction of hydraulic structures, roads and railways, gas and oil pipelines, power transmission lines and other linear structures."

As demonstrated in detail in Section 6.4 of the present Expert Opinion, laying of the pipeline route using trench method will provoke inevitable destruction of rare and protected species of living organisms and their habitats, including those listed in the Red Data Books of the Russian Federation and the Leningrad Region.

Thus, the above provisions of the Doctrine [3-3] once again point to violations of the current legislation of the Russian Federation by design decisions.

4.7. Contradictions to the provisions of The Strategy of Ecological Safety of the Russian Federation for the Period Until 2025

The Strategy of Ecological Safety of the Russian Federation for the Period Until 2025 (hereinafter Strategy) [3-4] classify the following aspects as global challenges of environmental safety:

- reduction of biological diversity, which entails irreversible consequences for ecosystems and destruction of their integrity;
- reduction of fauna species diversity and populations of rare animal species;
- creating obstacles for the migration of animals, including aquatic species.

Taking into account these challenges and threats to environmental safety, achieve the goals outlined in the Strategy [3-4] requires delivering on the following main targets:

- conservation of biological diversity and of terrestrial and marine ecosystems;
- implementation of effective measures for conservation and rational use of natural resources, including forest, hunting and aquatic biological resources, and for conservation of forest ecological potential;
- expansion of measures for conservation of biological diversity, including rare and endangered species of plants, animals and other organisms, their habitats, and development of a system of specially protected natural areas;
- implementation of strategies for conservation of rare and endangered species of plants and animals.

As demonstrated in detail in Section 6.4 of the present Expert Opinion, laying of the pipeline route using trench method will provoke inevitable destruction of rare and protected species of living organisms and their habitats, including those listed in the Red Books of the Russian Federation and the Leningrad Region.

Thus, the above provisions of the Strategy [3-4] once again point to violations of the current legislation of the Russian Federation by design decisions.

4.8. Violation of the "Regulation on the expertise of planned economic and other activities on the environment in the Russian Federation"

As noted in paragraph 4.4.1 of the present Opinion, the project documentation does not contain a part or Volume called "Environmental Expertise". The relevant topics are covered in the Volumes 7.1.1, 7.1.2, 7.2.1 and 7.2.2 of the project documentation and in the Volumes of the annexes thereto. Therefore, formulating a deficiency report on non-compliance of the project documentation with the Regulation on the Environmental Expertise of the Planned Economic and Other Activities in the Russian Federation "[4-1] (hereinafter - the EE Regulations), we will refer them to the content of the above Volumes.

According to paragraph 2.6 of the EE Regulations [4-1], "environmental expertise documents should be scientifically based, reliable and reflect results of studies carried out taking into account the interrelationship of various environmental, social and economic factors (the principle of scientific validity, objectivity and the legality of conclusions of environmental expertise)."

As demonstrated in detail in Section 5 of the present Expert Opinion, *Evaluation of Completeness and Reliability of Conducted Engineering Surveys*, the engineering survey data that served as basis for design decisions for implementation of the planned activities, are incomplete and partially unreliable.

Thus, the EE documents that provide for the gas pipeline construction through the territory of the Kurgalsky nature reserve, contradict the requirements of paragraph 2.6 of the EE Regulations [4-1].

Points 1.5 and 2.7 of the EE Regulations [4-1] stipulate the duty of the customer (executor) to ensure the use and provision to all participants of the EE process of complete and reliable source information in time.

As demonstrated in detail in Sections 6.1, 6.3 and 6.4 of the present Expert Opinion, the part on the documentation of the project in question, in terms that refer to environmental expertise, is incomplete and partially unreliable.

Thus, the EE documents presented in the considered project do not meet the requirements of paragraphs 1.5 and 2.7 of the EE Regulations [4-1].

4.9. Violation of regime of Kurgalsky nature reserve

The Volume 7.2.1 (page 54) of the project documentation rightfully speaks of the lengthy history of studying the nature of the Kurgalsky Peninsula and its environs: there are publication references starting with 1983, information on the work of the Kurgalsky expedition of the St. Petersburg Naturalists Society started since 1992 and on a detailed study of the local nature since the mid-1990s. This long work of almost 20 years resulted in passing the Regulation on the State Natural Complex Regional Reserve Kurgalsky No. 82 [6-1] signed by the Government of the Leningrad Region on April 8, 2010. One of the key points of the reserve regime was a ban on economic activities that lead to fragmentation of natural ecosystems and landscapes (in particular, installation of communications was banned in the reserve, except for those necessary to provide essential services for the existing settlements and for development of border and navigation services).

The Decree of the Government of the Leningrad region of July 25, 2017 No. 291 [6-2] approved a new Policy statement on the reserve that fundamentally changed its regime. The most significant changes are that the new regime does not limit construction and reconstruction of linear facilities in the reserve area, as well as moving heavy equipment along forest roads and other public and non-public roads needed for construction and reconstruction of such facilities.

At the same time, according to paragraph 4.3 of the Regulations on the Kurgalsky nature reserve [6-1], activities permissible for implementation in PAs in accordance with paragraph 4.1 (including construction and reconstruction of line facilities) are carried out on condition of ensuring conservation of natural complexes and objects, subject to protection within the boundaries of PAs.

Since implementation of the projected facility cannot ensure full preservation of natural complexes and objects subject to protection in the Kurgalsky nature reserve, and during the pipeline construction, many key habitats of protected flora and fauna will inevitably be irretrievably lost, construction of the gas pipeline will be a violation of the regime of the Kurgalsky nature reserve.

It should also be noted that the change in the Resolution of the Government of the Leningrad Region dated April 8, 2010 [6-1], held on July 25, 2017 [6-2], contradicts a number of fundamental legislative and regulatory acts of the Russian Federation and international conventions. This change is currently being challenged in court.

4.10. Violation of the Policy statement on the Ramsar site "Kurgalsky peninsula"

The proposed activity contradicts paragraph 13 of the Policy statement on the Wetland of International Importance especially as Waterfowl Habitat "Kurgalsky Peninsula"[6-3]. According to the paragraph, prohibited are all activities that violate the natural hydrological regime in water bodies of a wetland; discharges, emissions of pollutants and storage of production wastes; reclamation and dredging.

As demonstrated in detail in Section 6.4.7 of the present Opinion, the pipeline construction will change its hydrological regime. In addition, significant dredging works will be carried out within the boundaries of the Ramsar site "Kurgalsky Peninsula" (according to the report "Assessment of Alternatives for the Russian Part" [8-2] (Table 4-2), the amount of coastal dredging will reach 525,000 m³).

Thus, **the gas pipeline construction will be a violation of the regime of the Ramsar site "Kurgalsky Peninsula" [6-3].**

4.11. Violations of other legal acts and of the Constitution of the Russian Federation by project documentation and design decisions

In addition to the abovementioned, the Expert Commission made other comments regarding the inconsistency of the project documentation with the current environmental legislation. A detailed rationale is given in **Annex 8** to the Opinion of the Expert Commission. It is mentioned, in particular, that the provisions of project documentation will violate:

- Fundamentals of State Policy in the Area of Environmental Development (approved by the President of the Russian Federation on April 30, 2012) [3-5], (8-2);
- The Maritime Doctrine of the Russian Federation until 2020 (approved by the Order of the President of the Russian Federation No. Pr-1387 of July 27, 2001) [3-6], (8-3);
- Regulations on the Procedure for Conducting State Environmental Expertise (approved by the Decree of the Government of the Russian Federation on June 11, 1996, No. 698) [3-7], (8-4);
- Rules of submitting project documentation of facilities, construction, reconstruction, major repairs of which are supposed to be carried out on the lands of specially protected natural areas, for conducting state expertise and state environmental expertise (approved by RF Government Decree No. 822 of November 7, 2008) [3-8], (8-5);
- Regulations on the Kurgalsky nature reserve (subparagraph 11 of paragraph 4.3) regarding the introduction of plants and other organisms [6-1], (8-1);
- Resolution of the Government of the Russian Federation of February 5, 2016 N 79 "On Approval of the Rules for Protection of Surface Water Bodies" [3-14], (3-26), (3-27);
- Resolution of the Government of the Russian Federation of February 16, 2008 N 87 "On Composition of Sections of Project Documentation and Requirements for Their Content" [3-15], (3-47), (3-50);
- Article 21 of the Federal Law "Production and Consumption Wastes" [1-10], (3-49)).

All violations of the current legislation noted above contradict the provisions of Articles 15.2 and 58 of the Constitution of the Russian Federation [1-1]:

Paragraph 2 of Article 15 of the Constitution of the Russian Federation [1-1] provides: *"The bodies of state power, local self-government bodies, officials, citizens and their associations are obliged to observe the Constitution of the Russian Federation and laws."*

Article 58 of the Basic Law [1-1] determines that *"Everyone is obliged to preserve nature and the environment, to take care of natural resources"*.

4.12 Conclusions

The foregoing shows that the project documentation and the proposed design solutions contradict a number of fundamental norms of the current legislative and regulatory acts of the Russian Federation and the Leningrad Region.

Based on the above, the Expert Commission concludes that implementation of the facility is inadmissible due to inconsistency of the documentation justifying the planned economic activity with the environmental requirements established by the legislation in the field of environmental protection.

Section 5. Estimation of completeness and reliability of the performed engineering surveys

The members of the Expert Commission made numerous comments that regarded incompleteness, unreliability and methodological groundlessness of the performed engineering and environmental surveys. A detailed explanation of the comments is given in **Annex 6** to the Expert Opinion.

Thus, the Experts note the following:

- the project developers present inaccurate information (Volume 7.2.1, page 53) on involvement of specialized scientific organizations, in particular the Komarov Botanical Institute of the Russian Academy of Sciences, to the engineering and environmental surveys of the Kurgalsky nature reserve (6-1) (**Annex 12**);

- in the surveys, landscape locations and peat thickness values were diagnosed incorrectly (6-2);

- in the surveys (Fig. 3.1 of Volume 1.6.12), there are no landscape description points in the northern part of the Kader marshland (6-3);

- in the surveys, the landscape descriptions are not completed (6-4);

- works on identification and mapping of biologically valuable forests (including old-growth forests), declared in the floristic survey technique (Volume 1.6.16, p. 23), have not been implemented. No documents provided on distribution and area characteristics of biologically valuable forests (BVF) in the documents of engineering and environmental surveys (6-5);

- engineering and environmental surveys of flora objects (Volume 1.6.16, p. 84-101) do not fully reveal the flora value parameters of the survey area, since for the analysis of flora simplified methods and approaches are used that do not allow to determine a significant part of its value characteristics (6-6);

- the engineering ecological surveys (Volume 1.6.16, p. 84-101) lack data on the current state of the protected species populations of vascular plants, bryophytes, lichens and fungi (6-7);

- the engineering and environmental surveys executor used incomplete and partially unreliable data (Volume 1.6.17, pp. 3-30) when operating the data of the Database of the Botanical Institute of the Russian Academy of Sciences, created during preparatory phase of the Red Data Book of the Leningrad Region (6-8);

- the engineering and ecological surveys executor erroneously identified the protected species *Pulsatilla patens*– Fig. 5.30 (Volume 1.6.16, p. 124) presents a hybrid of *Pulsatilla patens* x *P. pratensis* (6-9) instead;

- the engineering and ecological surveys executor erroneously identified the protected species *Malaxis monophyllos*– Fig. 5.54 (Volume 1.6.16, p. 154) shows the species *Dactylorhiza fuchsii* (6-10);

- the engineering and ecological surveys executor erroneously identified the protected species *Platanthera chloranta* – Fig. 5.55 (Volume 1.6.16, p. 156) shows the species *Platanthera bifolia* (6-11);

- in the surveys, the conservation value of the southern part of the Kurgalsky nature reserve, with regard to flora listed objects, is artificially lowered (Volume 1.6.16, p. 10) (6-12);

- the conclusion about poorness of lichen flora in the area of the planned construction site made by the engineering and environmental surveys executor (Volume 1.6.16, p. 266) is unreliable (6-13);
- the engineering and environmental surveys executor used improperly the data of the Red Data Book of East Fennoscandia in relation to the territory and objects of engineering and environmental surveys (Volume 1.6.16, pp. 110, 148-149, 189, 264 et al.; Volume 1.6.18, pp. 6-32, etc.) (6-14);
- the engineering and environmental surveys executor used an unapproved list of flora objects from the printed edition of the Red Data Book of Nature of the Leningrad Region [7-1] with no authorization (see in the Sections and bibliographies—eg. Volume 1.6.16, page 285), (6-15);
- information on participation of A. V. Loseva in the survey development (Volume 1.6.10 p. 246) is doubtful (6-31);
- the survey executor disregarded HELCOM recommendations to carry out an aerial survey of ringed seals (for objective or subjective reasons), and the validity of the chosen methodology did not receive due reasons in the studies (6-17);
- a detailed description of the vegetation of the islands (Volume 1.6.10, p. 247) presented in the Section on shipboard registration of marine mammals, is methodologically unjustified (6-18);
- conclusions on the size of the Grey Seal population made on the basis of the survey performed on May 8 (Volume 1.6.10, Section 2.1.1, p. 267) are methodologically unjustified (6-19);
- there are no data on the Baltic Grey Seal (6-20) on the maps (Volume 1.6.10, Section 2.2, Fig.2.5-2.10, p. 254-259);
- an error in determining the animal species (6-21) has been detected in Volume 1.6.11 (Annex) in Figure D.5;
- information on detection of massive Ringed Seals haul-outs of in the vicinity of the island of Khitamatala and puppies of Grey Seal in the vicinity of the island of Remisaar is not confirmed by photo materials and is probably unreliable (6-22);
- according to table 2.3 (Volume 1.6.10), individuals of seals near the "western coast of the Kurgalsky Peninsula" (that is, on the sites closest to the planned pipeline route) were not specified (6-23);
- information provided by the researcher (Volume 1.6.10, Section 2.2.3, p. 270) stating that both types of pinnipeds within the surveyed area were located exclusively on moraine boulders and did not use sand and pebble scythes contradicts the data of other Sections of the project (6-25);
- information provided by the survey executor (Volume 1.6.10 Section 2.3 *Conclusions*) that in the Gulf of Finland, haul-outs of the Ringed seal were only detected in the vicinity of the Maly Tyuters island, is doubtful (6-26);
- no research was conducted on seasonal use of the Ringed Seal and Grey Seal haulout on the sites located in the zone of the gas pipeline affected area (6-27);
- the conclusion of survey executor (Volume 1.6.10 Section 2.3 *Conclusions*) stating that "The remaining islands located near the laying of the gas pipe route, i.e. Bolshoi Tyuters island, Northern and Southern Virgin islands currently do not function as haul-outs of the Baltic Ringed seals and Grey Seal", not is justified (6-28);
- the conclusion of survey executor (Volume 1.6.10 Section.2.3 *Conclusions*) that "... most of the animals give birth considerably to the North of the gas pipeline zone in the Tiskolovsky reef area and the Vigrund bank", is not justified (6-29);

- the executors of aviation registration of marine mammals do not present, for some reason, the photographs of the haul-outs near the planned gas pipeline route (6-30);
- the performed shipboard registration (Volume 1.6.10 Section 2.2.2 page 268-269) is unfounded as the method of monitoring the seals, since it has been, in fact, a study done concurrently in the framework of ornithological survey (6-36);
- the following fish species that belong to ordinary species of the Eastern part of the Gulf of Finland (Volume 1.6.5, table 6.1, page 165) have no biological characteristic given: river lamprey, sabrefish, Baltic cod, three-spined stickleback, ruff and slingshot (6-32);
- the following fish species listed in the Red Data Book of the Russian Federation [7-2] have no biological characteristic given: sea lamprey, shad, trout, bullhead (Volume 1.6.5, table 6.1, page 165), (6-33);
- considering the issue of spawning grounds in the vicinity of the pipeline laying area (Volume 1.6.5, Section 6.4), there is only the herring reported, other species are not even mentioned (6-34);
- studies of the timing and duration of sloping migration of young Atlantic salmon in places of planned construction have not been performed (6-35);
- the number of surveys performed in 2016 on the Western coast of the Kurgalsky peninsula in the zone of the planned gas pipeline is clearly insufficient to obtain a reliable picture describing the current state of the communities of nesting and migrating birds (6-37, 6-41);
- in Section 5.3.1. of the Volume 1.6.19, a large number of inaccuracies and omissions on sketch-maps of rare species findings was detected, including the absence of separate sheets of the maps (6-38, 6-39);
- on the sketch-maps (Figures 5.8-5.24) of Volume 1.6.19, all locations of birds, both nesting, resting and transit migrants (6-40) are indicated with no distinction;
- on the illustrations of the Volume 1.6.10 and in its text part, there are no diagrams of the movement of ships and aircraft, including their verbal description. As a result, it is impossible to determine on the sketch-maps of rare species findings and distribution of migratory bird stopovers, what are the reason for the absence of birds in some areas, whether it is the lack of data due to the fact that there was no observation at this point or birds were avoiding the stopover (6-42) ;
- the choice of methodology for conducting aerial survey of migratory birds in the planned gas pipeline zone during the spring migration of birds, instead of conducting shipboard records, is not justified (Volume 1.6.10) (6-43);
- the specialists who performed aerial surveys did not have the necessary experience and (or) qualifications (6-44);
- the timing and routes of avian aerial surveys (Volume 1.6.10) are not methodically substantiated (6-45);
- in the Section 1.4.6 of Volume 1.6.10 (pages 217-239), there are no tables with the numbers of bird species encountered during the aerial survey and their distribution in different surveyed areas (6-46);
- in the sections of Volume 1.6.10, the executors of the surveys have committed numerous gross errors:
 - in determining the bird habitats and determining timing of migration and migration routes of different species (6-47, 6-49, 6-50, 6-51, 6-52, 6-53, 6-54, 6-55, 6-56, 6-59);
 - in the species identification (6-48, 6-60);

- when working with literature sources (6-57, 6-58);
- in Section 1.6 of Volume 1.6.10, the survey executor does not indicate a significant impact factor such as noise and low-frequency vibration effect on the ichthyofauna and, accordingly, on the numbers and distribution of piscivorous birds, as well as the direct effect of this factor on diving birds (6-61).

In total, the Commission Experts **made 61 specific comments on the documentation of engineering surveys of the design documentation under consideration.** The totality of the above stated individual observations allows us to conclude that there is no complete and reliable data in the following sections of the project documentation that represent the results of engineering and environmental surveys:

- Volume 1.6.10
- Volume 1.6.11
- Volume 1.6.12
- Volume 1.6.16
- Volume 1.6.17
- Volume 1.6.19.

The Commission Experts note that the results of engineering and environmental studies can be considered generally satisfactory only for the Volume 1.6.5 dedicated to research of ichthyofauna.

According to the results of analysis of engineering studies of the design documentation, the **Commission notes that the incompleteness and inaccuracy of the submitted project engineering survey makes it impossible to reliably estimate the impact of the proposed activity on the environment, the formation of an exhaustive list of measures for the protection of natural objects and complexes, as well as correct planning of such events.**

Section 6. Analysis of project documentation and project design solutions

6.1. Analysis of project documentation for completeness and reliability of the submittal, for presence of unjustified borrowings, internal contradictions and technical errors

6.1.1. Evaluation of completeness and reliability of project documentation

The experts of the Commission made numerous comments regarding the incompleteness and unreliability of the project documentation. A detailed explanation of the comments is given in **Annex 3** to the present Expert Opinion.

So, experts note the following:

- the project does not provide a description of the Gungerburg Ridge of ancient dunes as a unique geological and landscape site (3-1);
- the project provides incomplete information on the discharge from the Kader wetland in its northern part (3-2);
- there is no information in the project about surface runoff along watered troughs in the ridge-hollow relief area between the Gungerburg Dune Ridge and the shore of the NarvaBay (3-3);
- the project lacks information on the sites of old-growth forests growing on the route of the planned gas pipeline and near it (3-4);
- the location and values of the thickness of peat occurrence (3-5) were diagnosed incorrectly in the project;
- landscapes (landscape locations) in the northern part of the Kader marshland (3-6) are diagnosed incorrectly in the project;
- landscape descriptions were not fully implemented in the project (3-7);
- in the project, bogging of a section of the pipeline route corridor (3-8) was assessed incorrectly;
- the project does not provide calculations on the balance of seized soils, taking into account their granulometric composition (3-9);
- the engineering proposal on backfilling of the coastal trench (3-47) has not been substantiated in the project documentation;
- characterizing the waters of the coastal part of the marine aquatorium the developers use the standards for fresh water (3-10);
- the methodology for mathematical modeling of suspended solids distribution in the marine environment during the construction of the Russian section of the offshore gas pipeline Nord Stream-2 has not been applied correctly (3-11);
- optimization of the option of passing the gas pipeline route in the offshore section from the point of view of minimizing possible volumes of underfill is not supported by design decisions (3-12);
- the project does not analyze the causes of high concentrations of nitrogen compounds and other components in the coastal waters of the water area of the NarvaBay (3-13);
- the project does not have a comprehensive assessment of the degree of surface waters contamination upon hydrochemical indicators (3-14);
- the project does not analyze the causes of pollution of bottom sediments (3-15);

- the project does not provide a description of the site geological structure that would be based on the results of engineering and geological surveys, on picketing the projected pipeline route (3-16, 3-17);
- the project does not describe provide a description of the site hydrogeological conditions that would be based on the results of engineering and geological surveys (3-18);
- the developers do not describe the chemical composition of groundwater is not along the entire coastline of the route. The causes of groundwater pollution are not considered (3-19);
- the project does not consider the causes of pollution of surface waters and bottom sediments (3-20);
- the project does not characterize correctly the dangerous exogenous processes of the present days (3-21);
- the monitoring program of the geological environment provides abstract (non-measurable) controlled parameters (the form and location of the shoreline, the relief of the coastal zone, the bottom relief) are given (3-22);
- the project did not assess the impact of water loss during the construction phase on the hydrogeological regime of the surrounding area (3-48);
- in the project documentation there is no necessary information on the projected water purification technologies, recommended brands of treatment plants, their producers, technical and commercial characteristics (productivity, indicators of wastewater treatment degree on various components, estimated cost, etc.) (3-23);
- the list of measures for geological environment protection is incomplete and does not cover all types of impacts and their consequences, which must be minimized. Thereafter, the conclusion of developers stating that during the pipeline operation the impact on the geological environment will be permissible, is unreasonable (3-24);
- the list of the main controlled parameters of run off effluents treated to standard quality, is incomplete (3-25);
- there is no section on the groundwater monitoring program in the project (3-26);
- there is no section on monitoring program for the state of surface waters in the project (3-27);
- in Section 4.2.6.1 (Volume 7.2.1), there is no information on sites of biologically valuable forests (BVF) within the limits of land allocation and on the adjacent territories; no information is given on spatial location of BVF, their extent and area (3-28);
- there is no information (Section 4.2.6.2 of Volume 7.2.1, p. 81-83) on phytocenoses of value as habitats of protected species; no information on rarity or uniqueness of such habitats for the region (3-29);
- there is no information on conservation value of phytocenoses in the northern part of the Kader marsh; the presented information (Volume 7.2.1, p. 83) stating there are no phytocenoses of significance valuable in terms of preservation of local protected species populations, is inaccurate (3-30);
- in section 4.6.9., *Rare Species of Biota, Areas of Special Value* (Volume 7.2.1, p. 164-167), data on the number of protected species growing within the boundaries of the construction corridor are substantially underestimated: instead of 8 protected species of vascular plants, bryophytes and lichens (all 8 species listed in Red Data Book of the Leningrad Region and 4 of them also in the Red Data Book of the Russian Federation) only 4 protected species of vascular plants are listed (all 4 species listed in the Red Book

of the Leningrad Region and 2 of them in the Red Data Book of the Russian Federation) (3-31);

- the project documentation (Volume 7.2.2, pp. 120-121) does not contain information on the cost, methodology and calculation of success of lichen displanting (3-32);

- in Sections 6.4.3. (Volume 7.2.2, p. 222) and 6.4.5. (Volume 7.2.2, p. 223), the developer does not take into account the consequences of emergency situations (explosions and fires) in the setting of forests of high and very high class of fire hazard, namely: destruction of large parts of valuable forest areas belonging to the PA Kurgalsky nature reserve (3-33);

- in Sections 6.4.3. (Volume 7.2.2, p. 222) and 6.4.5. (Volume 7.2.2, p. 223), the developer does not take into account the consequences of emergency situations (explosions and fires) in conditions of forests of very high and high class of fire hazard, namely, destruction large areas of valuable forests that are part of the Kurgalsky nature reserve (3-33);

- in Sections 6.4.3. (Volume 7.2.2, p. 222) and 6.4.5. (Volume 7.2.2, p. 223), the developer does not take into account the consequences of fuel and lubricant spill on the Kader wetland ecosystem, which, being part of the Kurgalsky nature reserve, is an object of special protection and a habitat of large populations of protected vascular plant species (3-34);

- no data is given in the project documentation (Volume 7.1.1, Section 4.4.5) on presence and nature of ice conditions in the Narva Bay (3-37, 3-45, 3-46);

- in the project, no rationale is presented of the reasons for locating a permanent storage of soil seized during dredging at a considerable distance from the site of work (3-44);

- calculation of payment for waste disposal (Volume 7.1.2, p. 9.2) does not correspond to the project design solutions (Volume 7.1.2, p 5.9.8). As a result, the fee has been repeatedly understated: the project does not take into account the expenses for the negative impact on the environment coming from 3, 345 tons of waste. This violates the principle of waste disposal payment (Article 21 of the Federal Law "Production and Consumption Wastes" [1-10]).

6.1.2 Internal contradictions

The Commission Experts made a number of specific comments regarding the internal contradictions found in the project documentation. A detailed explanation of the comments is given in **Annex 7** to the Expert Opinion.

The comments concerned, in particular, the following identified internal contradictions:

- in different sections of the project, the distance between the projected gas pipeline and the village of Khanike is estimated in different ways (7-1);

- the nature of the spread of suspended matter in the course of the pipeline laying works on the offshore section in different parts of the project documentation is forecasted in different ways (7-2);

- contradictions in information on the effect on the vegetation cover, the location and the areas of designated for felling (Volume 7.2.2, p. 100 and Volume 7.2.2, p. 123) (7-3);

- in the text of Section 5.6.7 of the project (Volume 7.2.2, p. 120), in contrast to the data in Section 4.2.6.3., Rare and protected plant species (Volume 7.2.1, p. 83), there is data on the registered 12 pieces of the protected species *Pulsatilla patens* within the corridor boundaries (7-4);

- in Section 5.8.3. of the Volume 7.2.2., "construction of culverts at the intersection of waterways, even in case of building temporary barriers (dams)" (page 150) is indicated as one of the measures of the PA protection. However, no such information on the structure of the culvert facilities is found in the project design decisions for arrangement of the pipeline onshore section linear part (for ex., Volumes 3.7.1 and 3.7.2) (7-5);

- in different sections of the project there is conflicting information about the width of the potential impact zone of the pipeline on plant objects (7-6);

- in Volume 1.6.10, Section 2.2.3, p. 270, the surveys executor states: "Both species within the study area lay exclusively on moraine boulders and did not use sand and pebble scythes", although the figure G-7 of the annex (Volume 1.6.11) shows Grey Seals clearly leaving the sand bar (7-7);

- in Volume 1.6.10, Section 2.3, the survey executor affirms: "The number of Ringed Seals in the Gulf of Finland is at an extremely low level; haul-outs are registered only on the Maly Tyuters island". However, even according to the data given in the very survey materials (Volume 1.6.10, pp. 260-267, text and table 2.3), the surveys executor registered the Ringed Seals not only on the Maly Tyuters island (7-8);

- the project documentation demonstrates internal inconsistencies with regard to data on seasonal migration of pinnipeds (7-9) and their numbers (7-10).

6.1.3. Identified technical errors and shortcomings

The Commission Experts made a number of specific comments regarding the technical errors and shortcomings of various nature. A detailed explanation of the comments is given in **Annex 5** to the Expert Opinion.

In particular, the following technical errors and shortcomings were brought out:

- numbering of figures, tables, annexes and sections does not correspond to that used in the text and/or the Volume (5-1, 5-4, 5-6, 5-15);

- the project maps and schemes are in some cases presented in an unreadable format due to incorrect choice of scale (5-2);

- in a number of maps and drawings, there are no signs, or they are incorrect (5-3, 5-5, 5-14);

- the project documentation uses outdated (not valid) legislative and regulatory documents, while the up-to-date documents are not used (5-7, 5-8, 5-9, 5-10, 5-11, 5-12);

- in the review of the laws and statutory acts in the field of environmental protection applied by the developer, there are no up-to-date federal laws (5-13);

- in the project documentation, there are references to missing applications (tables, diagrams, drawings, etc.) (5-18);

- in the text of the project documentation sections, there are no references to the sources (5-19);

- Section 4.6.4 of Volume 7.1.1 contains, among other things, unpublished data on shipboard records, performed on 27.06.2016 - 02.07.2016 under another project, the developer not having registered the rights of use (5- 20, 5-21, 5-22).

6.1.4. Conclusions

In total, the Commission Experts made:

- 49 specific comments on evaluation of completeness and reliability of the project documentation (except for information on rare and protected species);
- 10 specific comments on internal contradictions in the draft;
- 22 comments on identified technical errors and shortcomings.

6.2. Analysis of project documentation and project design solutions in terms of compliance with applicable standards, regulations and technical guidelines

6.2.1. The program of industrial environmental monitoring and control

In preparation of the following Volumes: 7.1.5 “Industrial Environmental Monitoring and Control During Construction. Offshore Section”; 7.1.6. “Industrial Environmental Monitoring and Control During Operation. Offshore Section”; 7.2.9. “Industrial Environmental Monitoring and Control During Construction period. Onshore Section”; and 7.2.10. “Industrial Environmental Monitoring and Control During Operation. Onshore Section” the requirements of National State Standard R 56061-2014, "Industrial Environmental Control. Requirements for the Program of Industrial Environmental Control"[5-1] and National State Standard R 56063-2014" Industrial Environmental Monitoring. Requirements for Programs of Industrial Environmental Monitoring "[5-2] were not properly implemented.

The program of industrial environmental monitoring (IEM) (industrial environmental control (IEC) should include a description of:

- registration and processing of primary information (observations and measurements);
- methods for processing, analyzing and evaluating the results of IEM observations, preparing forecasts of changes in the environment state and pollution;
- ways of documenting, storing and accessing the results of observations of the IEM and the forecasts made on their basis;
- production of reports (adding reporting forms), including those provided to state environmental oversight bodies (within the framework of IEC results reporting).

The volumes do not contain the data described above. Sections 9, *Reporting*, contain only general provisions, there is no specificity.

Section 7.2.2 of Volume 7.1.5 provides abstract (non-measurable) controlled parameters of the geological environment: the shape and location of the shoreline; the relief of the coastal zone; relief of the bottom (the remark is given in **Annex 3 - 22**).

Volume 7.1.1, p. 23 states: "The ground unsuitable for backfilling in the trench is exported by self-propelled vessels with a drop-down bottom for placement in the disposal zone located near the port of Ust-Luga." In accordance with the Order of the Ministry of Natural Resources of the Russian Federation of March 24, 2014 No. 147 [4-3], it is also necessary to monitor the state of water, bottom sediments, living organisms in this waste dump.

In the reviewed documentation (Volumes 7.1.5 and 7.1.6), the section on the monitoring program in the area of disposal of the soil dump located in the area of the Ust-Luga port is missing. This violates the provisions of the above-mentioned MNR Order No. 147 [4-3].

The Commission also notes that, in Volumes 7.2.9 and 7.2.10, there is no information on the organization of groundwater monitoring, which is a violation of both the federal ("Rules for Protection of Underground Water Bodies" [3-10]) and departmental (Departmental Guidelines 39-1.13- 081-2003 [5-3]) of normative documents (the remark is given in **Appendix 3-26**).

In view of the foregoing, it should be recognized that, in the reviewed project documentation, the program of industrial environmental monitoring and control during the construction and operation of both onshore and onshore sections of the pipeline has not been developed.

6.2.2. Protection of objects of human activity from the impact of emergency situations of anthropogenic nature

In Volume 10.11.04, *Report on Public Discussions: Appendices L-U*, on page 73 it is stated, in particular, that "... the placement of the intelligent pig node in this section of the site is impossible according to regulatory requirements (in case of using ground pipelines at the intelligent pig site, the distance from them to the border of a settlement should be at least 700 m)."

According to the explanations of the documentation developer, for determining the minimum distances between the gas transportation system facilities to objects of human activity, in this case Code Specification 36.133330.2012 (hereinafter, referred to as CS 36.133330.2012 [5-4]) was applied. According to the CS data, the minimum permissible distances to the boundaries of settlements with underground gas pipeline laying are indicated in column 1 of table 4 for large diameter gas pipelines and are 350 meters. In accordance with Note 5, when ground laying gas pipelines with a length of 150 meters (the gas pipeline within the boundaries of the intelligent pig site is located above ground), these distances are applied with an increasing coefficient of 2, i.e. are 700 meters.

The applied CS36.133330.2012 [5-4] was developed for gas pipelines with a pressure of up to 10 MPa (item 1.1. [5-4]), that is, it is not applicable directly to the Nord Stream 2 project, where the gas pipeline is designed for operating pressure of 22.1 MPa. According to the information in Section 6.5 of Volume 1.1.0, *Explanatory Note*: "To carry out engineering surveys, design and construction of the North Stream-2 gas pipeline, "Special Technical Conditions for Engineering Surveys, Design and Construction of the Facility" W-EN-ENG-PRU-REP-819-PSTS01RU-06 (hereinafter referred to as STC) have been developed and agreed upon in the Ministry of Construction and Housing and Communal Services of the Russian Federation and approved by the Customer in accordance with the established procedure.

In accordance with the project information (Volumes 3.7.1, page 44, as well as Volumes 2.2.1, page 18): "Distances from the axis of the projected gas pipelines to infrastructure facilities, settlements, industrial and agricultural enterprises, high-voltage transmission lines voltage, roads, buildings and structures have been adopted in accordance with STC according to paragraph 7.15, tables 4 of CS 36.13330.2012 [5-4] "Main Gas Pipelines" with an increasing coefficient of 1.5." In Tables 4.3 and 4.1 of the specified project Volumes, only the normalized distance from the underground part of the gas pipeline to settlements is considered, which, in view of the applied draft pipe diameter (1153 millimeters) and the step-up ratio of 1.5, of the applied in accordance with the STR, is 450 meters.

In the project, no information is given the normalized distance from the site of the intelligent pig with ground pipelines to the nearest settlement. However, when applying

coefficient 1.5 designated in STC and of coefficient 2 defined by note 5 to table 4 of SC 36.13330.2012 [5-4], we obtain the minimum normalized distance from the intelligent pig site to the nearest settlement (300x2x1.5) equal to 900 meters.

The project in question contains conflicting information about the actual distance from the projected facilities to the nearest village, i.e. the village of Khanike (**Annex 7-1**). According to the measurements carried out by the Commission Experts, counted on the basis of the map of functional zones of the Kuzemkinsky rural settlement, Kingisepp municipal district of the Leningrad region, the distance from the intelligent pig sites (Volume 7.2.1, p. 16, fig. 2.1, and *ibid.*, p. 55, fig. 4.2) to the nearest site, designated as Khanike village, is about 400 meters (<http://xn--e1aaefhcbnll5ar.xn--p1ai/general-nyy-plan.html>). Thus, even taking into account possible clarifications on the methods of measuring standardized distances, the Expert Commission concludes that the planned placement of the gas pipeline intelligent pig site does not correspond to the established safety standards [5-4] of the minimum permissible distance from the projected facility to the nearest settlement.

Thus, **in case of implementation of the planned activity, the state of protection of vital human interests from the possible negative impact of emergency situations of anthropogenic nature and their consequences will not be ensured.**

6.2.3. Natural and artificial objects crossing the pipeline route

In the Explanatory Note to the project (Volume 1.1.0), the developer defined technical design solutions for the organization of the pipeline route intersections with various natural and artificial objects (Section 7 of the *Explanatory Note*). In particular, the experts considered:

- crossing the shoreline (section 7.7);
- crossing communications (2 inactive communication cables) (Section 7.8);
- crossing water-cut areas (section 7.9);
- crossing the patrol road (infrastructure line facility of the intelligent pig site) (section 7.10).

The issues of crossing natural and artificial objects and obstacles are also considered in Section 2.3 of Volume 7.2.1. The Section also considers, in addition to the above-mentioned intersections, crossing 2 reclamation channels.

The plan of the Northern and Southern strings of the gas pipeline (Volume 3.7.2, sheet 3 of the Plan, page 5 of the Volume) shows the gas pipeline route intersection with four forest roads. However, on the plan, no information is given:

- on constructive design solutions for the intersection of these transport communications;
- on security measures ensuring intersection security.

It should be noted here that the project provides design solutions for intersections of inactive communication cables and reclamation channels.

is also missing in the materials of The construction project documents (Volume 5.2.1), as well as the rest of the project documentation lack information on arranging intersection with forest roads. This contradicts the requirement of subparagraphs c) of paragraph 35 and subparagraph t) of paragraph 36 of the Government Decree of the Russian Federation No. 87 [3-15].

Based on the foregoing, it can be concluded that, in case of implementation of the activities in the planned project, the above-mentioned forest roads will be "cut" in the

process of construction work, and all traffic along these roads will remain suspended both for the time of gas pipeline construction and for the subsequent period of gas pipeline operation.

Meanwhile, the westernmost of the four forest roads crossed by the gas pipeline is the road of Ropsha-Sarkulya, which bears an official status of a public road of local importance. This status was approved by the Resolution of the Administration of the Municipal Unit "Kingisepp Municipal District" of August 19, 2015 No. 1842 [6-7]. In the specified Resolution [6-7], it is designated as Access road Ropsha-Sarkulya, 12.2 km long, identification number 41-221 OP MR 41-003. **At the moment it is a non-alternative access to the village of Sarkyulya, as well as to the frontier guard facilities located in the vicinity of the village.**

Paragraph 2.1 of Article 30 of the Federal Law of November 8, 2007 No. 257-FZ "Roads and Road Activities in the Russian Federation and Amending Certain Legislative Acts of the Russian Federation" [1-11] establishes that *"Temporary restraint or termination of vehicle movement on regional or intermunicipal and local roads is carried out in accordance with the procedure established by the highest executive body of state power of the subject of the Russian Federation."*

According to paragraph 1.3 of the "Procedure for Implementation of Temporary Restrictions or Stopping the Movement of Vehicles on Regional or Intermunicipal and Local Roads" [6-8], "Temporary restrictions or termination of traffic are imposed on the basis of a legal act on introduction of a restriction or congestion of traffic (hereinafter, act on restriction) ..." According to paragraph 1.4 of the Procedure: "The act of imposing a restriction is adopted ... by local authorities for public roads of local significance."

In the considered project documentation, there is no legal act on imposing a restriction or termination of traffic on the local road Ropsha-Sarkulya, identification number 41-221 OP MR 41-003, issued by the Kingisepp Municipal District.

Thus, the considered project documentation violates the Resolution of the Government of the Russian Federation No. 87 [3-15] and the "Procedure for Implementation of Temporary Restrictions or Stopping the Movement of Vehicles on Regional or Intermunicipal and Local Roads" approved by the Resolution of the Government of the Leningrad Region dated January 23, 2012 No. 13 [6-8].

6.2.4. Compliance of the considered documentation with applicable standards, regulations and technical guidelines

The Experts made numerous specific comments on inconsistency of the considered documentation with the current standards, regulations and technical guidelines.

- The project lacks a comprehensive assessment of the degree of surface water contamination by hydrochemical indicators, which is a violation of the Regulatory Guide 52.24.643-2002 (hereinafter referred to as RD 52.24.643-2002) "Methodological guidelines. Method of integrated assessment of surface waters contamination degree upon hydrochemical indicators" [5-7], (3-14).

- The project lacks a description of hydrogeological conditions of the site based on engineering and geological surveys' results, which is a violation of SC 47.13330.2012. Code specification. Engineering surveys for construction. Basic provisions. The updated version of Construction Norms and Regulations 11-02-96 [5-8], (3-18).

- The project lacks a section on the groundwater monitoring program, which is a violation of the Departmental Regulatory Document 39-1.13-081-2003 (hereinafter

referred to as DRD 39-1.13-081-2003) "System of Industrial Environmental Monitoring at Gas Industry Facilities" [5-3], (3-26).

- In the project, the construction of the coastal part of the gas pipeline does not envisage culverts. This is a violation of paragraph 13.3 of CS 36.13330.2012 "Transfer pipelines" [5-4] (7-5).

- List of indicators rated in the Rosson River (Volume 7.2.9 Section 6.4.2 and Volume 7.2.10 Section 6.3.2) does not correspond to the list of indicators from the mandatory Appendix "D" to RD 52.24.309-2016 "Organization and Implementation of Monitoring Observations of the State and Pollution of Land Surface Waters" [5-15]. Absence of sanitary and epidemiological indicators is a violation of the "Rules for Monitoring of Sewage Composition and Properties" [3-9], (8-6).

- Location of the route road on the onshore pipeline section which remains after the construction completion for the subsequent period of the gas pipeline operation, contradicts SC 36.13330.2012 "Transfer pipelines" [5-4], (3-51).

- In violation of paragraph 364 of the Rules of the Fire Fighting Regime of the Russian Federation [3-16], the project provides only one entry to the construction site of the linear part of the coastal section.

Violations of the current standards, regulations and technical guidelines by the design solutions, considered in this Section, will lead to forced changes and adaptations that the developer will have to bring into the project documentation. The Expert Commission notes that new design decisions should also be subject to environmental expertise procedure. Therefore, **not until the developer eliminates the violations indicated in this Section, the Commission opinion on the evaluation of the proposed activity cannot be positive.**

6.3. Analysis of admissibility of the negative impact on the environment planned in the project documentation (Offshore section)

6.3.1 Impact on marine mammals

The incompleteness and unreliability of the performed engineering surveys, considered in detail in Section 5 of this Expert Opinion, determined the incompleteness and unreliability of the project documentation, the assessment of impacts on rare and protected species of marine mammals. The developer's analysis of the nature of the planned activity impact on fauna is given in Sections 4.6.5 of Volume 7.1.1 and 5.7.2 of Volume 7.1.2 of the Project. The section contributors recognize that "the places of detection of seals near the Kurgalsky Peninsula are in close proximity to the projected gas pipeline route" (Volume 7.1.1, p. 123). There is also an indication of the exact distance to the nearest Ringed Seal haul-outing (the Maly Tyuters Island) from the gas pipeline that is 2.5 km. At the same time, there are a number of significant shortcomings in the sections of the project documentation that were commented upon by the experts of the Commission, regarding completeness and reliability of the project documentation in terms of assessing the impact of the planned activities on the Baltic Sea fauna. The arguments for comments are detailed in **Annexes 4, 5, 6 and 7** to the Expert Opinion. Thus, the experts note, in particular, the incompleteness and (or) unreliability of the project documentation in relation to:

- detection of seals and seal habitats (4-18, 4-19, 4-20, 4-21, 4-22, 4-23, 4-27, 4-33);

- information on ice conditions in the Narva Bay (4-34);
- assessment of the impact on listed marine mammal species by the proposed activity (4-24, 4-25, 4-26, 4-28);
- presence of internal contradictions in the project documentation (7-7, 7-8, 7-9, 7-10);
- absence in the project documentation of the developed measures to protect rare species of pinnipeds (4-29, 4-30, 4-31, 4-32);
- presence in the documentation of technical errors and shortcomings (5-16, 6-30).

Taking into account the specific comments mentioned above, the Expert Commission comes to the following conclusions:

1. The information presented in the project documentation on the proposed activities expertise on marine mammals is incomplete and partly unreliable. The distribution of the haul-outs of seals of both species is indicated incorrectly. The design engineers did not carry out their own research into the use of the Narva Bay water area by seals of both species. The information taken from various sources to assess the impact of the proposed activity was used incorrectly. Lack of information in on the nature of the of pinnipeds' use of the sea area means groundlessness of any conclusions on potential impact on them of the projected gas pipeline.

2. The pipeline route has not been examined for the detection of puppy seals of both species. However, a conclusion was drawn that there are no puppies on the track.

3. In the results of the surveys, at least in one case given as an example, species of a seal on an aerial photograph made in the Kurgalsky nature reserve, was indicated incorrectly (instead of ringed seals, gray seals are shown) (Volume 1.6, Part 11, figure D.5). Also, on the sites closest to the gas pipeline, species of the seals are not identified. At the same time, the surveyors who performed the aerial survey do not show photographs of areas close to the route (Maly Tyuters Island, Rodcher Island, Kiskol Reef, Western coast of the Kurgalsky Peninsula). These facts indicate a low quality of the project in the part in question.

4. The quantitative indicators of direct effect of physical factors on marine mammals (range and duration of action in comparison to the established threshold values for both species of pinnipeds) have not been analyzed or quantified.

5. The analysis of the potential gas pipeline impact on marine mammals at the operational stage has not been carried out. There is no study of the impact on the marine fauna of the existing Nord Stream 1 gas pipeline as an analogue facility.

6. The developer didn't study seasonality of seals of both species' use of water area and haul-outs in the route influence zone. As a result, the project lacks calculated optimal timing of the work to minimize the negative impact on seals.

7. The documentation declares, but does not develop measures to reduce the impact of noise and vibrations on marine mammals, no mention is made of measures to minimize the consequences from dredging.

In view of the foregoing, **the following conclusion of the developer is not well-founded:** "On completion of construction works, forecasted are stabilization of the ecological situation and return of the species composition and numbers to the initial indicators. The set of developed nature protection measures will help minimize direct and indirect impact on birds and marine mammals and preserve the biodiversity of the area in question"(Volume 7.1.2, Section 10.6., Page 180).

The Expert Commission also notes that the gas pipeline route will pass near the key habitats of ringed seals and grey seals during the open water period (Verevkin,

Sagitov, 2004 [7-4], Loseva, Sagitov, 2015 [7-5]), at a distance comparable to the size of an individual seal site. Both species of seals are listed in the Red Data Book of the Russian Federation. At the same time, the population of ringed seals varies from 100 to 240 individuals and is close to extinction (Trukhanova et al., 2014 [7-6], Volume 1.6.10, Section 2.3).

6.3.2 Impact on ichthyofauna

As already noted in Section 5 of this Expert Opinion, the data of engineering and environmental surveys dedicated to studies of ichthyofauna can be generally considered satisfactory.

Section 4.6.3 of Volume 7.1.1 provides a sufficiently detailed description of the ichthyofauna in the water areas of the planned gas pipeline construction, based largely on the multi-year monitoring data of the State Research Institute of Lake and River Fish Industry and on other sources of information (publications, documentation), and, to a lesser extent, on the results of own ichthyological survey performed as a part of engineering and environmental surveys.

However, the project lacks information on the biological characteristics of fish species listed in the Red Book of the Russian Federation, previously encountered in the studied water areas. Information on spawning and feeding migrations of fishlike vertebrates and fish in the areas of planned construction in the Narva Bay is not fully represented, especially in comparison with that for the Luga Bay. Apparently, this is a consequence of lesser studies of Narva Bay. But in a number of cases, an impression is created of deliberately reducing the available information on the Narva Bay and on its important role in the life cycle of migratory fish. For example, some of the report's phrases are evidently taken from the 2012 comprehensive environmental survey materials that are available on the Internet [8-3]. These materials indicate that "The densest and the most stable clumps of Baltic herring that are of commercial importance are concentrated in the deepwater areas of the bay adjacent to the islands of the Moschny, Bolshoy Tyuters and Maly Tyuters, Gogland, and in the Narva Bay" [8-3, p. 95]. The same sentence was detected in the report of "Frecom" Ltd. issued last year [8-1, p. 123]. In the submittal (Volume 7.1.1, page 98), the phrase is given almost in the same form, listing of all the islands, **however, the Narva Bay is no longer mentioned**. Nonetheless, misprints in the Latin names of fish in the submitted documentation (Volume 7.1.1) are the same as in the materials mentioned above, and are given in similar tables (see Table 4.30 in Volume 7.1.1 and Table 7.5.4 of [8-1] and Table 8 of [8-3]): *Zoarces vivipsrus* instead of *Zoarces viviparus*. Thus it can be argued that the information given was copied from previously submitted materials and reports. However, the information about the Narva Bay characterized by aggregations of Baltic herring of commercial significance, was omitted intentionally by the documentation developer, **which can be characterized as professional forgery**.

The developer's analysis of the nature of the proposed activity impact on the ichthyofauna is given in Section 5.6.3 of Volume 7.1.2 of the project. In the documentation, the possible effects of the proposed activity on the ichthyofauna are described very superficially and do not allow to fully understand the direct, indirect and other negative impacts of the gas pipeline construction and operation on fish populations. The following sections are also formally presented in the draft:

- expected damage to aquatic bioresources (ibid., Section 5.6.4, p. 73);
- marine biota protection activities (ibid., Section 5.6.4, p. 74);

- possible effects of emergency situations on the ichthyofauna (ibid., Section 6.3.4.3, pp. 144-145).

What stands out is the fact that there is only one paragraph dedicated to the analysis of the impact on the ichthyofauna of the functioning analogue facility, the offshore gas pipeline Nord Stream 1, where in addition to the declaration of no impact of the gas pipeline following the monitoring, no specific information on the results of this monitoring is given.

In view of the above, the Expert Commission believes that in the project under consideration, the assessment of proposed activity impact on the ichthyofauna, as well as measures to reduce the negative proposed activity impact of the on the ichthyofauna, are underdeveloped.

6.3.3 Impact on avifauna

Incompleteness and unreliability of the conducted engineering surveys, considered in detail in Section 5 and **Annex 6** of the Expert Opinion, determined the incompleteness and unreliability of the expertise on the marine avifauna. For example, in Section 4.6.4 *Avifauna* (Volume 7.1.1), in Figure 4.13, there is an abundance of data received as a result of aerial surveys, the unreliability of which is proved in detail above (6-42, 6-43, 6-44, 6-45). This section, in particular, contains indications of the non-existent colonies of Great Cormorant (6-54), there are no data on the colonies of the Guillemot (6-55), the number of certain species (Greylag Goose, Tufted Duck, etc.) many times exceeding the results of long-term ship counts (6-47). Also, there is data on encounters of a number of rare subspecies of birds (Light-bellied Brent Goose, European Oystercatcher, etc.), which can be determined up to the subspecies only taken in hands or at close range and cannot be determined from the aircraft (6-48).

The developer's analysis of the nature of the proposed activity impact on avifauna is given in Section 5.7.1 of Volume 7.1.2.

The experts of the commission made the following specific comments on the completeness and reliability of the project documentation in terms of assessing the planned activities impact on seabirds:

- in Section 5.7.1 of Volume 7.1.2, the vessels noise impact estimation on seabirds is given incorrectly (3-40);
- in Section 5.7.1 of Volume 7.1.2, unreliable data on the current nature of navigation in the zone of the planned gas pipeline in the Narva Bay (3-41) are given;
- in Section 5.7.1 of Volume 7.1.2, the developer does not analyze the possible consequences of impact on breeding bird communities from changes in the migration routes of bottom fish (3-42);
- in the list of measures for the protection of avifauna (Section 5.7.3 of Volume 7.1.2), there is no information on the necessary coordination of construction dates with the least damage periods for birds (3-43).

In view of the foregoing, the data concerning the proposed activities expertise on the marine avifauna given in Volumes 7.1.1 and 7.1.2 of the project should be considered incomplete and partially unreliable.

6.4. Analysis of admissibility of the negative impact on the environment planned in the project documentation (Onshore section)

6.4.1. Impact on phytocenoses

Subsections 4.2.6.1. *General Characteristics of Forests* and 4.2.6.2. *Conservation Value of Phytocoenosis* (Volume 7.2.1) provide general characteristics of forests and phytocenoses, and also indicate the presence of valuable phytocoenosis in the project area. Verbal descriptions of valuable phytocenoses are also given. It should be noted that information on which of the phytocenoses are of value as habitats of protected species are not available (data are provided only for grass willow forest). Neither it is said whether such habitats are rare or unique for the region, and, therefore, the damage to the environment at their loss is not estimated objectively. An important drawback of the project documentation also is that in the sections and accompanying drawings, there is no attempt to allocate valuable phytocenoses on the map, marked as communities in need of increased attention and protection during the implementation of the planned activities.

In the sections above, there is no information on biologically valuable forest areas (BVF), but their presence within the boundaries of construction allocation and in adjacent territories was evident due to a whole series of specialized and indicator species of vascular plants, bryophytes, lichens and fungi (*Epipactis atrorubens*, *Lobaria pulmonaria*, *Neottia nidus-avis*, *Pulsatilla pratensis*, *Pulsatilla patens*, *Oligoporus placentus*, *Nowellia curvifolia*, *Pycnoporellus fulgens* and many others, repeatedly mentioned in the sections of Volumes 1.6.1-1.6.18, 7.2.1, 7.2.2), as well as data on the availability of old sites of mature forests (see **Annex 3-4**). In addition, in the subsections under consideration, the information on the intersection of the pipeline with a BVF massif given in the "Directions for the Management Plan of the State Natural Complex Reserve Kurgalsky" carried out within the framework of the international TACIS project, was completely ignored [8-4].

Thus, in the sections under consideration there is no information on the presence of a massif of biologically valuable forests, the BVF spatial location, their extent and area, and the proportion of BVF areas within the entire forest area in the allocation zone (corridor and buffer zone) is not indicated. This leads to a distortion of information regarding distribution of environmentally valuable plant communities in the project implementation area, and to unreliability of information on the level of damage to the natural environment as a result of implementation of this option of the gas pipeline route.

6.4.2. Impact on landscapes

In the Volume 7.2.2., the developer does not consider potential risks of the planned activity realization for the unique listed landscapes of the Kurgalsky Peninsula. Correspondingly, there are no measures developed to protect the landscapes and minimize the negative impact.

At the same time, the Commission Experts note that the biggest value of the Kurgalsky nature reserve is that for historical reasons its territory has remained empty and poorly developed for many decades. This particularly refers to some coastal landscape types on most of the Baltic Sea coast that are virtually destroyed or heavily transformed by humans.

For example, the Gungerburg ridge of ancient dunes is a form of relief and a landscape that has no analogues in the Leningrad region and in the neighboring regions of the Northwest of European Russia: more than 16 km in length, up to 32 m altitude, up

to 15 m in relative height, up to 800 m in width, slopes up to 15°, as well as the preserved pine forests of high recreational value and biological diversity. Any fragmentation of the relic dune ridge, including that envisaged by the pipeline construction project, will irreparably damage it.

Despite the historically very intense development of the surrounding territories as a whole, the forest vegetation of the Kurgalsky nature reserve largely avoided the impact of intensive forestry development and the accompanying fragmentation in the second half of the 20th century and later. It is the low level of fragmentation and relatively low accessibility of forest ecosystems in the coastal zone that made possible the preservation of a large number of rare and protected plant and animal species in this area. An increasing fragmentation and accessibility of the reserve territories, which is inevitable during construction of a large linear facility, will unfailingly lead to loss of these values on a much larger area than the area that will be directly affected by the construction and operation processes.

6.4.3. Impact on vegetation and soil cover

The developer's analysis of the nature of the proposed activity impact on vegetation and soil cover is given in Section 5.6 of Volume 7.2.2 of the project. In Section 5.6.1, the developer identifies and analyzes the following negative impacts of the proposed activity on plant communities:

- direct impact of construction (felling of tree and shrub vegetation and complete destruction of live ground cover within the pipeline route);
- indirect (implied) impact associated with a sharp change in environmental conditions in the cut areas (additional light, heat and moisture) – the verge effect;
- wind impact on the stand, formed in a closed state, in places of artificial verges formed by felling.

In addition to the above factors of impact, the developer also notes: habitat fragmentation, invasive impact, increased risk of fires, air pollution by construction equipment. Based on the listed impacts and risks, the developer presents conclusions of the assessment of their potential negative impact on plant communities.

The phrase from the Section under consideration: "the main ecological risk in the gas pipeline laying is the presence of very valuable phytocenoses ..." (p. 107 of Volume 7.2.2) is taken as a curious incident.

Analysis of this Section performed by the Commission Experts revealed the following main drawbacks:

- expertise in Subsection 5.6.1. The impact on the vegetation cover (Volume 7.2.2, pp. 100-108) seems to be performed in an incomplete and unreliable manner, since it is based on knowingly incomplete and unreliable data: in the project documentation, unreliable and incomplete data is given on the number of plant species listed in the Red Data Book of the Russian Federation and the Red Data Book of the Leningrad Region (and on the number of specimen) and falling into the construction corridor, as well as into the construction land allocation for in general;
- in the abovementioned Section, the developer does not provide complete information on location of roads, access roads and places of deployment of a large number of heavy construction equipment units and mechanisms used during the coastal zone project realization phase. Travel and placement of 30 units of heavy construction equipment and mechanisms (excavators, crawler cranes, dump trucks, wheel loaders, etc.) (Volume 7.1.1, page 28), as well as direct creation of roads for their travel on the

shoreline will lead to loss or significant irreparable damage to coastal complexes (shoals and shoreline with coastal and sublittoral vegetation). That said, it is the preservation of coastal complexes listed SNR features of outstanding value that is one of the main objectives of the Kurgalsky nature reserve. In addition, it is on the narrow coastal territory (both in the 30-meter zone of the construction site and in the adjacent areas), according to the text and cartographic data given in the project (Volume 1.6.17, pp. 50-61, vol. 7.2.1, p. 166, etc.), a large number of locations of protected species and natural objects with a significant conservation value are concentrated (including objects and complexes listed as key protected features located on the territory of the Kurgalsky nature reserve - for example, reed-lyme grass communities with local populations of high density of protected species of *Epipactis atrorubens*, *Carex arenaria*, etc.);

- in this same Section, no expertise is provided of location and travel of 119 heavy construction equipment units and other mechanisms (bulldozers, truck cranes, excavators, crawler cranes, truck tractors, wheel loaders, etc.) involved in the construction of the linear part of the object (Volume 7.2. 1, pp. 38-40), on hydrological regime and other habitat conditions of large local populations of plant species common in the northern part of the Kader marsh – *Rhynchospora fusca* and *Drosera intermedia* - present both within the boundaries of the construction corridor and in its immediate vicinity – i.e. the protected species presence of which is closely related to the existing hydrological regime of the Kader Marsh. At the same time, assessing impact on vegetation, the developer ignored that any activity potentially leading to a change in the natural hydrological regime of the zone within Ramsar site, is not allowed;

- according to the data presented in the considered Subsection, to perform works related to displanting of rare and endangered species listed in the Red Data Book of the Russian Federation, a permission to extract flora species listed in the Red Data Book should be issued by the central office of Federal Service for Supervision of Natural Resource Usage (Volume 7.2.2, p. 120). **However, the developer does not consider an alternative option, which is necessary if the said permission is not received.** Since the required amount of displanting (taking into account reliable and not deliberately underestimated data on the number of protected vegetation objects in the construction site) is unprecedentedly large for the Leningrad Region (several thousand specimen of protected vegetation objects according to "Reference Opinion of the Expert Commission Consultant of Public Environmental Expertise E.A. Glazkova"), and there is no successful practice of displanting rare species on such scale, probability of obtaining the Federal Service permission for such operation is low;

- to calculate and predict the impact associated with "border effects" (expressed in change in microclimatic indicators, etc.), information set forth in the work of V. M. Ivonin (Volume 7.2.2, p. 104) was used (in this case, the work itself was not listed in the bibliography). However, his publications on the considered issue (1. V. M. Ivonin, M. D. Pinskiy, A. V. Egoshin, 2012 [7-7]; 2. V. M. Ivonin, A. V. Egoshin, 2012 [7- 8]) present information valid for the mountain forests of the Caucasus and reflect the scale of the impact spread on linear objects (forest roads, etc.) in other type of conditions differing in landscape and forest plants. It is incorrect to apply these works to the situation of forest communities in the North-West of the European part of Russia and a construction site the width of which is not comparable to the one of forest roads and driveways (for which the author proposes the indicated 15-meter width of "border effects"). Thus, the developer is unreasonably considering a 15 m wide strip adjacent to the construction corridor as a zone of the potential gas pipeline influence on the

vegetation cover (Volume 7.2.2, p. 104-105). It should be noted that in the earlier documents submitted for public hearings, the indirect gas pipeline impact zone was estimated by the developer as 50 m.

6.4.4. Impact on rare and protected plant species

One of the most important sections of the assessment of the planned activities impact on the environment is related to the assessment of impact on rare and protected plant species that are endangered or destroyed in case of the planned activity implementation.

Incompleteness and unreliability of the conducted engineering surveys, considered in detail in Section 5 of the Expert Opinion, determined the incompleteness and unreliability of the expertise on rare and protected species of flora and fauna in the considered project documentation.

The Commission Experts made numerous specific comments on completeness and reliability of the project documentation in terms of status report on presence of rare and protected plant species in the area of the proposed activity, the expertise done in the project, and also on activities that contribute to minimizing the corresponding negative impacts. A detailed explanation of the remarks is given in **Annex 4** to the Expert Opinion.

In particular, the Experts noted the following:

- there is no reliable data on the number of flora species listed in the Red Data Books of the Russian Federation and / or the Leningrad Region (the number of protected species and / or specimen) which will be affected in case of the planned activity implementation (4-2, 4-11);

- in the data of subsections (Volume 7.2.1, pp. 83-86, vol. 7.2.2, p. 120) there is no complete and reliable list of sites of outstanding value that will be affected in case of the proposed activity implementation (4-2, 4-11)

- in the project documents (Volume 7.2.1, pp. 83-86, Volume 7.2.2, p. 120, Volumes 1.6.16-1.6.18) there is no information on presence of the species *Hottonia palustris* listed in the Red Data Book of the Leningrad Region within the boundaries of the construction corridor counting more than 1000 specimens (4-3, 4-11);

- in the project documents (Volume 7.2.1, pp. 83-86, Volume 7.2.2, p. 120, Volumes 1.6.16-1.6.18) there is no information on presence of the species *Epipactis atrorubens* listed in the Red Data Book of the Leningrad Region within the boundaries of the construction corridor counting more than 50 specimens (4-3, 4-11);

- in the project documents (Volume 7.2.1, pp. 83-86, Volume 7.2.2, p. 120, Volumes 1.6.16-1.6.18) there is no information on presence of the species *Neottia nidus-avis* listed in the Red Data Book of the Leningrad Region within the boundaries of the right-of-way (within the 15-meter buffer zone) counting more than a few specimens (4-3, 4-11);

- in the project documents (Volume 7.2.1, pp. 83-86, Volume 7.2.2, p. 120, Volumes 1.6.16-1.6.18) there is no information on presence of the species *Aulacomnium androgynum* listed in the Red Data Book of the Russian Federation and the Red Data Book of the Leningrad Region within the boundaries of the construction corridor counting more than a few specimens (4-3, 4-11);

- in the project documents (Volume 7.2.1, pp. 83-86, Volume 7.2.2, p. 120, Volumes 1.6.16-1.6.18) there is no information on presence of the species *Lobaria pulmonaria* listed in the Red Data Book of the Russian Federation and the Red Data

Book of the Leningrad Region within the boundaries of the construction corridor counting more than a few specimens (4-3, 4-11);

- in the project documents (Volume 7.2.1, pp. 83-86, Volume 7.2.2, p. 120, Volumes 1.6.16-1.6.18) there is no information on presence of the species *Felipes leucopellaeus* listed in the Red Data Book of the Russian Federation and the Red Data Book of the Leningrad Region within the boundaries of the construction corridor counting more than a few specimens (4-3, 4-11);

- in the project documents (Volume 7.2.1, pp. 83-86, Volume 7.2.2, p. 120, Volumes 1.6.16-1.6.18) there is no information on presence of the species *Lecanactis abietina* recommended for listing in the Red Data Book of the Leningrad Region within the boundaries of the construction corridor counting more than a few specimens (4-3, 4-11);

- in the project documents (Volume 7.2.1, pp. 83-86, Volume 7.2.2, p. 120, Volumes 1.6.16-1.6.18) there is no full and reliable information on the value of Kader wetland, including information on presence of a 1000 specimens of *Drosera intermedia* within the gas pipeline right-of-way;

- in the project documents (Volume 7.2.1, pp. 83-86) there is no information on presence of the species *Armeria vulgaris* listed in the Red Data Book of the Leningrad Region in direct vicinity of the construction right-of-way within the boundaries of the construction corridor counting more than a few specimens (4-5);

- Information of Section 4.6.9. (Volume 7.2.1, p. 164-167) contain inaccurate and incomplete information on the number of protected species within the boundaries of the construction corridor with a width of 30 to 60 m. Data on the number of protected species within the boundaries of the construction corridor with a width of 62 to 85 m are distorted and understated. (4-6);

- illustrative materials (see Map of environmental restrictions within the study area) (Volume 7.2.1, p. 166) does not contain reliable and complete information on the number and names of protected vegetation objects and information on biologically valuable forest areas (BVF) (4 -7);

- inevitability of destroying a number of protected vegetation objects that were not taken into account by the developer (Volume 7.2.2, p. 120) when developing measures to conserve valuable flora objects (4-8);

- biological features of most species of vascular plants, lichens and bryophytes present in the construction zone (Volume 7.2.2, pp. 120-121) prevent from successful use of measures for their displanting to preserve specimens and prevent their death during the project (4-9);

- Section 6.7 (Volume 7.2.10) does not contain detailed information on displanting projects for protected plant species, which does not allow assessment of the success of planned activities and follow-up control (4-10);

- there is no developed method for transplanting protected species of plants in the project documentation (confirmed by the data of multi-year monitoring) (Volume 7.2.2, pp. 120-121) (4-12);

With this in mind, the conclusion of the Subsection 5.6.1., *Impact on the vegetation cover* stating that "the degree of impact on the vegetation cover and SNRs as a whole can be assessed as permissible, the impact under consideration will be insignificant and can only be manifested on a local scale" (Volume 7.2.2, p. 108), **is not justified and is not reliable**, since in case of implementation of the planned activity, habitats of flora species listed in the Red Data Book of the Russian Federation and / or the Red Book of

the Leningrad Region will be destroyed, and natural complexes and species subject to protection in the boundaries of the nature reserve will be destroyed and disturbed.

6.4.5. Evaluation of measures of protection of flora species

The most serious remarks were made by the Commission Experts on Section 5.6.7 of Volume 7.2.2 *Measures of protection of flora species listed in the Red Books of various levels and their habitats*. Experts note that, according to the materials of Section 5.6.7, **the main direction** of rare species conservation during the construction of gas pipeline facilities is displanting into natural biotopes (Volume 7.2.2, p. 119). However, at the present time, there are no regional normative legal acts that permit the implementation of displanting of flora species listed in the Red Data Book of the Leningrad Region. Therefore, activities related to this area, for the most part, cannot be realized and will not be able to ensure the preservation of most species listed in the Red Data Book of the Russian Federation and / or the Red Data Book of the Leningrad Region.

According to the Resolution of the Government of the Leningrad Region of April 8, 2014 No. 106 "On the Red Data Book of the Leningrad Region" [6-4], the Committee on Natural Resources of the Leningrad Region should approve a list of special measures for the protection of flora species listed in the Red Data Book of the Leningrad Region, including artificial breeding and release (planting) in the natural environment, resettlement (displanting), creation of genetic banks, protection of specific habitats (growth), as well as the order of their implementation on the basis of proposals. This list should be submitted and / or approved by the Commission for the Protection of Rare and Endangered Flora.

However, at the present day, the Committee on Natural Resources of the Leningrad Region has not yet currently established a Commission for the Protection of Rare and Threatened Flora Species. Neither there is a list of special measures to protect flora species listed in the Red Data Book that would be approved by the Committee on Natural Resources of the Leningrad Region.

It should be noted that the regulatory legal act defining the list of special measures for the protection of flora species, the regulatory legal act approving the method of displanting are subjects of review of a federal level state environmental expertise (paragraph 1 of Article 11 of the Federal Law "Environmental Expertise" [1-5]). The site of Federal Service for Supervision of Natural Resource Usage presents no information on positive conclusions of state environmental expertise on displanting methods of the above species in the Public Register of State Environmental Expertise on.

Thus, measures to displant flora species listed in the Red Data Book of the Leningrad Region do not comply with the current regional legislation and cannot be carried out legally.

In addition to this, as noted by the Commission Experts (**Annex 4 – 9**), the biological characteristics of most species of vascular plants and lichens proposed by the developers for displanting do not allow successful use of displanting measures to preserve specimens of these species. Therefore, measures to prevent or minimize damage to plant complexes and species are not in fact such: in the course of their implementation, the plant organisms themselves will die, and in the course of the project as a whole, their habitats will be lost. **Such an impact, leading to the destruction of valuable flora species listed in the Red Data Books of the Russian Federation and / or the Leningrad Region, is contrary to environmental legislation and is unacceptable.**

6.4.6. Impact on avifauna

The project developer's analysis of the nature of the planned activities impact on the fauna is provided in Section 5.7 of Volume 7.2.2. Here, the developer identifies and analyzes the following types of anthropogenic impact of the proposed activity on the fauna (p. 130):

"- reduction of the habitat area as a result of seizure of lands on which complete or partial destruction or radical change of biotopes will occur;
- transformation of habitats in the adjacent territory;
- anxiety factor;
- direct death of animals as a result of poaching, functioning of production facilities. "

The Commission Experts made numerous specific comments on completeness and reliability of the project documentation concerning assessment of the planned activities impact on wildlife and in particular on the availability of habitats for rare and protected bird species in the area of the planned activity. Details of the arguments are given in Annexes 3 and 4 to the Expert opinion.

The Commission Experts noted:

- in Volume 7.2.1. Section 4.2.7.2, sub-chapter *Hunting and Commercial Species of Birds*, on page 101 does no indication is given of the presence of grouse courtship site directly at the intersection with the planned gas pipeline route (3-35);

- Volume 7.2.1. Section 4.2.7.2 does not substantiate identification of only 5 sites of outstanding value instead of 19 sites identified by engineering and environmental surveys (Volume 1.6.19, pages 210-211) (3-36);

- in Volume 7.2.1. Section 4.2.7.2. among rare species nesting in areas of outstanding value, the Stock Dove is mentioned. This species was not found during engineering and environmental surveys (Volumes 1.6.19, tables 5.1 and 5.2), and its mention in the section text is not substantiated by citations (4-13);

- in the list of specially protected objects of the Kurgalsky nature reserve (Volume 7.2.1, Section 4.6.2, p. 149) are erroneously not indicated: Baltic Dunlin, Turnstone, Oystercatcher, Caspian Tern (4-14);

- in Volume 7.2.2, Section 5.7.1 on p.133 in figure 5.9, only 22 breeding or courtship sites of 7 rare or valuable bird species are shown. At the same time, in this area, 442 sites of findings of 76 rare bird species were indicated, of which 43 are nesting in the gas pipeline impact zone (Volume 1.6.19, tables 5.10 -5.51) (4-15);

- the statement of the developers that "the inhabited nest of the white-tailed eagle identified as a result of ecological studies falls into the zone of strong impact ... Nesting sites of other listed birds are either on the border of the maximum possible zone of strong influence, or beyond it" (Volume 7.2.2., Section 5.7.1, page 134) does not correspond to the survey data (Volume 1.6.19) demonstrating that a large number of listed birds nest directly on the planned gas pipeline route or next to it, including Horned Grebe, Bittern, Coot, Corncrake, Spotted Crake, Lapwing, Greenshank, Great Snipe, Boreal Owl, Black Woodpecker, Grey-headed Woodpecker, White-backed Woodpecker, Wood Lark, Meadow Pipit, Great Grey Shrike, Greenish Warbler, Great Reed Warbler, River Warbler, Redwing, Missel Thrush, Red-breasted Flycatcher, Coal Tit, Rustic Bunting; a number of other bird species (White Stork, Lesser Spotted Eagle, Eurasian Hobby, Kestrel and Hen Harrier) have their feeding grounds in this area.

- the conclusion that the construction noise effect on white-tailed eagles nesting in the zone of the construction corridor will be within the normal limits of norms (Volume 7.2.2, Section 5.7.1, p.134-135), is not substantiated (4-17);

- assessing the prospects of stabilization and growth of the numbers of animals and birds (Volume 7.2.2, Section 5.7.2), the developer does not take into account the increasing recreational load on the nature reserve by the personnel of the gas supply station of the gas pipeline (about 500 people) (3-37);

- estimating perspectives of stabilization and growth of numbers of animals and birds (Volume 7.2.2, Section 5.7.2), the developer does not take into account the risks associated with increasing the availability of bird habitats for people and predatory mammals located in previously inaccessible areas of the reserve (3-38);

- measures of fauna protection (Volume 7.2.2, Section 5.7.3.) are designed without taking into account the biology of the avifauna of the nature reserve (3-39).

Considering the submitted comments, it can be concluded that **the negative impact on the nature reserve fauna will affect a much larger territory than the project developer claims, and it will be more time-consuming and much more intense.**

In Volume 7.2.2, Section 5.7.3 *Measures of fauna protection* and Section 5.8.3 *Measures of SNR protection*, information is provided only on local least-cost security measures to be taken during the gas pipeline construction (minimum alienation of land, fire safety and measures of secure storage of reagents, conservation of watercourses, collection of garbage, traffic only on specially designated roads, nameplates, prohibition of weapons and free running dogs). The only environmental compensation measure mentioned is construction of several artificial nests for large birds, which may not be populated by birds in the future.

The scale of these measures is not comparable to the ornithological value of the territory and the extent of the intervention. Nowhere in the text of the project is considered nor mentioned the event recommended in Volume 1.6.19., Chapter 6.2 *Recommendations and Proposals on Prevention and Reduction of Adverse Effects of the State of the Environment*, as carrying out all disturbing work after the breeding season of birds, i.e. in August. In the above sections of Volume 7.2.2, a recommendation to exclude laying new technological roads on forest sites during the construction period, except for the ones along the pipeline construction corridor, is also not considered. In these Sections of the project, neither the following recommendations given in Volume 1.6.19. (Section 6.2) and aimed at environmental compensation measures, are considered: 1) installation of barriers at the off ramps leading to the coast and to the central parts of the nature reserve from local roads; 2) installation of anchoring booms on the canal coming from the lake Lipovskoe to prevent violations of the nature reserve regime in places of mass nesting of birds.

Based on the results of Commission review of the proposed activity impact analysis on the fauna made by the developer, the commission came to the following conclusions:

- in Volumes 7.2.1 and 7.2.2 of the project, significant inconsistencies with the results of engineering and environmental surveys were revealed: the number of habitats of outstanding value and nesting sites and encounters of rare bird species in the laying zone and the impact of the planned gas pipeline were reduced significantly: of the 442 encounter points and 76 rare species of birds, only 22 nesting points of 7 species are

mentioned in the analysis. With the exception of the white-tailed eagle nesting grounds, none of the nesting of rare species directly along the pipeline route is mentioned;

- among the negative impacts of the planned gas pipeline to the fauna of the nature reserve, there is no mention of a significant long-term increase in recreational loads and disturbance factor on a large area of the nature reserve from the side of the gas supply station personnel at the borders of the nature reserve, and a long-term increase in accessibility of many valuable thicket and wetland habitats for humans and predatory mammals caused by construction of a clearing and embankments. Growth of disturbance factor and destruction of woody vegetation have not been taken into account in the assessment of the influence of construction on the breeding of the eagle-tailed tail;

- the proposed measures to reduce and compensate for the negative impact on the avifauna and natural complexes of the nature reserve do not correspond to the scale of the construction impact on them;

In view of the foregoing, **the documents on the planned activity expertise on the fauna from the Volumes 7.2.1 and 7.2.2 of the project do not meet the environmental requirements established by the legislation of the Russian Federation in the field of environmental protection.**

6.4.7. Impact on the hydrological regime of the area

Speaking of temporary and permanent impacts on surface waters in Section 5.8.2 of Volume 7.2.2 of the project, project developers identify "a violation of the natural hydrological regime ... as a result of: excavation, including planning works in the construction zone, digging trenches, construction of service and permanent roads, construction of surface drainage systems, traffic and construction equipment. "

The Commission Experts also note the relevance of the risk of disturbance, in case of the planned activity realization, of the natural hydrological regime on the territories adjacent to the planned pipeline route. In particular, they point out that the change in the hydrological regime in the area in question may prove particularly strong due to the specific features of its structure. The landscape structure of the area to the west of the Gungerborg ridge is characterized by a combination of low sandy coastal ridges and watered degradations, with the water runoff directed mainly to the North. Interrupting this runoff by the gas pipeline route will inevitably lead to a change in the living conditions of many species of living organisms, including rare ones and particularly sensitive to such impacts. This will also inevitably provoke desiccation and decay of spruce forests prevalent on this territory (including old-growth ones) with the likely development of an outbreak of stem pests (in particular, the eight-toothed engraver beetle).

It is also necessary to note the inevitability of a change in hydrological regime in the northern part of Kader wetland in the course of the planned operation, with the wetland area being characterized by the low thickness of the peat deposit (usually less than 0.5 m) and a specific system of surface runoff, the impact on which can lead to irreversible changes in the natural complexes of the swamp. Since the project documentation does not provide any flow characteristics from the northern part of the Kader swamp, the nature of the above changes cannot be estimated.

It is also necessary to note the inevitability of a change in the course of the planned hydrological operation of the northern part of the Kader wetland, which is characterized by the low thickness of the peat deposit (usually less than 0.5 m) and a specific system of surface runoff, the impact of which can lead to irreversible changes in

the natural complexes of the swamp. Since the project materials, we do not have the flow characteristics from the northern part of the Kader swamp, the nature of the above changes.

In Section 5.8.3 of Volume 7.2.2., one of the measures of the SPNR protection is defined as "installation of culverts when crossing waterways, even when building temporary barriers (dams)" (p. 150). Despite this, in the design decisions on the arrangement of the linear part of the gas pipeline shore section of the (for example, Volumes 3.7.1 and 3.7.2), there is no information on the design of the culverts. The absence of culverts in the gas pipeline design is a violation of SC 36.13330.2012 *Trunk pipelines* [5-4], paragraph 13.3 of which states that "When laying pipelines in earthen embankments at intersections through beams, ravines and streams, it is necessary to provide for the installation of (penstocks, culverts etc.)".

Thus, **the declaration of proposed environmental protection measures does not find its confirmation at the level of technical design solutions.**

On the basis of the foregoing, reliability of predictions of direct and indirect impacts on the components of natural environment and natural complexes of the Kurgalsky nature reserve are questionable, namely:

The conclusion made in Section 5.4.1 *Water Consumption and Wastewater* (Volume 7.2.2, page 94): "If the design solutions are strictly complied with during construction and environmental activities, the negative impact on the environment is permissible" - is not justified by the project solutions;

The conclusion in Section 5.4.7. *Conclusions* (Volume 7.2.2, page 98): "Based on the assessment of the impact on the area water resources (surface and groundwater), it can be concluded that under normal (accident-free) mode of operation of facilities and compliance with environmental measures, impact on surface and groundwater is permissible" - is not substantiated by design decisions;

The conclusion made in Section 5.8.4 *Conclusions* (Volume 7.2.2, page 150): "In general, the impact is characterized as local in scale, short-term in the period of the main impact during the construction phase, ranging in intensity from insignificant to strong and in mostly reversible within the boundaries of the forecast impact zone" - contradicts the content of the project documentation.

6.4.8. Impact on SNR

In Section 5.8 of Volume 7.2.2 of the project, an expertise of the planned activities on SNRs is considered. In this subsection:

- the protected areas located in the area of the proposed activity are listed;
- the main environmental protection functions of the SNRs are listed;
- the main impacts in the SNR areas projected in case of implementation of the planned economic activity are listed;
- an assessment of these impacts is provided.

The analysis of this section performed by the Commission Experts revealed the following main drawbacks:

- in Section 5.8.1. *The Main Nature Protection Functions in the Area of Planned Economic Activity* (Volume 7.2.2, pp. 141-142), there is no information on the fact that protection of wetland complexes also belongs to the main nature conservation functions of the Kurgalsky nature reserve: wetlands also belong to the list of natural complexes of outstanding value and objects of the reserve, and a large number of specimens (about

1000 individuals) of the protected species *Drosera intermedia*, as well as several dozen specimen of the protected species *Rhynchospora fusca* can be found in the construction right-of-way within the northern border of Kader wetland;

- in Section 5.8.2. *Possible Impacts on the SNR Area as a Result of Planned Economic Activity* (Volume 7.2.2, pp. 142-143) in table 5.52 (Characterization of Potential Impacts on Components and Integrity of the Natural and Territorial Complex of SNRs), information on the significant change in the hydrological regime of the Kader swamp is missing among the mentioned impacts on vegetation cover. Such change will result in significant and critical change of conditions of biotopes occupied by large local populations of such listed species as *Drosera intermedia* and *Rhynchospora fusca*;

- *ibid* (p. 142-143), no information is given on the impact on the local population of *Hottonia palustris* numbering several thousand specimens and spread within the boundaries of the construction corridor and the adjacent territories in extensive waterlogged depressions and ducts in the western part of the corridor;

Both projected and potentially possible (taking into account the presented design decisions and technologies used in the project) **impact of the planned activities on protected areas and natural complexes of the State Nature Regional Reserve Kurgalsky and the Ramsar site Kurgalsky Peninsula cannot be regarded as admissible.**

Basing on the principles of ecological expertise on reliability and completeness of information submitted for environmental review, the presumption of the potential environmental hazard of any planned economic and other activities, as well as the scientific validity and objectivity of the environmental expertise, the developer's conclusions on the admissibility of the planned activity should be recognized as unfounded.

6.5. Analysis of design solutions for compliance of the proposed engineering and technological solutions with modern achievements of science and technology, as well as the world's best experience - the best available technologies (BAT)

In accordance with the Executive Order of the Government of the Russian Federation of December 24, 2014 "Approval of the List of Areas of Application of the Best Available Technologies" [3-11], the gas pipelines construction does not fall under the "List of Areas of Application of the Best Available Technologies". This circumstance reduces the risks of the activity initiator with regard to a possible judicial appeal against the project in question, because the technologies used in the project do not match the BAT. At the same time, this does not relieve the documentation developer from the need to consider alternatives for the best available technologies in the project documentation, because on the basis of Article 3 of the Federal Law "Environmental Protection" [1-6], the provision that reducing negative impacts of economic activity on the environment is achieved by use of the best available technologies, is one of the main principles of environmental protection.

In accordance with the information contained in the materials of the ESPO [8-5, p.5.5.1] in Germany, the Nord Stream 2 pipeline landfall will be constructed as a two-wire microtunnel. When choosing a technology, it is taken into account that the location of the landfall is characterized by the presence of a 200 m strip of vulnerable coastal forest. The use of the traditional open trench construction method during the laying of the pipeline through the forest strip will lead to a permanent loss of habitat and changes in the terrain, since the forest cannot be restored. The reason for these measures is the required protection of the pipeline from the roots of trees. In regard to this preferred construction method, the option of microtunnels was chosen for construction of the landfall, and was recognized technically acceptable. This will have the least possible impact on the environment. The merits of the method include:

- elimination of temporary disturbance of the environment along the pipeline routes during construction. Impacts are limited to tunnel inlets;
- elimination of the need to restore the forest habitat in the temporary working corridor;
- elimination of the need for the construction of a landfall cofferdam and of the impacts on the coastal strip and on the sea related to the construction process;
- elimination of direct impacts on the use of the beach area for tourist purposes, since an upset of the state of the environment is limited to outlet portals construction small in scale and duration;
- elimination of irreversible disturbance of the habitat during the pipeline onshore section construction, since the tunnel will be laid below the roots, so that the trees remain in place and do not pose a risk to the embedded pipeline.

Regarding the coastal section in Russia, the aforementioned documents concluded that "although the microtunnel as a method of construction is acceptable in Germany, crossing the microtunnel of the coastal strip of Russia will require a much longer trenchless section, thus being of a much greater risk with respect to the feasibility of construction" [8-5, 5.5.1]. This argument cannot be considered justified for the following reasons.

Firstly, a technical solution is possible that provides for the passage of the route by several microtunnels, for example, for the coast of Germany, 2 microtunnels of 700 m are chosen.

Secondly, different options of long distances trenchless technologies are used around the world, including the ones with complex routes. Direct Pipe © technology developed by Herrenknecht allows the use of trenchless pipelines at distances of 1500 m or more [Herrenknecht Tunneling Systems – the official website of the company: <https://www.herrenknecht.com/en/products/core-products/tunnelling/direct-pipe.html>]. In the province of Ontario (Canada), , in the context of numerous existing underground communications and a complex geological structure by microtunneling, Ward and Burke laid a 1,500-mm 740-m long line consisting of three curvilinear sections (the Elgin Mills Road Waterman project, part of the long-term water supply plan for the region of York) (Advancing microtunneling // Tunnel Business Magazine, February 17, 2014, <https://tunnelingonline.com/advancing-microtunneling/>). Thus, a refusal to use microtunnels for laying the pipeline route through ecologically sensitive landscapes of the nature reserve is not justified.

It should also be noted that the use of horizontally directed drilling (HDD) at the intersection of Specially Protected Natural Areas is recommended by the organization standard: "Trunk pipelines" of the OS Gazprom 2-2.1-249-2008 [5-5]. In paragraph 10.2.2.2. this standard specifies that the construction of gas pipeline crossings of water barriers using HDD method is recommended for narrow, built-up areas of rivers, near existing pipeline crossings, existing protected or unauthorized areas, in places requiring high environmental protection during the construction of the crossing.

Besides, the use of microtunneling technology makes it possible to traverse an alternative route that minimizes the crossing of the SNR Kurgalsky (for example, along the bank of the Narova River along the southern boundary of the reserve, which significantly reduce (up to 350 m) the pipeline route intersection with the coastline of the nature reserve).

For the part of the route passing through the area of the Kurgalskiy nature reserve, including the coastal area, the basic scenario was initially considered, i.e. the traditional construction method with an open trench with a corridor width of 85 m and a length of approximately 3,800 m from the DTD to the shoreline. As a result, in the considered project documentation, the developer presented a technical solution that maintains the pipeline laying open trenching method with fixed vertical walls (an optimized trench method). At the same time, felling will not be carried out over the entire width of the right-of-way, but only within the boundaries of the construction corridor 30, 40 and 60 meters wide (in three sections). The total area at which felling of tree and shrub vegetation is planned, makes 13.33 hectares (Volume 7.2.2, p.100).

The Commission Experts note that, using the optimized trench method of the gas pipeline construction will result in:

- damaging the integrity of the coastal and relic dunes (the Gungerburg Ridge);
- disturbance of the coastal strip in the place of cofferdam construction;
- reduction of vegetation in the construction corridor in whole and in part in the right-of-way;
- violation of the hydrological regime of the territory of the Kurgalsky nature reserve;
- fragmentation of the nature reserve ecosystem due to measures aimed at impeding the restoration of the forest in course of gas pipeline operation of the.

The negative consequences of the technical solution in question are discussed in detail in Sections 6.1 and 6.4 of the present Opinion.

In view of the foregoing, it can be concluded that trenchless technologies, in particular microtunneling technology, are more in line with the present-day technological development than trench technology and allow to obtain the best combination of criteria for achieving environmental protection goals. The choice made in favor of open trench technology to be implemented in the Kurgalsky nature reserve is, firstly, not justified by comparison with trenchless methods, and, secondly, narrows the circle of alternative routes. with The project documentation does not deflate the technical possibility of using microtunneling.

In addition to the provisions of Article 3 of the Federal Law "Environmental Protection" [1-6], indicated at the beginning of this section, the considered choice of technologies does not comply with Art. 15 of the Helsinki Convention [2-1], according to which the Contracting Parties shall take all appropriate measures in the area of the Baltic Sea and coastal ecosystems affected by the Baltic Sea, for the conservation of natural habitats, biological diversity, and for the protection of environmental processes. Document HELCOM 21-4 [2-1] recommends to the governments of the Contracting Parties that "activities that can significantly affect, destroy or damage such habitats should be prohibited, and derogations from the prohibition shall be granted only for activities with a significant predominance of public interests or when negative consequences can be eliminated through appropriate mitigation measures or compensation in the interests of nature conservation."

6.6. Conclusion

The foregoing indicates that the project documentation and the proposed project solutions in the event of implementation of the planned activity will have an impact:

- on rare and protected species of flora and fauna and their habitats,
- on protected sites and natural complexes of the State Nature Regional Reserve Kurgalsky and the Ramsar site Kurgalsky Peninsula,
which cannot be regarded as permissible.

Based on the above, **the Expert Commission declares inadmissible the implementation of the gas pipeline facility due to possible adverse effects of the proposed activity on the environment and related social, economic, environmental and other consequences.**

Section 7. Analysis of compliance of project documentation with the requirements of international Conventions

7.1. Violation of the provisions of the Convention on Biological Diversity

Article 2 of the Convention on Biological Diversity defines the basic concept of this Convention [2-2]: "In situ conservation" means the conservation of ecosystems and natural habitats, as well as the maintenance and restoration of viable populations of species in their natural environment, and in relation to domesticated or cultivated species - in the environment in which they acquired their distinctive features."

Then, in Article 8 it is determined that for in-situ conservation "Each Contracting Party ...:

(a) Establish a system of protected areas or areas where special measures need to be taken to conserve biological diversity; ...

(c) Regulates or makes rational use of biological resources that are important for the conservation of biological diversity in protected areas or beyond, to ensure their conservation and sustainable use;

(d) Promotes the protection of ecosystems, natural habitats and the conservation of viable species populations in the wild; ...

k) develop or implement the necessary legislation and / or other regulatory provisions to protect endangered species and populations."

Thereat, Article 10 obliges each Contracting Party to consider the issues of "the conservation and sustainable use of biological resources in decision-making at the national level" and take "measures in the use of biological resources in order to prevent or minimize adverse effects on biological diversity".

Article 14 of the Convention [2-2] provides for measures to assess the impact and minimize the adverse effects, in particular, it obliges "to introduce appropriate procedures requiring environmental impact assessment of its proposed projects that are likely to have significant adverse effects on biological diversity with a view prevent or minimize such consequences and ... take appropriate measures to ensure that the environmental consequences of their programs are properly taken into account and which may have a significant adverse effect on biological diversity".

Since Russia, like all countries of the Baltic region, is a party to the Convention on Biological Diversity [2-2], all of its provisions are incorporated into the Russian legislation not as a separate legislative act, but are implemented through legal norms in several laws (the Federal Law "Environmental Protection" [1-6], the Federal Law "Specially Protected Natural Areas" [1-7], the Federal Law "Fauna" [1-8], the Federal Law "Environmental Expertise" [1-5]), violations of which detected in the project documentation are analyzed in detail in Sections 4 and 6 of the Expert Opinion.

Thus, the materials under consideration regarding the gas pipeline construction on the territory of the State Nature Reserve "Kurgalsky" contradict the requirements of the Convention on Biological Diversity [2-2] and lead to a breach by the Russian Party of its commitments undertaken upon accession to it.

7.2. Violation of the provisions of the Convention on Wetlands of International Importance

The Executive Order of the Government of the Russian Federation "Measures to Ensure Compliance with the Obligations of the Russian Party Arising from the Convention on Wetlands of International Importance Particularly as Waterfowl Habitat of February 2, 1971" [3-12] ensure compliance with the obligations of the Russian Party to the Convention on Wetlands of International Importance (hereinafter referred to as the Ramsar Convention) [2-3]. In particular, it was entrusted to "Executive authorities of the relevant subjects of the Russian Federation in conjunction with the Ministry of Environmental Protection and Natural Resources of the Russian Federation:

a) to determine the boundaries indicated in the list of wetlands annexed to this Executive Order;

b) to develop, in coordination with the federal executive bodies concerned, and approve provisions on wetland sites located on their territories that are of international importance mainly as habitats for waterfowl, by determining in these provisions the nature management and protection procedures for these wetlands."

In pursuance of this Executive Order of the Government of the Russian Federation, the Government of the Leningrad Region issued the Executive Order No. 297 of December 14, 2004 [6-3].

According to the Regulations on the Wetland of International Importance especially as Waterfowl Habitat (Ramsar site) "Kurgalsky Peninsula" approved by the said resolution (paragraph 13), in the territory of a wetland prohibited are:

"(a) all activities leading to disturbance of the natural hydrological regime in the water bodies of the wetland; ...

c) reclamation and dredging. "

As indicated in Section 6.4.7 of the present Expert Opinion, the pipeline construction will have an impact in the form of a change in hydrological regime. In addition, dredging will be carried out within the boundaries of the Ramsar site "Kurgalsky Peninsula" of international importance (according to the report "Assessment of Alternatives for the Russian Part" [8-2] (Table 4-2, the amount of coastal dredging will make 525 000 m³).

At the same time, according to the Executive Order of the Government of the Russian Federation of September 28, 2015 which approved the "Criteria for Assigning Categories I, II, III and IV to Objects That Make a Negative Impact on the Environment" [3-13], the main gas pipelines make a negative impact on the environment and belong to 2 categories of impact (item "c").

Under Article 3, paragraph 2, of the Ramsar Convention [2-3], each Contracting Party shall arrange to be informed at the earliest possible time if the ecological character of any wetland in its territory and included in the List has changed, is changing or is likely to change as the result of technological developments, pollution or other human interference. Information on such changes shall be passed without delay to the organization or government responsible for performing the duties of a standing office, as specified in Article 8.

According to Article 8 of the Ramsar Convention [2-3], for the Conservation of Nature and Natural Resources fulfills the duties of a permanent bureau imposed by this Convention, unless the Contracting Parties, by majority vote in two thirds, designate another organization or government. "The continuing bureau duties shall be, inter alia:...

to be informed by the Contracting Parties of any changes in the ecological character of wetlands included in the List provided in accordance with paragraph 2 of Article 3."

Thus, information on the planned environmental change is to be sent to the Ramsar Convention Bureau prior to the development of the project.

According to paragraph 19 of the Ramsar Convention Handbook for the wise use of wetlands [8-6], in accordance with the amended definition of the concept of "ecological character", the revised definition of "change in ecological character of wetlands" is as follows: " For the purposes of implementation of Article 3.2, change in ecological character is the human-induced adverse alteration of any ecosystem component, process, and/or ecosystem benefit/service."

As indicated above (Section 6 of the present Expert Opinion), the gas pipeline construction will lead to destruction of natural complexes, destruction of habitats of protected species, and violation of hydrological regime. Thus, in the territory of the Kurgalsky nature reserve, the pipeline construction will lead to violations of various components of the ecosystem, in particular, the ecological character of the wetland will change within the boundaries of the wetland.

According to information available to Expert Commission, Russia, as a Party to the Ramsar Convention, did not inform the Convention Bureau about the planned changes in the ecological character of the Ramsar site Kurgalsky Peninsula expected as a result of the Nord Stream 2 gas pipeline construction before the development of the project.

Thus, **the materials of the considered project that substantiate the gas pipeline construction on the territory of the Kurgalsky Peninsula Wetland lead to a violation by Russian Party of the requirements of the Convention on Wetlands of International Importance, mainly as habitats of waterfowl [2-3].**

7.3. Violation of the provisions of the Helsinki Convention on the Protection of the Marine Environment of the Baltic Sea Area

According to Article 3 of the Convention for the Protection of the Marine Environment of the Baltic Sea Area (hereinafter referred to as the Helsinki Convention) [2-1], the Contracting Parties individually or jointly "take all appropriate measures with respect to the Baltic Sea area and its coastal ecosystems influenced by the Baltic Sea to conserve natural habitats and biological diversity and to protect ecological processes."

Article 6 of the Convention [2-1], *Principles and obligations concerning pollution from land-based sources*, in particular, provides for the obligations of the Contracting Parties to "undertake to prevent and eliminate pollution of the Baltic Sea area from land-based sources by using, inter alia, Best Environmental Practice for all sources and Best Available Technology for point sources. "

However, the considered project documentation demonstrated that the developer has also violated these international requirements applying double standards for the gas pipeline passage in Russia and in Germany with respect to the use of best environmental practices.

As follows from the project documentation (Volumes 3.7.1, pp. 43 and 3.7.2, p. 8-15), the landfall section of the gas pipeline is planned to be laid using trench method. At the same time, according to the materials of the ESPO [8-5], in Germany the installation of the pipeline in the landfall area will be carried out by constructing a two-wire microtunnel to hold the pipeline coastal sections. This will have the least possible impact on the environment.

Details of microtunneling as the best available technology in relation to the project under consideration, are described in Section 6.5 of the present Expert Opinion.

Nord Stream 2 AG believes that it is possible to cross the coastline in Germany using microtunneling method, arguing that this method is an advantage, despite the relatively lower value of the corresponding terrestrial natural complexes in Germany than on the coastal section of the route in Russia. At the same time, in the considered project, no convincing arguments are given on impossibility of building a microtunnel or on use of another trenchless method.

Therefore, in view of the example of Germany using the incomparably more gentle method of microtunneling, adoption of the most destructive trench method for pipeline construction is an abnegation of precautionary measures aimed at minimizing the harmful impact on the environment. In this case, this is a clear evidence of double standards in approaches to environmental protection in Russia and in Germany, which contradicts the norms of Article 6 of the Helsinki Convention [2-1].

Article 15 of the Helsinki Convention [2-1], *Nature Conservation and Biodiversity*, provides that the Contracting Parties "take all appropriate measures with respect to the Baltic Sea Area and its coastal ecosystems influenced by the Baltic Sea to conserve natural habitats and biological diversity and to protect ecological processes". This international norm enhances the inadmissibility of the pipeline route construction in the nature reserve, where, among other things, rare and endangered species of flora and fauna listed in the Red Data Books of the Russian Federation and the Leningrad Region live and grow.

In accordance with HELCOM Recommendation 21-4 [2-1] "Protection of Heavily Endangered or Immediately Threatened Marine and Coastal Biotopes in the Baltic Sea Area", Governments of the Contracting Parties are advised that "activities that may significantly affect, destroy or cause damage to such biotopes should be banned, and derogations from the ban are provided only for activities with a significant predominance of public interests or when negative consequences can be eliminated with the help of sponding measures to mitigate or compensate for the conservation of nature. "

According to 10.8.2.6 of the ESPO Report [8-5], construction and project-related facilities, as well as cable laying sites for construction, create obstacles for terrestrial species moving between small habitats and affect local populations.

Thus, the gas pipeline construction on the territory of the nature reserve and the refusal to use trenchless method of laying the route on the land Russian part before crossing with the coastline and within the shallow part of the Gulf of Finland (as provided for in the German section) would violate the norms of the Helsinki Convention [2-1].

7.4. Violation of the provisions of the Convention on Environmental Impact Assessment in a Transboundary Context

Despite the fact that Russia is not yet a party to the Convention on Environmental Impact Assessment in a Transboundary Context (hereinafter referred to as the "Espoo Convention") [2-4], the project materials should take into account and comply with its provisions in view of the fact that all the neighboring countries of the Baltic region are its parties.

Thus, in accordance with paragraph 8 of Appendix I, the list of activities covered by the requirements of the Espoo Convention [2-4] includes "oil and gas pipelines with pipes of large diameter ".

In accordance with the Espoo Convention (Article 4, paragraph 1) [2-4], the design documentation should contain the information described in Appendix II. According to Appendix II, the information to be included in the EIA documentation in accordance with Article 4, contains, at minimum:

- "b) A description, where appropriate, of reasonable alternatives (for example, locational or technological) to the proposed activity and also the no-action alternative;
- c) A description of the environment likely to be significantly affected by the proposed activity and its alternatives;
- d) A description of the potential environmental impact of the proposed activity and its alternatives and an estimation of its significance;
- e) A description of mitigation measures to keep adverse environmental impact to a minimum."

In Spring 2017, Nord Stream 2 AG prepared a report "North Stream 2 ESPO Report. April 2017" (hereinafter referred to as the ESPO Report) [8-5], which is the official document fixing the principles that the company applies to the implementation of an internationally significant project. The analysis of this report revealed numerous contradictions in the proposed activities to the current international and Russian legislation, as well as inconsistency of the content of the ESPO report [8-5] to the above requirements of the Espoo Convention [2-4]. **Annex 9** to the Expert Opinion contains more detailed comments on the ESPO report.

Thus, the numerous facts of incompleteness and unreliability of data on the value of natural sites provided for consultation to interested countries under the Espoo Convention [2-4] indicate a violation of the provisions of this Convention.

7.5. Violation of the Constitution of the Russian Federation

All the violations of international conventions noted above are contrary to paragraphs 2 and 4 of Article 15 of the Constitution of the Russian Federation [1-1].

Paragraph 2 of Article 15 of the Constitution of the Russian Federation [1-1] provides: "The bodies of state authority, the bodies of local self-government, officials, private citizens and their associations shall be obliged to observe the Constitution of the Russian Federation and laws."

Paragraph 4 of Article 15 of the RF Constitution [1-1] defines: " The universally-recognized norms of international law and international treaties and agreements of the Russian Federation shall be a component part of its legal system. If an international treaty or agreement of the Russian Federation fixes other rules than those envisaged by law, the rules of the international agreement shall be applied."

7.6. Conclusions

The foregoing shows that the project documentation and the proposed design solutions are contrary to four international Conventions, in three of which the Russian Federation is a Party that has assumed the corresponding liabilities, as well as the Constitution of the Russian Federation.

Based on the above, the Expert Commission declares inadmissible the implementation of the gas pipeline facility due to inconsistency of documentation substantiating the planned economic activity, to environmental requirements established by international Conventions and the Constitution of the Russian Federation.

Section 8. Conclusions

8.1. Evaluation of the choice of the pipeline route

In the documents of the project, no evidence is found that the choice of alternative pipeline routes within the planned economic activities will have a higher negative impact on flora and fauna, in particular, on species of flora listed in the Red Data Book of the Russian Federation and the Red Data Book of the Leningrad Region than the route considered in the project.

Moreover, based on both the documents of the project and other available sources of information, the Commission concludes that, on the contrary, the southern part of the Kurgalsky nature reserve holds natural complexes of a relatively higher conservation value than the ones of the Soykinsky Peninsula.

In the light of the above, the conclusions of the developer stating that "a comprehensive environmental impact assessment indicates a significant priority for the Narva Bay option over the Kolganpya option, the negative impact on the environment in the case of implementation of the Narva Bay option is expected to be lower than in case of implementing the investment project under Kolganpya option (Section 1.3.2 of Volume 7.1.1.)", are unreasonable and unreliable.

In the presented documents, practically no assessment is provided of other possible options for implementing the planned activities, in particular, of the option of passing the southern part of Kurgalsky nature reserve using the trenchless method with the width of the onshore part not exceeding 500 m,

Analysis of the set of facts and circumstances described in sections 3, 5 and 6 of the present Opinion allows the Commission to state that hiding information on comparative value of natural complexes when choosing alternatives to the pipeline route, as well as underrating the value of natural complexes of the southern part of Kurgalsky nature reserve is a deliberate policy of the project documentation developer.

8.2. Evaluation of the completeness and reliability of the conducted engineering surveys

The Commission experts, basing on the results of the analysis of the engineering and environmental surveys documentation (section 5 of the Opinion), made 61 specific comments on the incompleteness and unreliability of the engineering survey materials presented in the project documentation (**Annex 6**).

On the basis of these specific comments, the Commission concludes that the following sections of the project documentation that represent the results of engineering and environmental surveys: volumes 1.6.10, 1.6.11, 1.6.12, 1.6.16, 1.6.17, 1.6.19, do not present complete and reliable data.

The Commission notes that the incompleteness and unreliability of the engineering survey materials presented in the project makes it impossible to produce a reliable assessment of the environmental impact of the planned activity, to form an exhaustive list of measures for the protection of natural objects and complexes, and to correctly plan such activities.

8.3. Evaluation of environment impact of the planned activities

The Commission experts, on the basis of the project documentation analysis, made numerous specific comments on various aspects of the project documentation and on the presented project design solutions, such as:

- 52 specific comments on evaluation of completeness and reliability of the project documentation (except for information on rare and protected species) (Annex 3);
- 34 specific comments on evaluation of completeness and reliability of the project documentation regarding the information on rare and protected species of animals and plants that are put under threat of ravage or exterminated in case of implementation of the planned activity (Annex 4);
- 10 specific comments on internal contradictions within the project documents (Annex 7);
- 22 specific comments on identified technical errors and other identified shortcomings (Appendix 5).

Moreover, the Commission had to note in particular the revealed fact of information forgery when the developer made an attempt to understate the fishery value of the Narva Bay (section 6.3.2 of the Opinion).

The materials of the Nord Stream 2 project, due to the above-mentioned shortcomings and failures, do not provide the information necessary to assess fully the scope of impact of the planned activities on the environment, as well as to assess the adequacy of the envisaged measures for the environment protection and ensuring environmental safety and compliance of the proposed activity with environmental requirements and technical regulations established by the environment protection legislation in the Russian Federation and in the Leningrad Region.

In the sections of the project documentation related to environmental protection activities, the specific measures declared by the developer and aimed at reducing the impact on natural objects and complexes often lack their actuation at the level of technical design solutions (for examples see Section 6.4.7, Annex 3-23).

The project documentation also lacks a program of implementing environmental monitoring and control during the periods of construction and operation of the pipeline facility both offshore and onshore (see section 6.2.1).

The performed analysis of the project documentation makes the Commission conclude that the implementation of the Nord Stream 2 gas pipeline project in the version proposed by the developers will inevitably lead to the destruction and loss of valuable forest and coastal ecosystems and landscapes, the protection of which the Kurgalsky nature reserve was established for, as well as provoke destructive processes (changes in the hydrological regime, waterlogging, degradation of spruce forests) in the areas around the planned pipeline route.

In the case of implementation of the planned activity, habitats of flora and fauna species listed in the Red Data Book of the Russian Federation and/or the Red Data Book of the Leningrad Region will inevitably be destroyed, and valuable natural complexes and species subject to protection in the boundaries of the nature reserve will be destroyed and disturbed.

The Commission also notes that the gas pipeline route will pass near the key habitats (haul-outs) of ringed seal and gray seal, the species of pinnipeds listed in the Red Data Book of the Russian Federation. It should be pointed out that as of today, the population of ringed seals, according to various data, reaches as little as 100 to 240 individuals and is close to extinction. The safety of laying a gas pipeline through the habitats of pinnipeds of the Baltic is not proved by the project.

8.4. Evaluation of the compliance of project documentation and project solutions with current legislation and regulations

As shown in the materials of the present Opinion (Sections 4 and 7, Annex 8), an attempt to implement the project will inevitably lead to a violation of the provisions of:

- the Constitution of the Russian Federation [1-1];
- four international conventions [2-1, 2-2, 2-3, 2-4];
- one Code of the Russian Federation [1-2];
- five Federal Laws [1-5, 1-6, 1-7, 1-8, 1-10];
- eight Orders and Decrees of the Government of the Russian Federation [3-3, 3-7, 3-8, 3-9, 3-10, 3-14, 3-15, 3-16];
- three documents approved by decision of the President of the Russian Federation [3-4,3-5,3-6];
- three Decrees of the Government of the Leningrad Region [6-1,6-3,6-8], and a number of norms and methods, both state and departmental [4-1, 4-3, 5-1, 5-2, 5-3, 5-4, 5-7, 5-8, 5-15].

Thus, the planned activity contradicts the current legislation of the Russian Federation and the Leningrad Region, the objectives of creation and the regime of Kurgalsky nature reserve, the international obligations of Russia and the regime of Kurgalsky Peninsula Wetland of international importance (Ramsar site), and cannot be deemed permissible.

8.5. Conclusions on permissibility of implementation of the planned activity

The project, in the version proposed by the developer that suggests putting the pipeline route through the Kurgalsky nature reserve, and the technological solutions used in this process cannot be brought up to the level of permissible impact on the local flora and fauna, as well as on the natural complexes of the nature reserve, since the planned route passes through the territory with a very high concentration of protected species of flora and fauna. Implementation of the planned activity will inevitably lead to the loss of key habitats of these species, including direct destruction of thousands of plant species listed in the Red Data Book of the Russian Federation and / or the Red Data Book of the Leningrad Region. It will also lead to destruction or disturbance of valuable natural complexes and landscapes the preservation of which the Kurgalsky nature reserve and the Kurgalsky Peninsula Wetland of international importance (Ramsar site) were created / designated for.

Based on the aforementioned, the Commission concludes that:

- implementation of the pipeline facility is inadmissible due to inconsistency between the documentation justifying the proposed economic activity and environmental requirements established by the legislation in the field of environmental protection, international conventions and the Constitution of the Russian Federation;

- implementation of the pipeline facility is inadmissible due to the possible adverse effects of the planned activity on the environment and the related social, economic, environmental and other consequences.

The Commission concludes also that revision of the project documentation without changing the main solutions design appears to be fundamentally impossible. In particular, the Commission considers fundamentally impossible to revise the documentation under the condition that it retains the combination of the adopted project design solutions along the pipeline route with the chosen trench technology for the passage of the gas pipeline in its onshore section.