REPUBLIC OF BULGARIA

MINISTRY OF ENVIRONMENT AND WATER

MINISTER

ОВОС - 1144
28 ***December 2012***

Subject: *EIA Procedure for the investment proposal for construction of "Transmission Gas Pipeline South Stream on the territory of the Republic of Bulgaria"*

Dear Minister,

In reply to your letter № 3673/RP/10.09.2012, please find enclosed the ToR in English for the scope of the EIA of the investment proposal for construction of transmission gas pipeline "South Stream" on the territory of the Republic of Bulgaria, submitted by the developer during the national EIA procedure.

By the present letter we would like to inform you that as a result of the preliminary assessment concerning the environmental impact from the implementation of the pipeline in a transboundary context, there is a reasoned opinion in Chapter 5 of the ToR, according to which the investment proposal will not have any negative impact on the environment on the territories of the neighbour countries, including on the territory of Romania.

Given your willingness to take part in the EIA procedure for the above mentioned investment proposal, and also taking into consideration the results of the conducted analyses which do not identify any locations to be exposed to a risk of a significant negative impact in a transboundary context from the implementation of the proposal, we would like to ask for a final confirmation of your intent to continue your participation in a EIA transboundary procedure.

H. E. Ms. Rovana Plumb
Minister of Environment and Forests
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Bucharest, ROMANIA

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We would like to assure you that if there is no confirmation by your side concerning the continuation of your participation in the Bulgarian national EIA procedure, the results from the EIA, including those concerning the transboundary impact, will be reflected in the administrative act of the Bulgarian Ministry of Environment and Water. In this case and upon your request, after completion of the EIA procedure on Bulgarian territory we can provide for your information the issued administrative act.

In case you confirm your participation in the EIA procedure, we would like to ask for your opinion concerning the ToR enclosed to the present letter, especially Chapter 9 – EIA in a transboundary context, regarding the presumable impact on the territory of your country. In this connection, we would like to inform you that the next stage of the EIA procedure is the preparation of an EIA report based on the results of the consultations of the ToR. Your opinion concerning the transboundary impact part of the report will be taken into account. In this case it will be necessary to provide us with information on the condition of the components and factors of the environment, including the population in the affected regions.

Having in mind the fixed deadlines for implementation of the Bulgarian national EIA procedure, I would like to kindly ask you to send us your reply within two weeks from the receipt of this letter.

I avail myself of the opportunity to express my highest consideration and willingness for a fruitful cooperation.

Enclosure: *ToR for the scope of the EIA – 1 hard copy and 1 CD.*

Sincerely Yours,

Nona Karadjova

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TERMS OF REFERENCE FOR THE SCOPE, CONTENT AND FORMAT OF ENVIRONMENTAL IMPACT ASSESSMENT STATEMENT (EIAS) ON THE PROJECT 'TRANSMISSION GAS PIPELINE SOUTH STREAM ON THE TERRITORY OF THE REPUBLIC OF BULGARIA'

South Stream Bulgaria AD

Sofia, November 2012

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INTRODUCTION

The present Terms of reference is a revision of the Terms of reference for the scope, content and format of environmental impact assessment statement (EIAS) on the project 'Transmission gas pipeline "South Stream" on the territory of the Republic of Bulgaria' since April 2012, consulted with the Ministry of Environment and Water (MoEW) (Ref. letter OBOC-1144/04.06.2012)

On the basis of an Agreement between the Government of the Republic of Bulgaria and the Government of the Russian Federation (ratified by law, adopted by the 40th National Assembly of the Republic of Bulgaria on 25 July 2008, SG No. 69 of 2008, effective of 12 August 2008, hereinafter referred to as "the Agreement"), the above countries took a decision on cooperation about the building of a gas pipeline for natural gas transiting via the territory of the Republic of Bulgaria (**South Stream gas pipeline system**). The South Stream gas pipeline system is a new gas pipeline facility for natural gas transiting from territories, south of the Black Sea to the central parts of the European Union. The construction of the gas pipeline system, being an object to the Agreement, is planned from the territory of the Russian Federation, via the aquatic territory of the Black Sea, the territory of the Republic of Bulgaria and third countries. The implementation of this project will enhance the energy security of the European countries, being users of Russian natural gas as a result of the diversification of the export flows. The first natural gas supplies via the South Stream gas pipeline system are expected in the first quarter of 2016. The expected design life of the South Stream gas pipeline system is 50 years.

The route of the South Stream gas pipeline system consists of a **marine section** and **ground sections** running via the territory of countries of Southern and Central Europe.

The **marine section** of the South Stream gas pipeline system runs via the aquatic territory of the Black Sea and involves the ground section and the territorial waters of Russia and Bulgaria as well as the continental shelf and the exclusive economic zone of Russia, Bulgaria and Turkey. The marine section of the South Stream gas pipeline system will run along the bottom of the Black Sea, from the Russian to the Bulgarian coast, as its depth in Bulgarian territorial waters will be 34 metres at point [028º10'10.8"E / 43 03'05.4"N]. It will be at about 600 metres south of the existing Galata gas pipeline and will run parallel to it by its outlet on the Bulgarian coast in the Pasha Dere area at point [027º55'22.9"E / 43 06'22.0"N].

The technological borders of the marine section are: at the Russian coast – the first safety cut-off tap of the compression station, located immediately in front of the marine section of the South Stream gas pipeline system and at the Bulgarian coast – the last weldable safety tap before the receiving gas terminal located on the Pasha Dere area, Varna Municipality, Varna Region.

The total length of the marine section of the South Stream gas pipeline system will be about 930 km, its maximum depth – over 2,000 m, its designed annual capacity – 63 billion cu m, of which 41 billion cu m annually – for the Serbian section and 22 billion cu m annually – for the Provadia compressor station. The starting point of the gas pipeline on land and the marine section will be connected in the security zone of the existing Galata gas pipeline. The marine section of the South Stream gas pipeline system is an object to a Development Proposal, which

will be implemented by an enterprise, different from the Company and because of that **neither an environment impact assessment of the investment proposal "Marine South Stream Gas Pipeline – Bulgarian Section" nor measures for its restriction are included in the scope of this assignment**.
Therefore, **the scope of the present Terms of Reference does not include an assessment of the impact of that Development Proposal on the environment and, in particular, on the Black Sea basin and the measures for its restriction.**

South Stream Bulgaria AD ("the Company") has been established with the purpose of designing, construction and operation of the **ground section** of the South Stream gas pipeline system on the territory of the Republic of Bulgarian from the state border with the Republic of Serbia to the point, where it is connected to the marine section, specified in the Agreement.

The terms of reference for defining the scope, the content and the form of the statement on EIA for the Development Proposal **'Transmission Gas Pipeline South Stream on the Territory of the Republic of Bulgaria'** (hereinafter referred to as **"the Development Proposal"** or **"the gas pipeline"**) have been drafted on the basis of the Notification for Development Proposal, submitted by the Company to the Ministry of Environment and Water (MEW), our ref. No. 063/01 /5.08.2011, the MEW reply, ref. No. OVOS-1144/6.10.2011 and the other correspondence, related to the implementation of the Development Proposal.

In line with the MEW reply, ref. No. OVOS-1144/6.10.2011, the South Stream gas pipeline falls within the scope of item 33 of Annex 1 to EPA and is subject to mandatory EIA. Since the route of the gas pipeline runs through a territory, controlled more than one Regional Environment and Water Inspectorate, the Minister of Environment and Water is the competent authority to take a decision on EIA. By MWE letter, outgoing ref. No. 26-00-4136/11.01.2012, the Company was notified that MEW finds it expedient to apply the provision of Article 91 (2) of EPA, i.e. to conduct one of the assessments covered under Chapter Six of EPA, which in the specific case would be an EIA procedure. For this reason MEW explicitly specified in the above letter that on the grounds of Article 9 of the Ordinance on Environmental Assessment it would not be necessary to hold another environmental assessment procedure.

The terms of reference have been drafted in accordance with the requirements of EPA, the Ordinance on the terms and procedure for conducting EIA (SG No. 25/2003), last amended and supplemented by SG No. 3/2011) as well as all other applicable statutory acts of the effective legislation.

In line with the requirements of the effective statutory framework and the MEW instructions, given in connection with the Company-submitted Development Proposal, the present terms of reference have also been complied with the remarks, recommendations, opinions and proposals received by the complement authorities, institutions, the interested part of the society and other entities, with which the Company carried out consultations on the scope and content of the EIA statement (EIAS) in the period from December 2011 to March 2012.

Given that the gas pipeline project falls within the scope of item 8 of Annex I to the Convention on Environmental Impact Assessment in a Transboundary Context (ratified by the

Republic of Bulgaria with a law, SG No. 28/1995, effective of 10 September 1997, corrected by SG No. 89 of 1999), its implementation will be complied with the requirements of this convention ("the Espoo Convention" or only "the Convention") and all other requirements of the national, European legislation and all relevant international acts, related to the transboundary effect of the designed gas pipeline.

DATA ABOUT THE CONTRACTING AUTHORITY

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LEGISLATIVE FRAMEWORK

The EIA statement ("EIAS" or "the Statement") on the Development proposal the transmission gas pipeline South Stream on the territory of the Republic of Bulgaria should be drafted in accordance with the requirements of Chapter 6 of EPA (SG No. 91/2002; last amended by SG No. 42 of 3 June 2011), the Ordinance on the terms and procedure for conducting EIA (SG No. 25/2003, last amended and supplemented by SG No. 3/2011) and the Black Sea Coast Development Act (SG No. 48/2007, last amended by SG No. 92/2009).

The drafting of the statement should also take into account the Convention on Environmental Impact Assessment in a Transboundary Context (ratified by the Republic of Bulgaria with a law, SG No. 28/1995, effective of 10 September 1997, corrected SG No. 89 of 1999), the Ordinance on Environment Protection in Marine Waters (adopted by Council of Ministers' Decree No. 273 of 23 November 2010, SG No. 94/2010, effective of 30 November 2010) and Recommendation 2001/331/EC of the European Parliament and of the Council of 4 April 2001 providing for minimum criteria for environmental inspections in the Member Stares. EIAS should be complied with the requirements of the international institutions, Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment, amended by Directive 97/11/EC, amended and supplemented by Directive 2003/35/EC of the European Parliament and of the Council of 26 May 2003 providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment and Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment. Besides, the statement should be aligned to the EPA Chapter 7 requirements regarding the application of the best available techniques in regards to compressor stations, being a part of the Development Proposal.

The defining of the scope and content of EIAS is consistent with Article 96 (1) of EPA, the Ordinance on the terms and procedure for conducting EIA ("the Ordinance on EIA"), the instructions for drafting EIA on development proposals of MEW 2002, Guidance on EIA –

Scoping June 2001 and Guidance on EIA – Review June 2001, as well as Annex II to the Convention on Environmental Impact Assessment in a Transboundary Context.

The route of the gas pipeline does not affect directly protected territories within the meaning of the Protected Territories Act (SG No. 133/1998, last amended by SG No. 19/2011). However, it runs close to 19 protected natural territories including one wildlife reserve, 14 protected areas and four natural monuments, the location of which will be taken into account upon the construction of the gas pipeline in accordance with the MEW instructions, contained in Letter, outgoing ref. No. OVOS-1144/6.10.2011. The Development Proposal involves protected areas of natural habitats and wild flora and fauna and protected areas of wild birds included in the NATURA 2000 national ecological network and specified in Letter, outgoing ref. No. OVOS-1144/6.10.2011 of MEW. In accordance with the requirements of Article 31 of the Biological Diversity Act (SG No. 77/2002, last amended by SG No. 33/2011), apart from EIA, the Development Proposal is also subject to an assessment of its compatibility with the subjects and the objectives of the affected protected areas. According to Article 31 (4) of the Biological Diversity Act, the assessment of the compatibility of the Development Proposal with the subject and the objectives of the protected areas shall be carried out within the EIA procedure. Therefore, a report on the assessment of the level of impact should be drafted and added as annex to the Development Proposal. The report should be structured in accordance with the requirements of Article 23 of the Ordinance on the terms and procedure for conducting an assessment of the compatibility of plans, programmes, projects and development proposals with the subject and the objectives of the protected areas ("the Environmental Ordinance", adopted by Council of Ministers' Decree No. 201/31.08.2007, SG No. 73/2007, effective of 11 September 2007, last amended by SG No. 3/2011). The following statutory instruments should be taken into account when drafting a report on the assessment of the level of impact: the provisions of the Biological Diversity Act, the Environmental Ordinance, Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds, Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds as well as the instructions of Section II of Letter, outgoing ref. No. OVOS-1144/6.10.2011 of MEW.

1. CHARACTERISTICS OF THE DEVELOPMENT PROPOSAL

1.1 Physical characteristics of the Development Proposal

1.1.1 Scope of the Development Proposal

The scope of the Company's Development Proposal includes design and construction of a **ground section** of the South Stream gas pipeline system fully located on the territory of the Republic of Bulgaria of a length of 538 km (also called Black Sea-Serbia Route). This section of the South Stream gas pipeline system on the territory of the Republic of Bulgaria is a part of the South Stream trunk gas pipeline running via the territories of the countries of Central and Southern Europe.

The **technological borders** of the Company-constructed ground section, being an object to the Development Proposal are:

a) **starting point** – south of the Galata quarter, Pasha Dere Area, Varna Municipality, Varna Region, close to the Chernomorets tourist hat, constituting the first welding stitch in front of the incoming security tap of the receiving gas terminal on 2 km from the Black Sea coast;
b) **end point** – south of the Vrushka Chouka (Zaicar) checkpoint, close to the crossing of the state border between Bulgaria and the Republic of Serbia.

The coordinates of the starting and end points of the section of the South Stream gas pipeline system which is included in the scope of the Development Proposal are presented in Annex 2 to the present terms of reference, **Coordination register of the route, corridor and sites of the transmission gas pipeline South Stream on the territory of the Republic of Bulgaria.**

The route of the gas pipeline is complied with the existing gas transiting system of the Republic of Bulgaria and the designed route of the Nabucco gas pipeline. A lateral section, beginning at 2 km from the receiving terminal and ending at the Provadia compressor station (61 km), is also considered as part of the gas pipeline. At the Provadia compressor station the above lateral section is connected to the trunk gas pipeline and the transiting gas pipeline for natural gas transiting to the trunk gas pipeline (1.6 billion cu m/annually) for the Bulgarian transiting system and 20.4 billion cu m/annually for Turkey, Greece and Macedonia via a transiting gas pipeline of Bulgartransgaz EAD.

The separate sections of the gas pipeline route are located as follows:

- 0^{th} km – 61.5^{th} km – within the route of the Melrose gas pipeline;
- 2^{nd} km – 61^{st} km – in the area of the Provadia compressor station – new route;
- 61.5^{th} km – 71^{st} km – within the existing gas transiting system of the Republic of Bulgaria;
- 71^{st} km – 100^{th} km – new route;
- 100^{th} km – 198^{th} km - within the existing gas transiting system of the Republic of Bulgaria;
- 198^{th} km – 323^{rd} km - within the existing gas transiting system of the Republic of Bulgaria and a gas pipeline under the Nabucco project;
- 323^{rd} km – 392^{nd} km – within the Nabucco gas pipeline project;
- 392^{nd} km – 537.8^{th} km – new route.

A scheme of the main route of the gas pipeline on the territory of the Republic of Bulgaria is provided in Annex 1 to the present terms of reference.

1.1.2 Description of the territories in the Republic of Bulgaria covered by the Development Proposal

The route of the gas pipeline is located north of the Balkan Range in the middle of the Danubian Plane. The relief is even without considerable changes in height. The gullies and the

heights (hills, hillocks) have gentle slopes , flat bottoms and peaks. The prevailing part of the slopes has southern exposure. The gullies are dry in most of the year. Rivers, roads and railway lines are crossed in planes without steep sections. The route surrounds swamps. The lowest point is at an altitude of 0 m (Black Sea coast) and the highest – at 480 m (Popovski Hills). The steepest slope is registered at the crossing of the Archar River – 28% downwards and 19% upwards. The 467th km (87% of the whole length of the section) has a slope of less or equivalent to 5%.

The section runs via 11 regions: Varna, Shoumen, Razgrad, Tugovishte, Rousse, Veliko Turnovo, Lovech, Pleven, Vratsa, Montana and Vidin. The corridors of the existing gas pipelines of the Bulgarian gas pipeline network and the designed route of the Nabucco gas pipeline are used as 75% of the South Stream gas pipeline route runs parallel to them (at a distance envisaged in the relevant statutory documents).

The starting point is at 2 km from the Black Sea coast, south of the Galata quarter of the city of Varna, close to the Chernomorets tourist hat. The route runs parallel to the existing gas pipeline, Galata-Compressor Station-Provadia. After crossing the Black Sea highway (Varna-Burgas), the gas pipeline goes down from the plateau and cross the Provadia River and the Sindel-Staro Oryahovo railway line at the Sindel Village. Then it surrounds the Tsarevtsi Village from the north crossing twice the Sindel-Staro Oryahovo railway line and, again, the Provadia River and the Glavnitsa Tributary.

After the Bozveliisko Village the gas pipeline turns north, runs via the Provadia Plateau, surrounds the town of Provadia from the west and runs by the Provadia Compressor Station at the Krivnya Village. Then it continues northwards parallel to the trunk gas pipeline (southern semi-ring) and crosses the Provadia-Kaspichan railway line and the Provadia River. The pipeline crosses the Hemous highway and then runs independently crossing the Novi Pazar-Varna road. Then it runs via the Stana Hill (441 m) and after the Pamoukchii Village turns west following the route of the trunk gas pipeline (northern semi-ring). It crosses the Kriva River and the Ovche Pole Area.

The gas pipeline crosses subsequently the Shoumen-Doulovo road, the Hitrino-Samouil railway line, the Razgrad-Shoumen road and the Beli Lom River. Then it runs amidst the Beli Lom Dam and the Kanarata Hill (479 m), a part of the Razgrad Heights, crosses the Malki Lom and Cherni Lom rivers, runs north of Popovo and via the Popovski Hills (480 m). In the section from the Popovo town to the Selanovtsi Village (Oryahovo Municipality) the route runs parallel to the designed Nabucco gas pipeline. After the Popovski Heights it crosses two tributaries of the Banski Lom River and the Byala – Popova road.

At the Petko Karavelov Village the gas pipeline crosses the Yantra River and the Polski Trumbesh – Gorna Oryahovitsa railway line. North of the Boutovo Village, it crosses the Lomya River and the Levski-Pavlikeni railway line. Between the towns of Letnitsa and Levski, it crosses the Ossum River and the Levski-Lovech railway line. After running via the Pleven Heights (314 m) it crosses the Pleven-Lovech road and at the Burkach Village it separates from the trunk gas pipeline (northern semi-ring).

Between the villages of Sadovets and Kroushovitsa the gas pipeline crosses the Vit River and turns north. Between Gorni Dubnik and Dolni Dubnik it crosses the Pleven-Loukovit road and the Pleven-Cherven Bryag railway line surrounding the Gorni Dubnik Dam from the east. After the Iskur town, it turns west and crossers the Iskur River between the villages of Dolni Loukovit Staroseltsi. South of the town of Mizia, it crosses the Skut River the Mizia-Byala Slatina railway line (narrow-gauge, dismantled) and the Ogosta River and enters the Zlatiata Area.

The gas pipeline runs south of the Shishmanov Val Dam and north of the Vulchedrum town crosses the Tsibaritsa River. Between the town of Brousartsi and the Vasilovtsi Village it crosses the Lom-Brousartsi railway line and the rivers, Lom, Skomlya and Archar. North of the town of Dimovo, it crosses the Vidin-Montana road, the Vidin-Brousartsi railway line and the Vidbol River. Then it runs south of the Gramada Village and crosses a tributary of the Voinishka River south of the Kosta Perchevo Village. Between the Poletkovtsi Dam and the town of Koula it crosses the Voinishka River, runs parallel to the Koula-Vrushka Chouka border crossing road and crosses the Topolovets River. In the outskirts of the Vrushka Chouka Hill (692 m) and south of the Vrushka Chouka border crossing it reaches the state border with Serbia.

1.2 Areas necessary for implementation of the Development Proposal

The Development Proposal will be implemented on the territories described in item 1.1.2 above.

The estimated total construction area for the project implementation is about 5,500 ha, as the construction area within the servitude of the gas pipeline, needed for the implementation of the proposal, is not expected to exceed 4,000 ha at the final construction stage.

Under *Ordinance No. 16/9.06.2004 on the servitude of energy sites (SG No. 88/8.10.2004)* the minimum size of the servitude areas are as follows: for trunk, transiting gas pipelines and branches thereof with estimated diameter>1,000 mm – 17.5 m on both sides of the gas pipeline axis; for compressor stations – a section with a 10 m width around the external border of the facility; cathodic protection plants - a section with a 2 m width around the external border of the facility; for the underwater sections of the gas pipelines – stripes of 15 m on both sides of the gas pipeline axis. The servitudes are designed for construction, servicing and repair. The construction band in agricultural areas has a width of 45 m and in forests – 32 m.

At this stage of progress of the Development Proposal it is not possible to present a balance sheet of the specific territories by type and ownership – agricultural lands, forestry stock and urbanized territories for the separate options. The terms of reference for EIA and the Detailed Plan-Parcel Plan outline a corridor of a width of 2 km for designing the route and the options will be positioned there. The following balance sheets will be drafted for the separate route options:

- Balance sheet of the territory according to manner of durable usage;
- Balance sheet of the territory by type of ownership;

- Balance sheet of the territory by designation;
- Balance sheet of the territory by category of land;
- Total recapitulation of the areas subject to change of designation;
- Total recapitulation of the areas subject to condemnation.

The construction band in agricultural areas has a width of 45 m and in forests – 32 m.

1.3 Main characteristics of the production process of the Development Proposal

1.3.1 Information about the main technological processes, the components of the gas pipeline and the activities during its construction

1.3.1.1 Main technological processes

The main technological process that will be effected through the Development proposal the transmission gas pipeline South Stream on the territory of the Republic of Bulgaria is transiting of natural gas, supplied by sources outside Bulgaria, to European countries via an underground transiting gas pipeline. The natural gas will be supplies via a submarine gas pipeline under the Black Sea to the connecting point, the receiving terminal Pasha dere. The main technological process includes the following supplementary processes:

- Regulation of the natural gas pressure in the transiting network and its maintenance (increasing or decreasing);
- Purification of the natural gas from mechanical pulp;
- Measurement of the natural gas temperature and debit;
- Cooling of the natural gas;
- Heating of the natural gas;
- Distribution of part of the transited natural gas to consumers on Bulgarian territory through a technological connection to the national transiting network;
- Cathodic protection of the gas pipeline;
- Technological telecommunications network;
- Environment protection, development, repair and maintenance of the infrastructure and the facilities on the territory of the Republic of Bulgaria are accompanying processes.

The envisaged technological scheme is standard for natural gas transiting by land. Upon selection of appropriate technological equipment allowing efficient management and control and adhering to all requirements for construction, safe operation and environment protection, it may be classified as the best available equipment.

1.3.1.2 Gas pipeline components

The main components of the gas pipeline on Bulgarian territory, involved in the above technological processes, are as follows:

- Receiving terminal Pasha dere;
- Exit connection – Serbia;
- Transiting gas pipeline, including by-passes (loops);

- Connections to the national gas transiting network;
- Compressor stations
- Starting and receiving chambers for cleaning and inspection;
- Gas measurement and regulating stations at the points of technological connections;
- Gas measurement station at the entrance of the gas pipeline into Bulgaria;
- Tap knots;
- Cathodic protection
- Technological telecommunication network;
- Terrains of servicing units and other auxiliary activities, on which the respective technical equipment for ensuring the safety of the gas pipeline is positioned.

Receiving terminal Pasha dere

The receiving terminal will be located at the beginning of the pipeline on Bulgarian territory and will be used to decrease or increase the gas pressure as necessary. The terminal and the compressor station may be on the same site. The selection of a site should be complied with the existence of protected territories and priority natural habitats in the region.

Transiting gas pipeline

The South Stream transiting gas pipeline is designed to transport natural gas of an estimated pressure of 9.8 MPa. The gas pipeline is expected to be built of straight-stitch low-alloy steel pipes with high strength and plastic indicators. The pipes will have external insulation and internal coverage providing high anti-corrosive protection. The transiting gas pipeline from the Black Sea to the border with Serbia has a diameter of 1,422 mm and a length of 540 km.

Compressor stations

The compressor stations operating under transiting networks are designed to increase the gas pressure with the purpose of restoring pressure losses resulting from torsion and local resistance upon transportation. The compressor stations on Bulgarian territory will have capacity and location depending on the considered options. There will be three or four compressor stations.

A certain number of operational compressor aggregates and a reserve one will be installed in the compressor stations. The compressors will be equipped with gas turbines operating on gases resulting from natural gas burning. After the gas turbine, they will go out through a chimney, equipped with a noise-killer being an integral part of every compressor.

The stations will be constructed on new sites on the ground. Each will have an area of about 6 ha and will house the main and the auxiliary sub-facilities.

The main technological sub-facilities on the site of the compressor stations will be:

- Starting/receiving chambers for cleaning facilities;
- Turbo compressor aggregates with coolers and collectors;
- Gas purification station;

- Gas reducing station.

The purification stations will be positioned at every 250 km along the gas pipeline. They are designed to release and accept cleaning, separating and diagnosing agents. There are also chambers for acceptance and starting of cleaning facilities, pipelines, fittings and scavenging sparking plugs, a knot for collection and disposal of the residual products from the gas pipeline cleaning, cleaning device signalling apparatus, local or remote control panel.

The **gas metering stations (GMS)** are facilities measuring the quantity of the transited natural gas, installed close to or at the gas pipelines of the transiting network. GMS are installed on the ground and include the following equipment: incoming and outgoing tap, filter, gas measurement device with temperature and pressure regulator, manometer and thermometer.

The gas **purification station** includes a separating filter for separating moisture drops and mechanical pulp.

Inter-system connections to the national gas transiting network
The connection between the South Stream gas pipeline and the national gas transiting system is designed to supply the natural gas quantity needed for consumption in Bulgaria.

Linear tap knots
According to preliminary estimates, 37 tap knots will be placed along the South Stream transiting gas pipeline. They divide the gas pipeline into technological sections. Their number and location will be specified in the next stages of the project development.

1.3.1.3 Construction

The construction of the South Stream Gas Pipeline Development Proposal on the Territory of the Republic of Bulgaria and the related infrastructure will be carried out on the basis of projects approved in line with the requirements of the Spatial Development Act and drafted in compliance with the construction, technical, fire safety, hygiene and ecological norms and standards.

The main construction activities are:

- Ground works – removal of the humus and its temporary disposal within the construction trunk; excavation works to form the route for laying the pipes and sites for the compressor stations and the linear tap knots – expected volume.

Levelling works to fill the route, reclamation of the construction trunk; temporary roads and temporary depots for earth for the period of construction;

- Complex construction activities – upon crossing of water territories, roads and railway lines and other components of the engineering infrastructure;
- Installation works – mostly welding works on the gas pipeline up to Bulgarian State Standard BDS EN 12732, BDS EN 287-1+A1, BDS EN 288-1+A1 and technological instructions;
- Protection of the gas pipeline from corrosion;

- Installation of the equipment of the facilities;
- Density and strength tests of the gas pipeline – according to BDS EN 12327, BDS EN 1594 and BDS EN 12186.
- Transportation activity – transportation of earth, construction materials and equipment from/to storage facilities along the national road network and temporary roads to the construction sites.

Construction activities are carried out on a construction trunk of a width of 45 m in agricultural lands and 32 m in forests and the sites of the facilities.

Before being laid in the ditch the pipes and the accessories should be checked for possible damages incurred during their transportation and storage.

The relevant technical specifications and instructions for installation of the separate components should also be adhered to upon the construction of the gas pipeline.

The Ordinance on the structure and safe operation of the transiting and distribution gas pipelines and the natural gas facilities, stations and devices – Council of Ministers' Decree No. 171/16.07.2004 (SG No. 67 of 4 August 2002) sets out requirements for distance from population centres, settlements and independent facilities and requirements for placement of gas pipeline crossing rivers, water basins, railway lines, roads and highways.

When a transiting gas pipeline has to cross a river the crossing point is placed at straight sections, resistant to the water flood. The route is determined on the basis of the results from the hydrogeological and hydrological studies.

The designed upper elevation of the gas pipeline in under-water sections is set at 0.5 m below the estimated alternation of the river bed for a term of 25 years after the laying of the gas pipeline. However, it should not be less than 1 m below the bottom of the water basin as at the moment of the laying of the transiting gas pipeline.

Where the gas pipeline crosses water basins and its route consists of rocky soils, the distance from the upper side of the covered gas pipeline to the bottom of the water basin should be no less than 0.5 m.

If very wide and deep water basins are crossed, the gas pipeline may be laid out at the bottom of the basin.

The following should be done in regards to the under-water sections of the gas pipeline: a control zone along the under-water route should be set and marked; the frequency of checks of the gas pipeline should be increased; protection against the interference of third persons should be ensured.

Transiting gas pipelines cross railway lines and roads at embankments or flat terrain. The pipes laid at crossing sections of transiting gas pipelines with railway lines, highways and

1st to 3rd grade roads are covered by a steel shield pipe of a diameters at least 22 mm bigger than the nominal diameter of the gas pipeline.

When a gas pipeline runs beneath a railway line, the former should be laid out at a depth of at least 2 m, measured from the basis of the rail to the upper side of the protective shield and at least 0.5 m from the bottom of gutters or drains. When crossing roads, the gas pipeline should be laid out at a depth of at least 1.4 m, measured from the level of the road covering to the upper side of the shield and at least 0.4 m below the bottom of gutters or drains.

1.3.2 Type and quantity of the raw and prime materials allocated for the construction and the operation and requirements for their quality

The use and storage of hazardous chemical substances and mixtures within the meaning of the Protection from the Harmful Effect of Chemical Substances and Mixtures Act is expected in the course of the construction and operation of the gas pipeline.

The following main raw and prime materials will be used in the gas pipeline construction and operation:

1.3.2.1 Construction

Land

Apart from what has been state above, the specific type of the lands along the gas pipeline may not be pointed out, including agricultural lands – arable and non-arable, forest stock – forests and forest lands, water territories, territories in preventive planning-protection mode, transportation territories, territories in servitude mode, urbanized territories and territories in hygiene protection mode.

Water

Upon the construction of the gas pipeline and the sites of the facilities along it, water will be used for:

- Preparing of concrete mixtures and other building mortars;
- Watering of the temporary roads and construction sites to prevent dust emissions in the air;
- Hydraulic testing of the gas pipeline;
- Needs of the personnel.

The quantities of water used during construction on the sites of the facilities for preparing of concrete mixtures and other building mortars, watering of the temporary roads and construction sites and for the needs of the personnel are expected to be insignificant.

Tests are being carried out upon the construction of the gas pipeline in line with the general requirements of BDS EN 12327 and the production technological instruction. As a rule, the transiting gas pipelines are tested hydraulically in terms of strength and density in accordance

with BDS EN 1594, BDS EN 12186 and BDS EN 12327. The volume of water needed for one test is 31,000 cu m at an average distance between two tap knots of 25 km and a diameter of the gas pipeline of 1,422 mm.

The necessary quantities of water for the testing of the gas pipeline will be supplied from water sources in proximity to the route, mostly, surface running or regulating water reservoirs. The necessary quantity of water may be optimized by reducing the length of the tested section through gags.

Upon the operation of the gas pipeline, the main technological processes do not involve water consumption. Water will be used mostly for the needs of the personnel of the operator of the compressor stations. The water for this purpose will be supplied from the network of the water supply companies operating in the respective area.

Sources of energy

The capacity of the natural gas transiting pipeline is expected to reach 63 billion cu m/annually at the final stage. Up to 1.6 billion cu m/annually are expected to be used by consumers on Bulgarian territory.

Natural gas will be used as fuel at the compressor stations operating under the South Stream gas pipeline.

Upon the construction, fuels, in particular, diesel fuel, will be used for the construction mechanization. The electricity needed for welding works along the pipeline will be provided mostly by diesel generators and for the main storage facilities – by the electricity network.

Upon operation electricity is used in the compressor stations, the control and measurement devices and the cathodic protection.

Minerals, aggregates, wood

The implementation of the Development Proposal does not involve extraction or use of minerals and wood.

Aggregates will be used in the construction of the sites of the compressor stations, the linear tap knots, the entry and exit terminals, the facilities along the transiting gas pipeline for crossing other types of infrastructure or water basins, reinforcement of land or slopes.

1.3.2.2 Operation

The transiting gas pipeline will be set into operation under the general terms laid out in the above-quoted Ordinance and BDS EN 12327. The operation of the gas pipeline and its facilities will be carried out in accordance with Chapter 8 of the Ordinance on the structure and safe operation of the transiting and distribution gas pipelines and the natural gas facilities, stations and devices (Council of Ministers' Decree No. 171/16.07.2004, SG No. 67 of 2 August 2004, last amended by SG No. 7 of 21 January 2011).

The user of the gas pipeline shall ensure its safe and accident-free operation and shall maintain it in accordance with the technical requirements of the Ordinance, the norms and rules for fire safety and rescue and their technical documentation.

Regardless of the regular technical inspections performed by the technical supervision authorities, external technical review of the gas pipeline should be conducted at least once a year.

The gas pipeline should be set into operation in a manner ensuring its evacuation and gradual increase of pressure up to the level of working pressure. After the electric chemical protection system is set into operation, its efficiency should be tested.

1.3.2.3 Termination of operation

The above-quoted ordinance as well as the related Bulgarian and European standards do not treat the issue of the decommissioning of transiting gas pipelines and the facilities thereof. After halting and emptying the gas transiting network and the respective facilities under regulation BDS EN 12327, the equipment is dismantled and the sites are closed down in compliance with the general rules for safety equipment.

In case of termination of operation of the gas pipeline, there are two options for shutting down of the very pipeline: to leave it as it is or to drag/dismantle it. The on-spot storage would involve the following activities:

- Degassing;
- Cleaning of the pipeline by washing it out;
- Filling it with water or inert gas;
- Hermetical sealing.

In the long term a shut pipeline would not exert a negative impact on the environment. In any case, dismantling and removing the pipes would have even if a short-term negative impact on the environment.

1.4 Defining the type and quality of the expected emissions and waste

1.4.1 Expected waste and emissions during the gas pipeline construction and operation

The construction of the 'Transmission Gas Pipeline South Stream on the Territory of the Republic of Bulgaria' is expected to produce dust emissions resulting from the construction activities and emissions from the operation of the engines of the construction equipment. The testing of the gas pipeline generates considerable amounts of waste water. Construction waste, of which residual earth masses form the biggest share, is also generated. Hazardous waste is generated on the sites for servicing and repair of construction machines. Construction is a source of noise and vibration caused by the machines on the construction site. It is also a source of harmful physical factors, such as heating, light, electromagnetic or

ionizing irradiation during the welding works on the gas pipeline. Activities, preventing or reducing the effect of these emissions should be planned at the next stages of the project.

The waste generating activities at the three stages will be implemented in accordance with the requirements of the Waste Management Act, SG No. 86/30.09.2003, last amended by SG No. 8 of 25.01.2011, which is a precondition for maximum reduction of the emissions.

1.4.1.1 Water

During the construction activities, the testing of the gas pipeline for density and strength under BDS EN 12327, BDS EN 1594 and BDS EN 12186 is a main source of waste water. During the test the water does not change its volume. However, its quality may change due to the presence of products resulting from corrosion of the internal side of the pipes, scale and slag and electrodes in the pipeline, as well as earth, water and different objects that have penetrated in it by chance. The volumes needed for the testing of the gas pipeline will be supplied from nearby water sources, mostly surface running water or fixed water reservoirs. The volume of the water needed depends on the length of the tested section. The testing process is complied with the restrictions, contained in Ordinance No. 6 of 9 November 2000 regarding the emission norms of admissible content of harmful and hazardous substances in waste water discharged in water basins. For this reason, before conducting a test, the inner of the gas pipeline should be cleaned of scale and slag and of earth, water and different objects that have penetrated in it by chance. The underground gas pipeline is cleaned after its laying in the ditch and covering with earth. Upon cleaning of the gas pipeline, no cleaning devices or different pollutants are allowed through the linear fitting. After the inner of the gas pipeline is cleaned through scavenge or wash out, temporary gags are formed at the ends of the cleaned section. The residual water may be classified as waste water from a technological testing process. After the hydraulic test the water should be discharged into a running or fixed water basin. The waste water should conform to the requirements for second grade water under Ordinance No. 7 on indicators and norms of surface running water (SG No. 96/12.12.1986). The discharge process is regulated by Article 46 of the Water Act. Upon discharge all draining lines should be duly reinforced so as to prevent movement during drainage.

The main and the auxiliary technological processes **upon the operation** of the Transmission Gas Pipeline South Stream on the Territory of the Republic of Bulgaria are not a source of production waste water. Insignificant amounts of waste water will be generated by the personnel on the sites of the compressor stations. Before their discharge in the earth or receiving waters, they will be treated in local treatment facilities.

During operation the gas pipeline will be regularly cleaned from corrosive materials and construction waste by releasing a cleaning device to clean the natural gas from moisture drops and mechanical pulp through separating filters. The resulting condensate is a mixture of water, light hydrocarbons and mechanical pulp.

The condensate is collected in a tank equipped with an air-vent, a fire preventing device and a pump. Through the pump the condensate is transferred into a tank, transported by

road and is moved for treatment outside the site of the compressor station in accordance with the Waste Management Act. This condensate is treated as hazardous substance, "Natural Gas Condensate" – oil, low boiling, non-specific (complex liquid combination of hydrocarbons separated from the natural gas stream into a surface separator through residual condensation; it consists of hydrocarbons in the C2-C20 range; it is in liquid form when exposed to air temperature and pressure) – under the Ordinance on the terms and procedure for classifying, packing and labelling of chemical substances and mixtures (SG No. 68 of 31 August 2010, effective as of 31 August 2010) and Regulation (EC) 1272/2008 of the European Parliament and of the Council of 16 December 2008.

Nomenclature:

- Index No. 649-346-00
- CAS 64741-47-5
- EC 265-047-3
- Classification: carcinogen, cat. 2; R 45, R 46, R 65, Xn, S 45 r S 53.

Waste water generated by the personnel and rain water from the sites of the compressor stations will be released in the sewerage systems of the respective settlements, in the earth or receiving waters. In the absence of a waste water treatment plant and/or a drainage system in the respective settlement, the production waste water will be treated in local treatment facilities before their release in the earth of receiving waters in accordance with the requirements of Ordinance No. 10 of 3 July 2001 on the issuing of permits for release of waste water in water basins and setting of individual emission restrictions for point sources of pollution (SG No. 66 of 27 July 2001, effective of 27 July 2001).

The effect on water **in the course of the operation** of the facilities of the Development Proposal may be assessed as insignificant, short-term, direct and indirect, without cumulative effect, with local action only within the region of the compressor stations, with a possibility for treatment. The operation of the facilities of the Development Proposal in accordance with their technological processes will not exert an impact on surface and subsoil waters given that waste and rain water from the sites of compressor stations are not directly discharged into surface receiving waters or the earth.

1.4.1.2 Soils

No soil pollution is expected during the **construction** activities.

The **operation** of the gas pipeline will involve a lasting change of the land use within preventive planning-protection mode areas at a distance of 200 m on both sides of the gas pipeline (total of 400 m) and within sanitary and hygiene mode areas, third grade, in accordance with the requirements of the effective statutory framework – at a distance of 1,000 m for compressor stations along the gas pipelines. In this context, the effect of operation on soils may be assessed as significant, lasting but local. The municipal and production waste and the waste water do not have contact with the soil and do not exert an impact on it.

1.4.1.3 Ambient air

The construction of the facilities of the gas pipeline, along with the construction technologies and machines used, will have an impact on air as a result of:

- Release of dust emissions upon construction (mainly excavation and covering works along the route of the gas pipeline and the sites of the facilities) – diffuse source, as well as upon transportation of materials and construction waste;
- Release of emissions from spent gases of the construction machines depending on their type – machines involved in the process of construction or transport means for the supply of raw and prime materials, equipment and workers – diffuse source. The expected emissions upon the use of diesel fuel by the construction machines include: first group of pollutants – SOx, NOx, organic pollutants, CH4, CO, CO2, N20, NH3; second group of pollutants (heavy metals) – Cd; third group of pollutants (resistant organic pollutants) – PAH, DIOX and PCBs, fourth group of pollutants – soot.

The generated construction waste and waste water are not a source of emissions in the ambient air.

The quantity of dust from a diffuse source is not regulated and may not be projected due to the lack of appropriate methods. It depends immediately on the weather conditions, the technology employed, the air humidity, the soils and the covering of the road network.

The projection of the type and quantity of the emissions from the operation of the road construction and installation equipment is made in accordance with SNAP CODE-08080 of the Methodology for Calculation of Emissions of Harmful Substances (Pollutants) Released in the Ambient Air Using Balancing Methods.

Sources of emissions of natural gas from the gas pipeline of a total length of 540 km are the scavenging sparking plugs and the facilities under the conditions of prophylaxis or emergency (fire, uncontrolled increase of pressure beyond 10% of the maximum limit). The compressor stations release natural gas when the compressors are set into operation (starting gas), the compressor is blocked or the compressor station is blocked as a result of suction or supercharge. Controlled release of natural gas from the compressor stations is performed through sparking plugs positioned at the end of the compressor station. The quality of the natural gas released in the air in Bulgaria is set in accordance with the Methodology for Calculation Emissions of Harmful Substances (Pollutants) Released in the Ambient Air Using Balancing Methods, drafted by MEW, 2000, CORNAIR and SNAP. The emission factor for transiting gas pipelines (code under CHEB-94-050601) is EF=25 g/Nm3 of consumed natural gas (given that CH4 falls into the first group of pollutants). The emission factor applies to the whole system – trunk gas pipeline – compressor stations. The natural gas is lighter than the air (with volume density of 0.765 kg/cu m) and rises high in the atmosphere upon release. It is not regulated as pollutant of the ambient air under the Bulgarian legislation.

The control of the natural gas emissions released directly from the gas transiting networks into the ambient air and the measures for their restriction may not be exercised “at the end of the pipe”. Emissions may be reduced using the following means:

- Using high-quality materials for the production of the pipes, connections and seals;
- Quick detection and correction of leakage;
- Good and permanent maintenance of the facilities;
- Applying of purification measures upon starting, stopping or other maintenance-related activities.

The compressor stations are an individual point fixed source of emissions resulting from combustion processes. The compressors are started by gas turbines operating on gases resulting from natural gas burning. After the gas turbine, they will go out through a chimney, equipped with a noise-killer being an integral part of every compressor. A certain number of operational centrifugal turbo compressor aggregates and a reserve one will be installed in the compressor stations. A hot water boiler for the needs of the personnel and for warming of pipelines is another source of emissions from a combustion process in each compressor station. The boiler will operate on natural gas.

Upon the operation of the compressor stations the separate types of estimated emissions are distributed as follows: 99.86% - CO2, which is not regulated as pollutant of the ambient air. Of the remaining 0.14% of the emissions regulated as pollutants, NOx accounts for 61.75%, CO – 24.67% and mercury – 0.0001%.

Regarding the combustion processes in the gas turbines, only the emission of nitric oxides are controlled as their quantity is most significant compared to the other emissions of pollutants.

Only specially-structured low-emissions drills are used in natural gas burning in the gas turbines.

During operation emissions from sparking plugs along the gas pipeline, emergency situations or repair and restoration activities constitute a diffuse source of natural gas emissions.

In the course of the operation of the compressor stations the burning of natural gas in the compressors causes emissions in the atmosphere. In the Republic of Bulgaria the admissible levels of harmful emissions for combustion installations with a rated thermal input equivalent or higher than 50 MW are regulated by Ordinance No. 10 of 6 October 2003 on the norms of admissible emissions (concentrations in residual gases) of sulphur dioxide, nitric oxides and total dust released in the atmosphere by big combustion installations (SG No. 93/2003, last amended and supplemented by SG No. 19/2011). According to Annex 4 of the Ordinance, the admissible emission norm for gas turbines operating on natural gas is 50 to 75 mg/Nm3 (15% of oxygen content) for single gas turbines meeting the requirements of Article 7 (2) (the admissible emission norm is applied when the facility operates at a capacity of over 70%).

For the purpose of the impact assessment of the emissions in the ambient air and the cumulative effect of other sources, an estimate of the ground concentrations of pollutants is obligatorily made using the PLUME model for calculation of the height of the releasing

devices, the dispersing and the expected concentration of harmful substances in the above-surface layer of the atmosphere. This should be performed at the drafting of the EIA because at this stage the location of the compressor stations and the equipment thereof has not been set.

The waste and waste water generated during operation are not a source of emissions in the ambient air.

The effect on ambient air in the course of the operation of the facilities of the Development Proposal may be assessed as insignificant, long-term, direct and indirect, without cumulative effect, with local action only within the region of the compressor stations, with a possibility for recovery.

1.4.1.4 Noise, vibrations, harmful physical irradiation

The **construction** of the gas pipeline is a source of harmful physical factors, such as light or heating emissions or electromagnetic irradiation resulting from welding works on the gas pipeline and the facilities thereof. The construction machines are a source of noise and vibrations within the construction site. The average level of noise in sites of this type exceeds 85 dBA. Workers within the construction site should obligatorily use personal protective equipment (hearing protectors).

The **operation** of the gas pipeline is not a source of harmful physical factors, such as light or heating emissions or electromagnetic irradiation. The turbo compressors do not cause vibrations above the admissible norms under BDS 16013-84. The emissions in the air during operation are caused by the compressor stations. The operation involves generation of waste water and waste by the personnel. The production waste does not have contact with the geological basis and do not exert an impact on it. The harmful physical factors are expected to produce noise. Vibrations and irradiation, however, are not expected. As a whole, the impact of the gas pipeline operation on the geological basis is insignificant, local in terms of place, with a possibility for recovery and without a cumulative effect.

1.4.1.5 Waste

Construction works within the construction band are a source of construction waste including construction and demolition waste (including excavated soil from contaminated sites) – code 17.

During construction hazardous waste will be generated at the permanent sites for servicing of construction machines including:

- Oil waste and waste of liquid fuel – code 13;
- End-of-life vehicles from different means of transport (including off-road machinery) and wastes from dismantling of end-of-life vehicles and vehicle maintenance;
- Batteries and accumulators – code 16 06;
- Separately collected fractions – code 20 01, fluorescent tubes and other mercury-containing waste – code 20 01 21;

The staff working on the permanent and temporary construction sites will generate mixed municipal waste – code 20 03 01.

The following waste will be generated **upon the use** of the infrastructure of the Development Proposal:

- Construction and demolition waste (including excavated soil from contaminated sites) – code 17;
- Oil waste and waste of liquid fuel – code 13;
- End-of-life vehicles from different means of transport (including off-road machinery) and wastes from dismantling of end-of-life vehicles and vehicle maintenance (except 13, 14, 16 06 and 16 08) – code 16 01;
- Batteries and accumulators – code 16 06;
- Separately collected fractions – code 20 01, fluorescent tubes and other mercury-containing waste – code 20 01 21.

The staff working on the permanent and temporary construction sites will generate mixed municipal waste – code 20 03 01.

The waste generated upon shutting down of the gas pipeline is identical to the one of the construction stage.

The types of waste are classified in accordance with Ordinance No. 3 of 1 April 2004 for classification of waste, SG No. 44 of 25 May 2004.

The shutting down of the gas pipeline involves generation of waste, emissions in the ambient air, noise and vibrations, analogous to the ones of the period of construction. Generation of waste water is not expected.

The expected emissions upon the shutting down of the South Stream gas pipeline are identical to the ones in the course of its construction. The shut down will result in termination of the natural gas emissions and harmful emissions from the gas pipeline and the compressor stations in the ambient air.

1.4.1.6 Hazardous substances

The hazardous substances generated the main and the auxiliary technological processes are: natural gas, nitric oxides, carbon dioxide, carbon oxide, welding aerosol (welding dust) and substances resultant from natural gas purification.

Natural gas

- *Physical properties*

The natural gas is a colourless gaseous and, in most cases, odourless (if it does not contain H_2S and other sulphur compounds) substance. When used for industrial purposes it does not have

odour either and its presence is established by gas analyzing devices. This gas is lighter than the air and its relative weight is 0.5 – 0.9 and, therefore, unlike propane-butane, it stays in the upper section of closed premises. It is felt when its concentration in the air is up to 1%.

- *Chemical composition*

It is not equal. Its main part consists of methane (75%-98.8%). The content of higher hydrocarbons is insignificant – from below 1% to 2-3%. Natural gas may contain CO_2 (from 1-2 to 20%) and N_2 (from below 1% to 5%). The provisional content of natural gas is the following:

Methane CH4		98.54%
Nitrogen N2		0.99%
Ethane C2H6		0.31%
Propane C3H8	0.10%	
Butane C4H10	0.04%	
Carbon Dioxide CO2		0.02%

- *Toxic action*

Natural gas is usually considered to be harmless at relatively low concentrations due to the absence of carbon oxide from its content. Its toxic action is mostly due to the content of methane. If the oxygen content in the air gases is below 20 volume % breathing becomes difficult and if it is below 12 volume %, this may cause death.

There are not set norms of admissible natural gas concentration either in the ambient air of settlement or in the air of a working environment.

The following can be pointed out as hazardous substances:

- Hydrocarbon, gaseous, compressed (not specified), or gaseous hydrocarbon, mixture, compressed (not specified) under No. 1964, hazard class and sub-class of 2.1;
- Gaseous hydrocarbon, liquefied (not specified), or gaseous hydrocarbon, mixture, liquefied (not specified) under No. 1965, hazard class and sub-class of 2.1;
- Methane, cooled, liquid, or natural gas , cooled, liquid, with high content of methane, under No. 1972, hazard class and sub-class of 2.1;
- Methane, compressed, or natural gas , compressed, with high content of methane, under No. 1971, hazard class and sub-class of 2.1, according to the same classification scheme.

Expressed in percentage, smoking gases upon natural gas combustion contain, for example, 8.56% CO_2; 17.02% H_2O and 74.42% N_2. The released nitrogen, which is much higher in content compared to the other gas pollutants, combines thermally with the ambient oxygen to form nitric dioxide.

Nitric oxides

- *Physical and chemical properties*

The nitric oxides are a non-permanent gaseous mixture of NO, NO_2 and N_2O_3 with light yellow up to dark brown colour and specific odour. In the air, nitric oxide quickly turns into NO_2.

- *Toxic action of nitric oxides*

Throat irritation is caused by concentration of 120 mg/cu m (recalculated as NO) and coughing – at 200 mg/cu m. Upon short-term exposure concentration of 200-300 mg/cu m is considered dangerous and upon long-term exposure – concentration of 70 mg/cu m. Concentration of 3 mg/cu m does not have any impact.

- *Clinical picture of the intoxication*

The high toxic action of nitric oxides results mostly in acute poisoning. The following norms are applicable for nitric dioxide and nitric oxide in the ambient air in settlements:

- Average hourly norm for human life protection of 200 μg/cu m NO2 with admissible deviation of 50% upon the entry of the ordinance into force;
- Average annual norm for human life protection of 40 μg/cu m NO2 with admissible deviation of 50% upon the entry of the ordinance into force;
- According to Ordinance No. 13 on the protection of workers from risks, related to exposure to chemical agents upon work (SG No. 8/2004, last amended and supplemented by SG No. 67/2007), the admissible concentration of nitric oxide in the air in a working environment is: 20 mg/cu m. Revised ILDH value, according to NIOSH (USA, 3/1/95) – 100 ppm;
- According to Ordinance No. 13 of the Health Ministry, the admissible concentration of NO_2 in the air in a working environment is 4.0 mg/cu m. Revised ILDH value, according to NIOSH (USA, 3/1/95) – 20 ppm. 6.

Carbon dioxide

Released during natural gas combustion. Carbon dioxide is a habitual and almost permanent component of the ambient air, where its concentration is 0.03-0.04 volume %. It is released in the ambient air upon combustion (for example, fuels), fermentation, breathing, etc.

In higher concentration, carbon dioxide may have a narcotic effect and irritates the skin and the mucous membranes. When CO_2 in the air exceeds 0.5%, this causes changes in breathing, the peripheral blood circulation and the electric activity of the brain. Concentration of CO2 of over 2 volume % causes serious disruption of breathing (asthma, rapid breathing). Concentration of 5 volume % results in loss of consciousness and 8-10 volume % - death.

There is no set norm of admissible concentration levels of carbon dioxide in the ambient air of settlements. The hygienic norm of CO_2 concentration in closed premises is 0.1 volume %. The average admissible concentration of CO2 per shift is 9,000 mg/cu m, according to ***Ordinance No. 13 on the protection of workers from risks, related to exposure to chemical agents upon work.***

- *Physical and chemical properties*

Colourless and odourless gas; low solubility in water; rather inert chemically; has bluish flame during combustion resulting in the release of CO_2; forms fiery mixtures in contact with the air.

- *Distribution in working and natural environment*

It is widely spread at any places, where conditions for incomplete combustion of carbon-containing matters are present.

- *Toxic doses and concentrations*

The carbon oxide has a high toxic effect. Upon concentration in the air of 0.5% it cases death for 5-10 min. At 0.1% it causes loss of consciousness and death within several hours. The effect of CO at different concentration is as follows: concentration of CO of 30-60 mg/cu m causes disruption of eyesight and hearing; breathing of 110-230 mg/cu m results in about 10% of carboxyhemoglobin (COHb), deviations in the psychological, psycho-physiological and psycho-motor tests, headache, disrupted coordination, hyperthermia of the skin and fatigue; concentrations of 440-690 mg/cu m cause insufferable headache, loss of balance, sickness, vomiting, adynamia and collapse at COHb of 30-40%; exposure to 1 2601 760 mg/cu m results in frequent and superficial breathing, low pulse, loss of consciousness and increase of COHb up to 60%; CO in concentration of 2,300 – 3,400 mg/cu m causes loss of consciousness, low pulse, rapid breathing and comma. An increase of the concentration of CO above 4,000 mg/cu m and of COHb over 70% results in death.

According to Ordinance No. 13 of the Health Ministry, the admissible concentration of CO in the ambient air in settlement in 10 mg/cu m per 24 hours. The admissible concentration of CO in the air in a working environment is 40 mg/cu m. Revised ILDH value, according to NIOSH (USA, 3/1/95) – 1,200 ppm.

Welding aerosol (welding dust)

This is formed upon welding of an electric arc at a temperature of 3,500-4,000C, most often, by electric welding machine and torch-lamp. The welding aerosol contains mostly iron but also aerosols and other metals (manganese, tungsten, etc.) and gases (ozone, nitric oxides, etc.).

The following provisional safe levels are regulated for a working environment: 4 mg/cu m for welding dust and 2.6 mg/cu m for electrodes of Vezhen type.

Natural gas condensate

This condensate is treated as hazardous substance, "Natural Gas Condensate" – oil, low boiling, non-specific (complex liquid combination of hydrocarbons separated from the natural gas stream into a surface separator through residual condensation; it consists of hydrocarbons in the C2-C20 range; it is in liquid form when exposed to air temperature and pressure) – under Annex 1 to the ***Ordinance on the terms and procedure for classifying, packing and labelling of existing and***

new chemical substances, mixtures and products (adopted by Council of Ministers' Decree No. 316/2002, SG No 5/2003).

Nomenclature:

- Index No. 649-346-00
- CAS 64741-47-5
- EC 265-047
- Classification: carcinogen, cat. 2; R 45, R 46, R 65, Xn, S 45 r S 53..

1.4.2 Waste management

During operation the gas pipeline will be regularly cleaned from corrosive materials and construction waste by releasing a cleaning device. The waste is collected in the receiving chamber of the treatment plant on the site of the compressor station. It may be classified as production solid waste:

- Iron-containing filings and turnings
- Other iron-containing filings and turnings
- Welding waste
- Other non-specified types of waste.

The personnel working at the sites of the compressor stations will generate mixed municipal waste that will be collected in containers. The projected quantity of municipal waste is about 30 cu m/annually at a norm of 0.6 cu m/annually per worker at an average number of the personnel working on three shifts. In case of remote automated management of the compressor stations, they will not have permanent personnel and no municipal waste will be generated.

Apart from the above waste, which is not classified as hazardous and is treated under the Waste Management Act, it consists of hydrocarbons in the C2-C20 range; it is in liquid form when exposed to air temperature and pressure) – under the Ordinance on the terms and procedure for classifying, packing and labelling of chemical substances and mixtures (SG No. 68 of 31 August 2010, effective as of 31 August 2010) and Regulation (EC) 1272/2008 of the European Parliament and of the Council of 16 December 2008.

2. OPTIONS FOR IMPLEMENTING THE DEVELOPMENT PROPOSAL

The EIAS should contain an assessment of two specific options of the below described options that will be placed in the envisaged corridor of a width of 2 km.

- Zero option

Zero option: "no-change" option compliant with the conditions of the existing gas transiting network of the Republic of Bulgaria for the transiting of natural gas to local consumers and neighbouring countries, the related technological processes and infrastructure without implementation of the development-project initiative.

- Option 1:

This option include newly designed gas pipeline and following facilities along the route

- Transiting gas pipeline from the Black Sea to the border with the Republic of Serbia;
- Transiting gas pipeline from the Black sea to the compressor station Provadia;
- By-passes of the gas pipeline from the Black Sea to the border with the Republic of Serbia;
- Receiving terminal Pasha dere;
- Compressor stations – 3;
- Gas measurement and regulation knot Provadia.

The preliminary technological scheme of the Option 1 and the relevant 2.0 km corridor for choice of a route are based on Option 2a from the Feasibility study of the project, prepared on a stage Pre-feasibility study. In the new technological scheme the receiving terminal is moved by 2 km, just before the first compressor station.

After additional specifications and agreements the gas measurement station on the border with the Republic of Serbia is not already exist in the project on the territory of the Republic Bulgaria and is foreseen the gas measurement station to be on the territory of the Republic of Serbia. On the border, on the territory of Republic of Bulgaria is envisaged only starting/receiving station for facilities for purification and inspection.

The location of the compressor stations is as follow:

- CS-1 „Varna“ - South of Galata compl., Varna Municipality, Varna District (just in before the receiving terminal)
- CS-2 „Lozen“ – Northeast of Lozen Village, Strazitsa Municipality, Veliko Tarnovo District;
- CS-3 „Rasovo“ – South of Rasovo Village, Medkovets Municipality, Montana District;

It is envisaged to use compressor stations of a nominal heat output of over 50 MW. These plants are included in the scope of item 1, Annex No. 4 of the Environment Protection Act. These plants should comply with best available techniques.

2.1 Main options for a route of Option 1

Regarding the adoption of an investment decision on the part of the Company, **two options of a route** of the gas pipeline are being considered. They are fully complied within the 2-km band pointed out in Annex No. 2 of the present terms of reference.

The options of a route are complied with the protected areas and territories on the country's territory and the related restrictions as well as with the required distance from existing sites (population centres and settlements, infrastructure sites and other facilities) envisaged in the effective legislation.

EIAS will treat equally and assess the possible impact of all analyzed options of the gas pipeline on the environment and people's health.

2.2 Criteria for the selection of a route

The selection of a route will be made after assessment of all considered and analyzed options (including its separate sections) and the 200-meter adjacent area in terms of how far other water protection areas under Article 119 of the Water Act, apart from drinking water protection areas, are affected. The purpose is to exert minimum effect on the environment and people's health upon the implementation of the Development Proposal.

If necessary, upon assessment of all options of a route, EIAS will present additional information regarding:

a) The system of criteria to minimize the impact on the environment that has been used to assess the positioning of the starting point of the gas pipeline;
b) Is that system consistent with the criteria for good condition of the marine environment;
c) The types of characteristics for analysis of the pressure and the impact on the current condition of the environment in sea waters, adopted by the Ordinance on the protection of the environment in sea waters.

3. CHARACTERISTICS OF THE ENVIRONMENT

3.1 Information about the condition of the environment components

3.1.1 Meteorological and climatic conditions

In terms of climate the location of the development proposal falls within all the three climatic zones on the territory of Bulgaria, namely: Continental-Mediterranean, Transitional-continental and European-continental climatic zones.

The first section of the gas pipeline route in the area of Varna Lake falls within the Black Sea climatic sub-zone, the climatic area of the northern Black Sea coast. The next section, which borders Shoumen area, falls within the Moderate-continental sub-zone, Eastern climatic area of the Danubian Plain. The third section, which reaches the area of Pleven, falls within the Central climatic area of the Danubian Plain. The section, which reaches Gramada, falls within the Northern climatic area of the Danubian Plain. The section reaching the border with the Republic of Serbia (Koula) also falls within the Central climatic area of the Danubian Plain.

The general physical-geographical characteristics, including the climatic conditions in the regions crossed by the South Stream Gas Pipeline Development Proposal on the Territory of the Republic of Bulgaria, display varying meteorological features in the different sections of the gas pipeline route.

3.1.2 Ambient air quality
Given that the ambient air quality is directly dependant on the meteorological conditions, a review is made of the regime of the main meteorological factors in the area on the basis of multiannual data from the existing Hydro-Meteorological Stations (HMS) within the range of the options: Varna (14 m above sea level/a.s.l.), Shoumen (215 m a.s.l.), Turgovishte (226 m a.s.l.), Pleven 163 m a.s.l.), Oryahovo (124 m a.s.l.), Vidin (35 m a.s.l.), Gramada (250 m a.s.l.).

Out of all meteorological factors those affecting most strongly the air quality are the thermal inversions and fogs, the wind and precipitation.

The Development proposal ‘Transmission Gas Pipeline South Stream on the Territory of the Republic of Bulgaria’ is located mainly on agricultural land, and less so in forests and land of the forestry stock, where there are no ambient air quality control centres of the National Environment Monitoring Automated System (NEMAS). Therefore, in the studied areas of the different routes the ambient air is not subject of intensive anthropogenic load and the air quality may be estimated as normal for a non-urban area.

In the population centres located near the options there are points for air quality monitoring pursuant to ***Ordinance No. 14 of 23.09.1997 on the norms for the maximum admissible concentrations of harmful substances in the air in population centres (SG No. 88/1997; last amended by SG No. 14/2004)***. The main indices being measured at the manual measurement

points are TSD – total suspended dust, FDP_{10} – fine dust particles (As, Cd, Ni, nAB and Pb), SO_2 and NO_2. The automated measuring stations (AMS) measure FDP_{10} – fine dust particles, SO_2, NO_2/NO, CO, C_6H_6, O_3, NMVOC and CH_4; standard set of meteorological parameters.

The prevailing air pollution in district centres is with dust (total suspended dust and fine dust particles), SO_2, NO_2/NO. There is less pollution with heavy metals, hydrocarbons, hydrogen sulphide. The main air pollution sources are motor transport, industrial zones, and means of heating.

3.1.3 Hydrological and hydrogeological conditions

The development proposal is **admissible** in terms of achieving the environmental objectives and the measures for ensuring good water conditions, which are laid down in the **River Basins Management Plan (RBMP) in the Danube region** approved by Order No. RD-293/22.03.2010 of the Minister of Environment and Water, as well as in the **River Basins Management Plan (RBMP) for the Black Sea Region** approved by Order No. RD-294/22.03.2010 of the Minister of Environment and Water.

The implementation of the Development proposal will comply with the requirements of the Water Act and the applicable secondary legislation. The route of the gas pipeline will take into consideration the location of the water sources for drinking and household purposes, as well as the existing and future sanitary protection zones (SPZ) and the enacted prohibitions and restrictions on activities in such zones.

The description and analysis of the components of the environment, where the Development proposal is going to be implemented, shall be made out in compliance with the information about water and water bodies, which is contained in the **River Basins Management Plan (RBMP) in the Danube region** approved by Order No. RD-293/22.03.2010 of the Minister of Environment and Water, as well as in the **River Basins Management Plan (RBMP) for the Black Sea Region** approved by Order No. RD-294/22.03.2010 of the Minister of Environment and Water. It shall also take into consideration the surface and ground water and the water protection areas pursuant to Article 119a, paragraph 1 of the Water Act, in which areas the location of the IP terrain falls and which are listed in Annex No. 7 in compliance with Opinion, outgoing ref. No. 4638/19.12.2011 by the Danube Region Water Basin Management Directorate.

The EIAS should contain thorough and detailed analysis of the potential negative impacts on the surface and ground water, as well as on the marine environment.

Further on, the EIAS should describe the need, purpose and method of supplying water to temporary grounds for construction equipment and workers and/or permanent facilities/grounds of the gas pipeline (such as compressor stations, gas distribution stations), as well as the treatment of potential waste water from them, for each stage of the Development proposal implementation.

When the EIA is being prepared an assessment of the route should be made in terms of its closeness to points of the national water monitoring network and the network of the National Institute of Hydrology and Meteorology, as well as with regards to issued permits for water power stations, extraction of coarse aggregate, waste water discharge and other acquired rights, which refer to the two-kilometer band and may be affected in the course of construction.

The EIAS should review also the impacts of the methods of laying down the gas pipeline where it passes through the water sites, which will be crossed by the route.

At a later stage a hydrological report will be drawn out pursuant to the provisions of the Water Act with a view to identifying the flooded areas of the water sites in the sections, which are crossed by or are in the vicinity of the gas pipeline route.

The EIAS should contain information about all water intakes and water sites used for water discharge; this information will make possible the assessment of the need permits to be issued pursuant to the Water Act and monitoring to be carried out. In the course of implementation of the Development Proposal the Company will obtain the required permits for water site use, as well as permits for water intake in compliance with the requirements of the Water Act.

3.1.3.1. Surface water

The Development proposal 'Transmission Gas Pipeline South Stream on the Territory of the Republic of Bulgaria' is located on the territory of the Black Sea natural water-catchment area. In terms of administrative water management it falls under two water basin management directorates – Varna and Pleven.

The water flows crossed by the Development Proposal route are not equivalent in terms of size of the water-catchment area and the river course, as well as in terms of their runoff pattern. These flows are divided on the basis of these indicators into two main categories – rivers and gullies. On the other hand, depending on the water quantity and in terms of water-catchment area surface they may be divided into the following four groups: large rivers, medium rivers, small rivers, and gullies.

In its section from Galata (Black Sea) to the border (the Republic of Serbia) from km 0.0 up to km 537.8 the South Stream Gas Pipeline will cross 9 large rivers (one of them will be crossed twice); 19 medium rivers (one of them will be crossed twice), 104 small rivers.

The section of the gas transiting pipeline from the Black Sea to the western border (the Republic of Serbia) from km 0.0 up to 134.9th km is located on the territory of the Black Sea region for water basin management in the Provadia River water catchment area. The route of this pipeline will cross the Provadia River three times, whereby it is the only river classified as a large one. The rivers classified as medium ones are Manastirska, Glavnitsa (crossed twice), Zlatina and Kriva Reka – a total of 4 medium rivers.
The section of the gas pipeline from 134.9th km up to 537.8th km is located on the territory of the Danube region for water basin management. This section crosses the following water catchment areas and water flows:

Roussenski Lom river valley
Yantra river valley
Osam river valley
Vit river valley
Iskar river valley
Ogosta river valley
Danube river valley

In the further stages of the project another about 15 small gullies are expected to be identified in the section Black Sea – Western border and these will need to be studied in terms of high waters and expected erosion. In this section the gas pipeline crosses also some drainage and irrigation fields. The more significant of them are from 32nd km to 43rd km, from 231st km to 235th km and from 439th km to 447th km.

According to the data published in the Annual and Quarterly newsletters on the environment condition in Bulgaria (MEW, EEA) most of the rivers meet the requirements of second category in terms of the following indicators: dissolved O_2, oxidized Mn, BOD_5, NH_4-N and NO_3-N. In some cases deviations from certain indicators are noticed and the water condition falls within third category in compliance with ***Ordinance No. 7 of 08.08.1986 on indicators and norms for determining the quality of running surface waters (SG No. 96/1986)***. A steady trend of improvement of the surface water quality is observed.

3.1.3.2. Ground water

Within the territory of the Black Sea area for water basin management ground water of the three main genetic types has been formed, namely: pore, fissure and karst type, with transitions among them. The wide variety of physical-geographical and geology-faces characteristics of the region give rise also to a large variety of the hydrogeological conditions in it. This is particularly true for the ground water type and the territorial distribution of its resources. The pore ground water has been formed in the water-bearing strata (aquifers) in the alluvial and pro-alluvial depositions, as well as in the loess complex. They are fed mainly by the seepage of precipitation water, and in some cases from rivers or other aquifers.

In terms of water abundance the aquifers are in most cases moderately water-saturated, and in a few sectors also highly water-bearing. The largest natural and operational resources belong to the aquifers in the terraces of the Golyama Kamchia and the Provadia rivers. The karst aquifers of the Lower Cretaceous (Aptian-Baremian and Malm-Valangian) and Miocene (Odarska and Karvunska suites) are a part of the structure of the Varna artesian basin. These three aquifers have concentrated enormous ground water resource. They are fed from atmospheric and river water. They are drained through the rivers network, the large karst springs near Devnya Town and Zlatina Village (3,800 dm^3/s) and the sea. In the larger part of the Malm-Valangian aquifer the water is of pressure type, and in the deeper eastern parts of the basin it is characterized also by higher temperature.

The Danube region for water basin management in general coincides with and covers the wide North Bulgarian artesian basin, which includes the first-generation geo-structural units such as the North Bulgarian suite elevation, the Lom trough, the whole Fore Balkans and the northern slopes of the West Balkan tectonic zone.

In Northeastern Bulgaria in the region of the Loudogorie extensive karst-fracture type aquifers have been formed amongst the several-hundred-meter thick Malm-Valangian and Aptian-Baremian limestone sediments. In the southern and central parts of the North Bulgarian arch elevation they form two-floor aquifers divided by the thick-layered Hauterivian marls, while to the north, due to alterations in the faces, they form a common karst-fissure type of aquifer. In Northwestern Bulgaria there is the vast Lom artesian basin. It encompasses parts of the middle and lower flows of the rivers Archar, Lom, Tsibritsa, Ogosta, Skut. Two significant aquifers have been formed in this basin – Pontian and Sarmatian, as well as one bearing a smaller quantity of water - Dakromanski.

According to the data published in the Annual and Quarterly newsletters on the environment condition in Bulgaria (MEW, EEA) the ground waters in the North-Bulgarian hydrogeological region are characterized by concentrations exceeding periodically the norms for the indicators NO_3-N, oxidized Mn, Fe, Mn, as per the Bulgarian State Standard BDS 2823-83: Potable water.

The spatial spread and the considerable surface area of the water catchment area of the Iskar River includes parts with varying physical-geographical characteristics and structures. They cause the occurrence of ground water of differing types and nature, generally corresponding to the existing water-holding structures:

- pore (pore-originating) ground water and less often pore-fission water in the non-connected or slightly aggregated sediments of the Neogene depressions and in the Quaternary deposits. They are considerably spread and are of practical importance in the Iskar River basin;
- karst and fissure-karst waters in unevenly cracked and karst-covered carbonate rocks of the pre-Neogene cushion. They are characterized by considerable but strongly changing quantity and varying properties;
- fissure ground water in varyingly cracked under-surface part of magmatic, metamorphic and sedimentary rocks in the hyper-genesis zone. They are widely spread, but rare, and are bedded at small depth. Larger and more constant quantity is typical only for water sources connected to tectonic disturbances or regional prismatic cracks of some upper Cretaceous volcanites.

According to the data published in the Annual and Quarterly newsletters on the environment condition in Bulgaria (MEW, EEA) the ground waters along the Iskar River course are characterized by concentrations exceeding periodically the norms for the indicators NO_3-N, oxidized Mn, Fe, Mn, as per BDS 2823-83: Potable water.

3.1.4. Geological basis

In terms of tectonics the options of the Development Proposal cross several major tectonic zones: the Balkanide structural zone and the Moesian platform (plate).

The geological structure of the Danubian Plain in the corridor of the gas transfer pipeline Black Sea – the border with the Republic of Serbia includes two of the main tectonic units of Bulgaria, namely the Moesian platform and the Alpine folds system.

In terms of its morpho-structural features the Moesian platform overlaps to a large extent with the Danubian Plain as a geo-morphological area, and continues to the north beyond the Danube into the Wallachian plain. In tectonic terms it is one of the most stable and consolidated territories in the country. It consists of two structural complexes. The lower structural complex is comprised of pre-Palaeozoic and old Palaeozoic, strongly folded, disturbed rocks, which have undergone metamorphism. The upper structural complex constitutes the platform cover of thick sedimentary rocks with almost horizontal strata deposited during the Mesozoic and Neozoic. Two structures are of primary importance in the texture of the platform cover – the North Bulgarian arch elevation to the east and the Lom valley to the west. The transition between them has been formed as a monoclinal.

According to the seismic zoning of the country the routes of the Development Proposal pass through areas of varying seismicity. In the area of Varna and Shoumen districts the seismicity is of degree VII with seismicity coefficient of 0.10. Turgovishte and Veliko Turnovo districts are of seismic intensity of degree VIII and seismicity coefficient of 0.15. In the remaining part of the route up to Gramada and Dimovo the seismicity is of degree VII with seismicity coefficient of 0.10, and up to the exit point at the border with the Republic of Serbia it is of degree VI with seismicity coefficient of 0.05.

Areas, here landslide are possible to occur, are considered to be the steep slopes of heights covered with talus clayey-sandy materials, as well as the high bank of the Danube comprised of loess-type materials. In sections, where there are outcrops of rocks with a larger number of cracks and lack of soil cover, landslips may possibly occur. Areas, where the route crosses carbonate rock complexes, offer conditions for karst phenomena occurrence.
Subsidence and settling are characteristic of the areas formed of loess and loess-type clays.

3.1.5. Landscape

The Development proposal 'Transmission Gas Pipeline South Stream on the Territory of the Republic of Bulgaria' falls within the following landscape areas and sub-areas:
1. Danubian plain-rolling landscape sub-system of territory of 31,720 sq km (28.7 % of the territory of Bulgaria);

- Danubian riverine landscape area (11);

2. West Danubian landscape rolling area (12)

3. Balkan Range landscape sub-system of territory of 23,660 sq km (21.4 % of the territory of Bulgaria);

- Western Fore Balkan landscape area (111);
- Western Balkan landscape area (114);

In the analysis of the current situation landscapes are considered to be a territorial system, which constitutes the following in terms of environmental protection:

- a resource system, which possesses and reproduces resources;
- a system ensuring human life and activities;
- a system preserving the genetic fund;
- a natural laboratory and a source of beauty.

According to the landscape-typology system of the country (BDS 17.8.1.02-89) depending on the function performed the landscapes distinguished in the study belong to the following respective categories:

- according to the features of the morphological structure:
- landscapes of lowland plains – up to 200 m;
- landscapes of rolling plains – from 200 to 400 m;
- according to the landscape forming factor – anthropogenic;
- according to the phase of formation and development – homeostasis with relatively dynamic persistence of the properties and composition;
- according to the possibility of keeping anthropogenic impact under control – controllable;
- according to their functional use:
- urbanized – created in the course of construction of the population centre;
- agricultural – used for agricultural activities and formed under their impact;
- transport – formed in the course of construction and operation of transport facilities;
- protecting the ambient environment (natural) – which has the task to prevent changes in certain characteristics of the territory.

3.1.6. Land, soil, bowels of the earth. Manner of use

The varied relief, the climate, the soil-forming rock, the vegetation and the other soil-forming conditions predetermine the existence of almost all natural soil types in Bulgaria along the routes of the options of the transmission gas pipeline South Stream on the territory of the Republic of Bulgaria. The description of those natural soil types follows in parallel the classification accepted in Bulgaria and the currently applicable FAO classification.

The gas pipeline route from the starting point – the Pasha dere terminal up to the Provadia River runs through soils in the rolling (hilly) and low-mountain territories. The next section up to the area of Shoumen – Turgovishte – Popovo is on carbonate humus. In the section to the north of Veliko Turnovo and Lovech the route runs through ordinary and maroon-like luvisols.

The gas pipeline route in western direction towards the exit point at the border with the Republic of Serbia runs through luvisol phaeozems, ordinary humus, which at places contains meadow humus complexes. The next section of the route runs through luvisol phaeozems. The last section of the route to the exit point goes through resin soils and rarely through complexes of luvisol and/or maroon soils.

At the current stage of the project development it is possible to point out the specific type of the lands along the gas pipeline, including agricultural lands – arable and non-arable, forest stock –

forests and forest lands, water territories, territories in preventive planning-protection mode, transportation territories, territories in servitude mode, urbanized territories and territories in hygiene protection mode.

Within the range of the studied 2-km wide band along the routes no disturbed soils of the following categories have been found: disturbed land of technogenic sites, soils undergoing physical degradation processes (erosion, acidification, salinification, over-humidification, bogginess, etc.), soils polluted with toxic organic and non-organic substances (harmful aerosols, irrigation water, burst pollutions, etc.).

The data from the Environment Executive Agency, which has been collected through the soil monitoring system introduced in 2004 to monitor the soil condition and the diffuse soil pollution caused by agricultural practices and atmospheric deposition of pollutants, shows that only at some points in the gas pipeline area in the Danubian Plain exceeding of the content of heavy metals and metalloids, mainly Zn, Cu, As has been observed. The exceeding of the maximum admissible levels of heavy metals and metalloids are within the limits stipulated in Ordinance No. 3 of 1979 (SG No. 39/1979, latest amended and supplemented by SG No. 36/2002).

Within the range of the 2.0-km corridor of the Development Proposal neither registered household and industrial waste landfills, nor historic pollution grounds, nor registered quarries for extraction of underground wealth – construction materials – have been found.

The preparation of the EIAS should take into consideration the information from the Registers and the specialized maps pursuant to the Underground Wealth Act, submitted by the MEET by Protocol of 19.12.2011.

3.1.7. Flora and fauna

A number of natural plant species are affected in the territories, which the gas pipeline runs through. In the route section from the entry point at Galata complex (Varna) up to the Yantra River the prevailing vegetation is comprised of oak woods spotted with areas of arable land. From the Yantra River up to the Vit River the route runs only through arable land. The western part of the route also runs only through arable land, and in the vicinity of the exit point at the border with the Republic of Serbia it crosses again a territory occupied by oak woods. In the Danubian Plain the natural forest and grass vegetation has been strongly altered by human activities and has been preserved only partially. In the agricultural land annual cereal and feed crops and different types of vegetables are grown, as well as orchards and vineyards according to the climatic and soil conditions and the regional specialization and market situation.

Within the scope of the Development Proposal options and around it fauna species typical of the climatic conditions and height above sea level are found. The Danubian Plain is occupied predominantly by lowland-plain type Euro-Siberian fauna.

Regarding the open areas in the mountains it should be taken into account that when those areas are sufficiently large, the birds communities (or the synusia in smaller open areas) are comprised of species typical for spacious open territories in plains. Observations of such territories have

found that in most cases the most numerous species are sky lark (Alauda arvensis) and corn bunting (Emberiza calandra), and in various such territories also red-backed shrike (Lanius collurio); out of them the former species nests exclusively on the earth surface, while the latter two – in coppice.

Besides the above ones also nesting couples of some other surface (nesting on the earth's surface) species have been observed, namely: black-headed wagtail (Motacilla flava feldegi), partridge (Perdix perdix), (Coturnix coturnix), stonechat (Saxicola torquata), and some others, which are most typical for open grassy areas in lowland plains of the country.

In open areas in the mountains further species have been observed nesting, namely: yellow bunting (Emberiza citrinella), ortolan bunting (Emberiza hortulana), cirl bunting (Emberiza cirlus), whitethroat (Sylvia communis), lesser-whitethroat (Sylvia curruca), linnet (Acanthis cannabina), etc. Wood lark (Lullula arborea) also nests in open areas amongst woods, including in the mountains.

Concerning the forest, bushy-forest and thick bushy areas in the lowlands of the country it should be borne in mind that their presence increases the variety of the fauna species, however, this is for the account of the species typical for forests. Such species are for example the following: turtle dove (Streptopelia turtur), wood pigeon (Columba palumbus), nightjar (Caprimulgus europaeus), green woodpecker (Picus viridis), greater spotted woodpecker (Dendrocopos major), lesser spotted woodpecker (Dendrocopos minor), robin (Erithacus rubecula), nightingale (Luscinia megarhynchos), blackbird (Turdus merula), mistle thrush (Turdus viscivorus), song thrush (Turdus philomelos), blackcar (Sylvia articapilla), chiffchaff (Phylloscopus collybita), long-tailed tit (Aegithalos caudatus), great tit (Parus), blue tit (Parus caeruleus), somber tit (Parus lugubris), marsh tit (Parus palustris), nuthatch (Sitta europaea), golden oriole (Oriolus oriolus), green-fish (Carduelis chloris), chaffinch (Fringilla coelebs), jay (Garrulu glandarius), yellow-necked field mouse (Sylvaemus flavicollis), dormouse and forest dormouse (Dryomys nitedula), commondormouse (Muscardinus avellanarius), mini pig (Sus scrofa), roe deer (Carpeolus carpeolus), beech (stone) marten (Martes foina), wild cat (Felis silvestris), Aesculapian snake (Elaphe longissima), big water frog (marsh frog) (Rana ridibunda), great (common) toad (Bufo Bufo) and others, which are typical also for forests in the mountains.

In the mountains and to a smaller extent in the plains there exist also rock massifs and rocky areas, as well as areas, which include both of these two types of habitats.

The impact on the forest, bushy-forest and thick-bushy habitats (territories) in the plains is to be considered undesirable. Their existence increases the variety of fauna species because besides the species typical for open areas, the compact wood and the bushy vegetation are inhabited by species of the group characteristic of those vegetation types.

In the mountain areas crossed by the route the open grassed areas are much smaller both in size and as a percentage of the forests and forest-bushy parts. The open territories in the mountains increase the variety of species there because the open territories are inhabited also by a certain number of terrestrial species as well as terrestrial-underground and underground species.

Concerning the flora and fauna the EIAS should consider the status of the dominant and endangered species, and should include an impact assessment of the Development Proposal on the flora, fauna and the protected areas covered by the Development Proposal during the construction works and operation.

3.1.8. Material and cultural-historical heritage

The Development Proposal lies mainly on agricultural land and lands of the forestry stock outside population centres. Within the studied 2-km band the route (1,000 m on each side) of the transmission gas pipeline South Stream on the territory of the Republic of Bulgaria does not pass through industrial production zones, resorts, villa areas or tourist sites.

The consultations with the Ministry of Culture have shown that it is possible indeed the areas, which will be affected by the new construction works and the accompanying activities, to contain also archaeological sites unregistered so far, but which have the status of immovable cultural values pursuant to Article 146, paragraph 3 of the Cultural Heritage Act. The scope of the Development Proposal includes on areas, which are rich in material and cultural monuments of Bulgaria.

The EIA Statement parts, which concern the cultural and historical heritage, should be prepared by a specialist in archaeology after carrying out field studies – identifying the archaeological sites in the areas that will be affected; for this purpose the Company will request information also from the National Archaeological Institute and Museum at the BAS and the relevant regional museums.

The EIA Report and the project documentation should be submitted for coordination review pursuant to the provisions of Article 84 of the Cultural Heritage Act.

4. PRELIMINARY ENVIRONMENTAL IMPACT ASSESSMENT. DEFINING OF MAJOR INEVITABLE AND LASTING IMPACT

4.1 During construction

4.1.1 Ambient air

The construction impact on the ambient air may assessed in preliminary terms as inconsiderable, temporary (only for the period of construction works), direct and indirect, without cumulative effect, of local effect only in the area of the construction band (ground), with a possibility for recovery.

Recommendations: The EIA Statement should suggest adequate measures for limiting the project impact on the ambient air in the course of construction works.

4.1.2 Surface and ground water

In the course of construction of the gas pipeline sites inconsiderable water quantities will be used for preparation of concrete mixtures and building mortars, moistening the temporary roads and sites.

The routes of the Development Proposal options cross a large number of water flows (surface water basins). This causes a potential possibility of direct impact on the surface water as a result of the construction works; such an impact may include temporary disturbance of the runoff, increased muddiness of the water flows, pollution with oil products due to the concentration of machinery near the crossings and pollution with construction waste.

All river flows within the scope of the Development Proposal have been declared to be sensitive areas, and some of them are also protected areas under the NATURA 2000 network. The crossing of water sites is subject of authorization pursuant to the Water Act and is classified as water site use. It will be carried out in compliance with the limitations stipulates in the authorizations issued pursuant to Article 46 (1), item 1 of the Water Act – construction of new, reconstruction or modernization of existing systems and facilities for: b) linear infrastructure, which crosses water sites – aqueducts, bridges, transfer networks and conduits, by the Water Management Basin Directorates – Varna, Pleven for each water site separately.

The site construction may exert an impact on the regime and status of surface water. The direct impact on water flows is concentrated in the areas, where they are crossed by the gas pipeline. This impact is local on the spot, short-term during the period of construction, with a possibility of recovery, with no cumulative effect. Its intensity may potentially vary from inconsiderable to considerable. The indirect impact will be of a limited nature in terms of time and territorial scope along the flow of the water objects.

The largest share of construction works for the passage of water sites belongs to earth-moving work (excavation, embankment) for laying the pipeline at the crossing point. Since these will disturb temporarily the existing river bed and the flooded terraces within the construction band of 45 m, there will be a burst increase of the quantity of solid runoff after the range. In order to mitigate the intensity of this impact the passage should be implemented when the river water level is at its minimum. Due to the low speed of the water, when the runoff is minimal, conditions occur for sedimentation of the inwash immediately after the range of crossing. This process will be discontinued after the transiting pipeline is laid out and the river course integrity and protection embankments are recovered.

Previous experience has shown that shallow ground water accumulated in the gravel deposits in river beds is in direct hydraulic relation with water flows. This predetermines the immediate impact of water-rests in the river and on the ground water level. The estimate is for seasonal fluctuations of the ground water level between 1.5 – 5.0 m. When the construction excavations are at a depth below the ground water elevation, water inflow is expected. The latter requires the excavations to be fortified. Ground inflow in the construction excavations beyond the range of crossing the rivers cannot be expected because the gas pipeline is to be laid at a depth of 2.5 – 3.0 m.

At the same time the concentration of construction machinery and equipment within the passage constitutes a potential risk of polluting the river water with fuels and lubricants. Therefore it should not be allowed to fuel the construction machinery with fuels or lubricants within the passage range. Prior to starting the construction works the technical good working order of all machines in the working unit should be checked and established.

It should be noted that the surface water regime may have a strong negative impact on the sites of the Development Proposal during the high-water period. Therefore the relevant safety measures in the course of construction should be undertaken.

No direct use of ground water is planned for the gas pipeline construction.

Passage of the gas pipeline through the first, second and third band of the sanitary protection zones around water sources and household and potable water supply facilities, as well as around mineral water springs used for treatment, prevention, potable and bathing purposes, is forbidden in compliance with Annexes No. 1 and No. 2 to Article 10 (1) of Ordinance No. 3 of 16.10.2000 on the conditions and order of exploration, design, approval and operation of sanitary protection zones around water sources and household and potable water supply facilities, as well as around mineral water springs used for treatment, prevention, potable and bathing purposes (SG No. 88/2000).

The gas pipeline construction does not affect the ground water regime. The condition of shallow ground water may possibly be affected by direct impact such as pollution with oil products from the construction machinery and with construction waste, whereby the pollution will be concentrated in the vicinity of excavations for laying the gas pipeline and making the foundation of its facilities. This impact is local on the spot, short-term for the construction period, with a possibility for recovery, with no cumulative effect. Its intensity may potentially vary from inconsiderable to considerable.

Recommendations: The EIA Statement should suggest adequate measures for limiting the project impact on the surface and ground water in the course of construction works.

4.1.3 Geological basis

The construction works for the gas pipeline will include a considerable volume of earth-moving work (excavation, embankment) of linear nature in order to make the trench for laying the pipeline, the trench average dimensions being 2.5 to 3.0 m depth, 2.0 m bottom width, 0.5 m slopes, and well as making a berm for dumping the overburden from the excavation. The earth-moving works for the foundation of the surface grounds and linear facilities are inconsiderable in volume and of small depth. The construction is not directly associated with extraction and does not change the relief. On the other hand it is connected with use of underground natural wealth, the extraction of which by other legal persons is classified as indirect impact. The released emissions, waste water, waste, noise and vibrations are inconsiderable. The construction impact is inconsiderable regarding the geological basis. It is short-term for the duration of the construction works, local on the spot within the construction

band, with possibility for recovery, with no cumulative effect. Reclamation of the construction band after the completion of the gas pipeline construction is planned.

Recommendation: It is obligatory to take into consideration the fact that the geological basis may exert considerable impact on the gas pipeline condition and its facilities by means of seismic activity, landslide processes, landslips, erosion and other physical-geological phenomena in the course of all the three phases – construction, operation and decommissioning. Therefore, when selecting the final route detailed account should be taken of the geological hazards, and whenever possible they should be avoided; further on, in the course of design and construction works the required technical measures for the site safety should be taken. The EIAS should suggest adequate measures for limiting the project impact on the geological basis during the construction works.

4.1.4 Soils

For the construction of the transmission gas pipeline South Stream on the territory of the Republic of Bulgaria a construction band of 45 m width with reclamation of agricultural land and of 32 m width without reclamation of agricultural land is foreseen. With a view to carrying out the construction a change will be made in the assigned use of the agricultural land and the forestry fund land with a view to the project needs; this change will be based on developed and approved detailed spatial-development plans for each land-use area along the route. A large volume of earth-moving works within the soil profile, which is why these works will exert the most significant direct physical impact on the soil compared to any other impact. The soils within the areas that are to be expropriated will be transformed permanently into technogenic ones (disturbed by anthropogenic activity). In the course of preparation and construction there should be mandatory compliance with the ***Agricultural Land Ownership and Use Act, the Implementing Regulations of the Agricultural Land Ownership and Use Act, the Soils Act and the Responsibility for Prevention and Remedy of Environmental Damages Act***.

During the construction preparation, after the construction band is cleared from bushes and trees, the humus shall be removed from a strip of 13 m width (for a pipeline of 1,400 mm diameter), which is necessary for excavating a trench to lay the gas pipeline, the trench dimensions being 2.5 to 3.0 m depth, 2.0 m bottom width, 0.5 m slopes, and well as making a berm for dumping the overburden from the excavation. The humus removed shall be temporarily dumped within the outline of the construction band. After a certain section of the gas pipeline is laid out, it will be backfilled and after the compactness and strength tests in compliance with the requirements of the *Agricultural Land Preservation Act and Ordinance No. 26 of 02.10.1996 on the reclamation of disturbed terrains, improvement of low-production land, removal and making use of the humus layer of the settlement environment (SG No. 89/1996; amended and supplemented by SG No. 30/2002) technical and biological reclamation according to an approved design shall be implemented.*

The reclamation of forest land shall be carried out in compliance with the Forests Act and its Implementing Regulations. In case of biological reclamation the restrictions on the territory aimed at the gas pipeline preventive protection shall be complied with. The soils in the grounds of the compressor stations and the other linear facilities shall be permanently transferred into

soils disturbed by anthropogenic activities. The latter type of disturbed soils is characterized with normal soil profile, but their natural soil-formation process has been interrupted. The emissions, dust and vibrations released in the course of earth-moving works by the construction machinery exert an inconsiderable impact on the soil. The residual earth mass classified as waste with code 20.02.2 poses a problem. A solution should be found for making use of it without disturbing the soil fertility of the surrounding land.

During the construction a spillage of fuels and oils from the construction machinery may occur in case of breakdowns, accidents or during fuelling; such spillage will cause hydrocarbon pollution of the local part of the construction band. Its harmful impact can be reduced by means of compliance with the technical requirements and control for prevention of breakdowns and implementation of recovery works in case a breakdown occurs. The impact on the soils exerted by the construction works may be assessed as considerable, local on the spot (within the construction band), short-term during the construction period, recoverable, with no cumulative effect.
Recommendations: The EIAS should take into account the recommendations given and should suggest adequate measures for limiting the impact on soil during the construction.

4.1.5 Flora and fauna

The construction of the development proposal site will permanently destroy annual and perennial agricultural plants within the boundaries of the construction band, which crosses arable land. On non-arable land grass, bushes and trees will be destroyed. In sections occupied by forests natural bush and trees vegetation in the cuttings will be destroyed. At this stage it is not possible to give a quantitative estimate of the expected damages due to loss of agricultural produce and trees on the basis of the potential productivity rates (bonitet). This will be possible at the future design stages, and measures should be undertaken for reducing such damages and losses. The intended reclamation will recover partially the plant species outside the area of the expropriated lands.

The impact on the fauna in the area, which the gas pipeline will cross, depends on the geometric characteristics of the site, namely the size of the affected area, its width and length affected by the construction works, as well as the nature of impacts at the different stages of the construction and to what extent these impacts are manifested. Specific features of the project are:

- Large length and surface area of the affected section;
- Small width.

The expected impacts from the gas pipeline construction and operation are only in case of breakdowns and depend mainly on the size of the affected (disturbed, altered, polluted with non-toxic materials, etc.) area.

The nature of the impact depends on which part of a certain territory will be affected and on the nature of the effect – disturbance or complete destruction of the soil surface, alteration in the vegetation cover, pollution with certain pollutants of the soil surface, water and/or air, hence of the flora and fauna.

In the areas, where the gas pipeline will be built, the soil surface and the soil structure, as well as the flora within the range of the construction works will be affected. Impact will be exerted on the habitats of the animal species living in the respective areas – small and slowly moving species and especially those living under the earth surface in the affected areas (such as small rodents, common mole, species of lizards, etc.). The excavation works will reach a depth of approximately 2.5 – 3.0 m depending on the pipes diameter.

In the servitude zone after the gas pipeline construction no growth of varies species of trees or bushes will be allowed, and those already existing there will be removed in advance. Growing of annual crops will only be allowed. A complete technical and biological reclamation of the affected terrains is planned.

Impacts and changes in the fauna in qualitative terms

The impacts and changes in the fauna may occur mainly in the affected forest and bushy-forest terrains, and mostly in thick-bush terrains. These impacts and changes will be manifested in the areas, which after the gas pipeline construction are turned into opened areas, and will be in terms of the occurrence and settling (including for reproduction) of individuals (couples and/or colonies) of species typical for open areas. In particular this will be the case with Chordata, of Vertebrata subtype, and also impact will occur on a certain number of amphibians, reptiles, birds and mammals, as well as invertebrates inhabiting this type of territories. Actually the change in the species composition will be substantial only in the affected forest, bush-forest and thick-bush areas, while in the open areas no substantial changes are to be expected, because their open nature will be maintained.

Impacts on the fauna and potential changes in quantitative terms

The impact of the gas pipeline is not expected to be considerable, because the small forest, bush-forest and thick-bush areas occur much less often than the large ones. The potential decrease of the territory of the abovementioned types of habitats and the narrowing of the populations of the species inhabiting them will be of importance actually only for the species that habitually inhabit such territories.

Cumulative effect

A minimal effect is to be expected in terms of taking space from the affected terrains of forest, bush-forest and thick-bush areas in the areas, where the gas pipeline will run, additionally to the space already taken by other sites. Concerning the fauna in the regions with such affected territories the outcome will be inconsiderable decrease in the number of the individuals inhabiting them, and this decrease will be most strong with the small-size species.

Due to the fact that the gas pipeline will be buried underground and the embanked earth mass will be levelled, no fragmentation of fauna species in the respective territories is to be expected.

Recommendation: When determining the final position of the route tolerance should be exercised towards high and unreachable rock massifs, and especially those suitable for nesting in them of rare and at risk of extinction bird species – owl (Bubo bubo), peregrine falcon (Falco peregrinus) , long-legged buzzard (Buteo rufinus), golden eagle (Acquila chrisaetos), black stork (Ciconia nigra), etc.

In mountains the route passes mostly through the lower parts, which is to be assessed as the correct option in terms of transportation of materials for the construction and accessibility for operation. From nature preservation point of view this is the more favourable option, because there is no probability of affecting any high-mountain parts or animal species inhabiting territories at such heights above sea level – high-mountain species and species of the so-called paleo-xero-mountain type, which inhabit limited areals and are of small number.

Crossing surface water sites in the course of construction will result in temporary disturbance of the migration possibility for ichtyofauna from the feeding places to the reproduction places. Therefore the construction works in the specified passage sections shall be carried out beyond the reproduction periods as stipulated by relevant orders, approximately from 15 April until 30 May. It is mandatory to ensure the flow-through of the environmental water quantities. Making the passages by means of horizontal boreholes is not expected to have an impact on the ichtyofauna.

Regarding the impact of the pipeline on the fauna during the construction and operation the following can be noted: The installation is a strip of long length, but of small width. Due to these features the installation will not be able to cause irrecoverable large damages in the relevant areas and territories, which it will be crossing, because actually it will not destruct a considerable surface area of habitats of various animal species.

As stated above, the most unfavourable situations will be the cases of affecting territories or types of habitats of small surface area. Such situations are least desirable at places, where the gas pipeline passes through small types of habitats in protected areas.

The impact from the construction on the fauna is local on the spot, in most cases with a possibility for recovery. The changes in the fauna may accordingly cause temporary or permanent changes also in the habitats of the natural animal species.

The band, within which the optional routes of the gas pipeline will be selected, is close to, borders or crosses protected areas under NATURA 2000.

Recommendations: In compliance with the requirements of the Biological Diversity Act alongside with the drawing out of an EIA Statement for the Development Proposal, an assessment of the project compliance with the objective and tasks for preservation of the protected areas and sites will also be made and it should obligatory include mitigation measures intended to prevent, reduce and potentially remedy the unfavourable effects from implementing the project in a protected area, as well as for determining the extent of impact on the subject of preservation in protected areas resulting from the carrying out of the suggested mitigation measures.

After identifying the location of the route, the natural and cultivated vegetation, as well as the fauna, need to be studied in detail as a stocktaking exercise and in order to reduce the Development Proposal impact on them. In view to ensuring reliability of the information, the stocktaking should obligatory be held in the periods May-June and August-October.

4.1.6 Landscape

The construction of the site of the Development Proposal will permanently change the typology of the landscape. According to the landscape types system of the country (BDS 17.8.1.02-89) on the basis of the function performed the landscapes distinguished in the study will be transformed into a technogenic landscape – formed in the process of construction and operation of the transfer pipeline.

Recommendation: The EIA Statement should suggest adequate measures for limiting the impact of the project on the landscape during the construction works.

4.1.7 Material and cultural heritage

The route of the Development Proposal within the studied 2-km band passes mostly outside population centres, resorts, villa zones and tourist sites, and the largest part of it falls within the corridors of the existing and designed main and transiting gas pipelines on the territory of Bulgaria. Therefore it has been clarified that the route will not affect any material wealth related to economic activities and recreation of people. When the EIA is developed the study should focus on the sections located outside the corridors already studied.

Nevertheless, the gas pipeline construction creates a potential possibility for compromising, threatening the integrity or destruction only of archaeological monuments of culture.

Recommendation: The terms of reference for EIA of the Development Proposal has to include the requirement that the EIA Statement part about the cultural and historical heritage should be made after a complete field review of all route options of the gas pipeline by archaeological teams, which are to establish on the spot exactly which of the known so far or newly discovered archaeological monuments of culture will be affected by the new construction. During this field review the respective monuments will be localized by their precise geographic coordinates.

The implementation of the Development Proposal is material wealth with positive impact on all aspects of human life.

4.2 During operation

4.2.1 Ambient air

The impact on the ambient air during the operation of the sites of the Development Proposal may be assessed as inconsiderable, long-term, direct and indirect, with no cumulative effect, with no

cumulative effect, with local action only in the area of the compressor stations, with possibility for recovery.

Recommendations: The EIA Statement should suggest adequate measures according to the above-mentioned findings for limiting the impact on the ambient air in the course of operation.

4.2.2 Surface and ground water

The operation of the Development Proposal facilities in compliance with their technological processes will not affect the surface and ground water provided that the waste water and rain water from the compressor stations sites are not discharged directly into a surface water collector or the bowels of the earth.

The impact on the water in the course of operation of the Development Proposal facilities may be assessed as inconsiderable, short-term, direct and indirect, with no cumulative effect, with local action only in the area of the compressor stations, with possibility for recovery.

Recommendation: The EIA Statement should suggest adequate measures for limiting the impact on the surface and ground water in the course of operation.

4.2.3 Geological basis

The impact on the geological basis in the course of operation of the site is inconsiderable, local on the spot, with possibility for recovery, with no cumulative effect.

4.2.4 Soils

The impact on the soil in the course of operation of the site is considerable, local on the spot, with possibility for recovery, with no cumulative effect.

Recommendation: The EIA Statement should suggest adequate measures for limiting the impact on the soils in the course of operation.

4.2.5 Flora and fauna

The impact on the flora in the course of operation of the transiting gas pipeline and the sites of its facilities is inconsiderable, permanent, but local on the spot. The impact of the restricted regime for land use on the fauna is inconsiderable, temporary, local and with no cumulative effect.

Recommendation: The EIA Statement and the Assessment of Compatibility of plans, programmes, projects and development proposals with the subject and the objectives of the protected areas should suggest adequate measures for limiting the impact on the flora and fauna in the course of operation.

4.2.6 Landscape

The operation of the South Stream Gas Pipeline on the Territory of the Republic of Bulgaria will not exert an impact on the landscape stemming from the released emissions, waste water and waste in inconsiderable quantities.

4.2.7 Material and cultural heritage

The operation of the gas pipeline will not affect the material and cultural heritage in the area, where it is implemented. As stated above, the Development Proposal itself is material wealth and will assist for the development of Bulgaria and Europe.

4.3 Upon termination of operation

Upon final decommissioning of the gas pipeline the nature of the impact is similar and commensurate with that during construction, because the main activities, emissions and waste are of the same type.

Recommendations: The EIA Statement should suggest adequate measures for limiting the impact of this phase on the environment components.

Depending on the future land use of the vacated terrains suitable reclamation should be carried out for changing the anthropogenic soils and for recovery of the soil-formation process. This process will result in recovery of the habitats and the fauna diversity.

5. CUMULATIVE IMPACT

In the course of drawing up the report on the EIA the possible cumulative impact of the construction and the operation of the gas pipeline with other investment proposals located in the vicinity of the route should be taken into consideration.

6. PLAN ON IMPLEMENTATION OF MEASURES FOR PREVENTION, REDUCTION OR COMPENSATION OF MAJOR INEVITABLE AND LASTING IMPACT

When preparing the EIAS **measures** should be stipulated for prevention and reduction of the considerable harmful impacts on the condition of the surface and ground water, water sources or sanitary protection zones at each stage of implementation of the Development Proposal, including during its operation, whereby special attention should be attached to the gas pipeline route passing through terrains, where the ground water level is almost at the terrain level (e.g. river terraces). The above-mentioned measures should: first, take into consideration the objectives of environmental protection of the water bodies and the zones for their protection, which are laid down in the approved River Basins Management Plans for the Danube and Black Sea regions; second, be coordinated with the relevant directorates. The identifying of the measures for protection of ground water against pollution should take into account the prohibitions stipulated in Article 118a, paragraph 1, items 1, 2, 3 and 4 of the Water Act, as well as the prohibitions and limitations for carrying out activities in existing or future sanitary protection zones around water intake facilities for household and potable water supply.

In compliance with the recommendation by the Regional Environment Protection and Water Inspectorate – Vratsa the EIAS should be accompanied by a separate proposal – a plan for implementation of measures for prevention or reduction of major harmful impacts, in order to ensure compliance with the environmental laws and by-laws; the above-mentioned plan should be made out as a table following the form in Annex No. 2a to Article 14, paragraph 1, item 5 of the Ordinance on EIA.

7. HEALTH AND HYGIENE

7.1 Identifying potentially affected population and territories

This section identifies potentially affected territories and population in the context of existing legal requirements and expected impact during the implementation of the Development Proposal.

In respect of the South Stream gas pipeline on the territory of the Republic of Bulgaria the requirements of the effective legal framework on health protection of the population will be observed, as the sites of compressor stations will be located outside the settlements, at a distance exceeding 1000 m.

Emissions released during construction and operation, any waste and harmful physical factors will be within norms.

Expert projections are that in case of normal operation of the site the toxicochemical factor (NOx, CO, organic pollutants, etc.) and the physical factor (noise, potential vibrations) will impact only the territory of the sites of the compressor stations and will not have any practical effects on the population in the nearby settlements.

7.2 Identifying of the risk factors of the natural and working environment on human health

Based on data about the technology of the Development Proposal it is established that the major harmful physical factor is noise. In the natural and working environment no electromagnetic fields, laser and other optic irradiation and no ionizing radiation will be generated/spread. The compressors on the sites of the two compressor stations are the source of noise.

As regards the noise factor, the Company will meet its obligations in accordance with Ordinance No. 2 on the protection of workers against risks related to noise exposure during work (SG No. 32/2003), and the maximum levels of noise in the working environment will not exceed 85 dB/A, and, where necessary, the required organizational measures will be taken to reduce the harmful impact of that factor (appropriate regime of labour and rest of workers, personal protection devices, etc.).

If there are sources of vibrations in the working environment, the Company will ensure compliance with the legal requirements for this factor as well - BDS 12.1.012-80 for general production vibrations and BDS 16013-84 for local production vibrations.

Risk factors harming human health shall be defined for the population in the nearest settlements and for the people working on the site, on the one hand, and for the period of construction of the project and during its operation, on the other hand.

According to the instructions given by the Ministry of Health, the EIAS shall describe different risk factors in terms of their impact on human health and in comparison with the effective hygiene norms and requirements both for the working environment and for the affected residential and/or other sites and territories subject to health protection. Defining the most significant risk factors for the affected population and the persons working on the site.

The EIAS shall make assessment of the possibilities for combined, complex, cumulative and remote impact of risk factors on the people working on the site and the adversely affected population.

7.2.1 During construction

During the construction of the project the risks for different working places will depend on the type of implemented activities (transportation, excavation, construction, erection, welding, etc.). Basically risks involve the possibility for labour accidents and traumas and the impact of specific factors relating to the type of the specifically performed activity:

- dust;
- noise;
- vibrations;
- adverse micro climate during open-air work;
- welding aerosols;
- exhaust gases from construction and transportation machines.

At this stage of the project it is difficult to predict the exact number of risky working places and the specific risk for each of these places. Implementation of the project by qualified staff and strict observance of the legal requirements for health and safety at work will minimize the possibility for an adverse impact on the health of the staff.

The expert projection is that these adverse factors will spread only on the sites of the project and will affect only the persons engaged in the construction of the project but will not affect the population from the nearest residential areas subject to health protection.

7.2.2 During operation

The major risk factors during the period of normal operation of the gas pipeline are:

- emissions of gaseous toxic substances (natural gas, CO, NOx, etc.);
- dust emissions;
- other harmful substances and/or waste;
- noise from production facilities;
- possible technological vibrations.

The possibilities for the stated risk factors to occur are for the staff working on the site, as the impact of these factors is limited to the sites of the compressor stations. Since natural gas is highly flammable and explosible, emergency situations are possible during the operation of the project (fires, explosion, natural disasters), causing emissions of significant quantities of toxic substances – products from incomplete

burning, soot, etc., as well as the explosion wave itself. Such situations will be of a very low relative frequency and with significant to high relative hazard, depending on a number of factors (impact nature and range, measures taken, weather conditions, etc.).

7.3 Estimate of the potential impact on human health

The potential impact of the identified harmful factors on human health (those from the nearest residential areas and those working in the project) include the typical effects of such factors on human health, on the one hand, and on the expected levels and duration of the impact of these factors, on the other hand.

The identified harmful factors during the construction of the project will have a strictly local effect and will last for a relatively short period of time and therefore they will not be of practical meaning to the population in the nearest settlements.

The main production hazard during the operation of the project, i.e. the natural gas, will be emitted periodically, with a controlled release in the atmosphere. In this situation, the limit value for the gas (the maximum permissible concentration respectively) is not expected to be exceeded in accordance with Ordinance No. 13 /2004 on the protection of workers from risks, related to exposure to chemical agents upon work. Thanks to the considerable distance of the nearest residential areas from the site of the project, concentrations of natural gas in these areas are expected to have no practical bearing on the population. On the other hand, as was stated, methane is not defined as a polluter in Ordinance No. 14 on the norms for maximum admissible concentrations of harmful substances in the air in population centres of the Ministry of Health and the Ministry of Environment and Water of 1997 and no hygiene norm for maximum permissible concentration in the air of settlements exists for it.

If the legally permissible levels of noise in the working environment are observed, given the significant distance of the gas pipeline and the facilities sites from the nearest residential areas (sites subject to health protection), no breach of the prescribed noise levels is expected, in accordance with Ordinance No. 6 on the noise indicators in the environment, indicating the level of discomfort during different parts of the day and night, limit values of noise indicators in the environment, methods of assessment of the noise indicators and the harmful impact of noise on the health of the population (SG No. 58/2006).

Therefore during the operation of the gas pipeline no adverse impact of the harmful factors is expected on the health of the population from the nearest residential areas.

Only in case of emergency (a fire or an explosion of natural gas) various toxic effects are possible on the persons in the place of the accident or in immediate proximity to it. The probability of accident is assessed as very low. Potential damages will depend on the nature and range of the impact, measures taken for limiting and elimination of the accident, weather conditions, etc.

According to the instructions given by the Ministry of Health, based on the estimate made in the EIAS, the number of the potentially affected population and territories, zones and/or objects with a specific hygiene and safety regime and/or subject to health protection shall be determined in accordance with the territorial scope of the environmental impact. Also, the EIAS shall pay special attention to the expected new risk factors after the construction of the new facilities.

7.4 Assessment of the potential for combined, complex, cumulative and remote impact

Based on the available information it may be assumed that during the construction and operation of the Development Proposal no factors with combined, complex, cumulative and remote impact will exist.

The combined effect of nitric and sulphur oxides in exhaust gases from construction and transportation machines should not be taken into account, because carbon dioxide will be present simultaneously. Pursuant to item 2 of Annex No. 2 to Art. 3 (1) of Ordinance No. 14 of 23.09.1997 on the norms for the maximum admissible concentrations of harmful substances in the air of population centres of the Ministry of Health and the Ministry of Environment and Water, on simultaneous identification in the ambient air of carbon oxide, nitric dioxide and sulphur dioxide, they retain their maximum permissible concentrations each one separately, i.e. these substances do not have a combined impact.

To a certain extent, a cumulative impact may be expected from the production noise as a chronic stress factor, which will affect only the staff on the site. This factor may have a cumulative impact only in particular circumstances – above the norm levels, improper regime of labour and rest, lack of relevant personal protection outfit, etc.

7.5 Estimate of the impact of the Development Proposal on the quality of life in the municipalities, involved in the project (living standards, social conditions)

7.5.1 Social impact

The South Stream gas pipeline for the construction of a new gas transiting system from Russia to Europe through the Black Sea aquatic area on the territory of Bulgaria is planned to pass through the territory of 38 municipalities. Given the scale of the project, it is expected that it will have impact on the infrastructure of the country, on the environment and the communities along its route. Therefore it is important, during the design of the project, to take account not only of the impact on the environment, but also of the social and economic impact on them.

7.5.2 Social and economic importance of the gas pipeline

For the region

Implementation of the South Stream gas pipeline on the territory of the Republic of Bulgaria is of great political and economic importance for the entire region, basically contributing to its higher sustainability.

The project will be an important step in seeking opportunities for diversification of energy sources and ensuring more guarantees for energy security and prosperity of the EU Member States and their neighbours. The new gas pipeline will meet most modern ecological and technological requirements and will increase significantly the safety of energy supply on the European continent.

For Bulgaria

The South Stream gas pipeline will strengthen the role of Bulgaria as a transit and distribution centre in Europe. The pipeline is expected to increase the transit of natural gas through the country's territory by 16

billion cub. m. in the first year and by 63 billion in the longer-term.

Based on expert estimates, after the implementation of the project, the country may receive additional revenues of USD 200 to USD 400 million from transit fees per annum.

7.5.3 Social aspects, expected to be influenced by the gas pipeline

The implementation of the project will promote more intensive development of gasification and will provide many benefits to the population in the regions through which the gas pipeline passes.

7.5.4 Opening of new jobs

During the process of study, design, construction and operation of the gas pipeline many contractor and sub-contractor companies will be engaged. This will contribute to the opening of new jobs, directly and indirectly, without the need of closing other jobs.

The operation of the gas pipeline will create sustainable jobs for the performance of the following activities:

- administration;
- monitoring and management of the pipeline system;
- support management centre;
- teams for operation and maintenance of the total route; maintenance of compressor stations;
- exercise of control;
- technical works;
- ecological activities.

Many of these activities require 24-hour regime – three-shift working hours. Based on expert estimates, not less than 450 new jobs are to be created. They will contribute to unemployment decline mainly among highly qualified staff in several settlements – the greatest number of jobs is expected to be created in the regions where the compressor stations will be built.

7.5.5 Improvement of the investment climate in the regions

Mainly for ecological and technical reasons the route of the gas pipeline follows as much as possible the routes of the existing gas pipelines of the national gas transfer network. At the same time, the South Stream gas pipeline passes through municipalities which do not have access to gas transfer and gas distribution infrastructure.

The provision of an ecological and efficient energy source creates opportunities for development and modernization of existing enterprises and emergence of new sectors, dependent on access to the gas network, in the regions through which the gas pipeline passes. On the other hand, this will boost development of the local small businesses, making settlements more attractive and increasing the number of the population in child, youth and adult age.

The project will help increase the investment value and attractiveness of the regions, will create conditions for tourism development and will open opportunities for restructuring and improvement of municipal budgets.

7.5.6 Increasing the energy efficiency of the municipalities

By boosting the development of the country's gasification, the South Stream gas pipeline will have a major input to the energy efficiency and reduction of the energy and carbon intensity of the economy, which are key priorities in Bulgaria's economic and energy policies.

In the context of the requirements of the European Union regarding the energy policy of Member States, the opportunity for more extensive gas consumption will help reduce the costs for energy in the industrial, public administration, trade and household sectors.

Replacement of a number of existing energy facilities using liquid and solid fuels by gas-fuelled facilities in practice means rollover of modern facilities, compliant to the European requirements. This will sharply reduce energy consumption in particular sectors in which energy resources are used inefficiently.

7.5.7. Improving the quality of life in the municipalities

Better air quality, increased leisure time by reducing the time for heating organisation etc., low-emission public transport, lower unemployment - all this will create better living conditions and more comfortable working conditions.

7.5.8 Promotion of the introduction of innovations

During the construction and operation of the gas pipeline new technologies will be implemented and best practices will be introduced in the techniques and technologies in pipeline construction, logistics, information systems for monitoring and control of the identified key aspects of the activities.

Use of new techniques, technologies and best existing techniques will be combined with training of the managerial and operational staff engaged in the construction and operation of the gas pipeline and attaching facilities; training and improving the qualification of local labour resources. This will contribute to acquiring new knowledge and skills in the field of pipeline construction and operation and spread of such specific knowledge across the country.

7.5.9 Social and economic aspect

The social and economic aspect of the impact assessment should show the influence of the project on increasing the standard of living of the population and on the efficiency of the public production.

7.5.10 Medical and social aspect

The medical and social aspect refers to the project's impact on the physical development of the population, including its impact on diseases, improved conditions of labour and rest, preserved aesthetic values of nature and anthropogenic landscape, protected areas, etc.

7.6 Estimate of the health risk

During the construction of the gas pipeline and in the period of its normal operation no adverse effects on the living conditions and health status of the population in the nearest settlements is expected. The level of risk of the different identified harmful factors is negligibly small.

In case of accident with natural gas no adverse effects on the living conditions and health status of the population in the nearest settlements is expected. The risk is negligibly small.

Around the compressor stations a hygiene protection zone will be set up, covering the territory between the sources emitting harmful substances in the environment (objects, facilities, systems) and the borders of the residential zone of settlements, resorts, enterprises and storage bases of the food industry. Construction of residential buildings, hotels, hostels, child, school and health institutions servicing the population is forbidden.

To ensure occupational health and safety to the people working in the sites of the Development Proposal the requirements of the Health and Safety at Work Act and its by-laws will be taken into account in the design stage.

During the construction and operation of the transiting gas pipeline and the facilities thereof the requirements for technical safety at work for different types of labour will be complied with. Commissioning of the project facilities shall be subject to proved compliance with the requirements for provision of occupational health and safety.

During the operation, the following will mandatorily be provided: physiological organisation of labour, regime of work and rest, training and induction of workers, placing relevant danger warning signs, and providing the required protective outfit at work and labour medical services to working staff.

In case of accident with natural gas an adverse impact is expected for the health of the persons in immediate proximity to the place of the accident. The level of risk is medium to high (significant).
The EIAS shall make assessment of the health risk, including assessment of the health risk during accidents, and health protection and risk management measures shall be proposed.

8. IMPACT OF THE DEVELOPMENT PROPOSAL ON PROTECTED TERRITORIES AND PROTECTED AREAS. ASSESSMENT OF THE LEVEL OF IMPACT

8.1. Potential impact on protected territories

According to the conclusion of the Ministry of Environment and Water substantiated in paragraph two of the Letter, outgoing ref. No. OVOS-1144 /06.10.2011 of the Ministry of Environment and Water, the route of the gas pipeline, including servicing sites, the Development Proposal **does not affect directly protected territories** within the meaning of the Protected Territories Act. Several protected territories are at a distance of 100-150 m from the elements of the Development Proposal. These shall be identified in the EIAS and specified in Annex thereto and their regime will be taken into account in the construction of the gas pipeline.

As regards protected territories, the EIAS shall deal with the state of dominant and endangered species and assess the impact of the Development Proposal on the flora, fauna and protected territories of the Development Proposal during construction and operation.

8.2 Potential impact on protected areas

Based on the official information received from the Ministry of Environment and Water the route of the pipeline passes through the following protected areas of the Natura 2000 network:

8.2.1. Protected areas for natural habitats and wide flora and fauna

The list of these areas is contained in item 1 of Annex No. 3 to the terms of reference, drawn up in accordance with the instructions of the Ministry of Environment and Water, given in letter No. OVOS-1144/ 06.10.2011.

As a result of the estimate made by the Ministry of Environment and Water of the likely level of negative impact of the Development Proposal on these areas, contained in paragraph two of the Letter. outgoing ref. No. OVOS-1144/06.10.2011 of the Ministry of Environment and Water, a conclusion is drawn that the Development Proposal is likely to have a significant impact on the natural habitats and populations of species included in item 1 of Annex No. 3 to the terms of reference as protected areas. Therefore, in accordance with the national and European legislation, in addition to the EIAS a report on assessment of the level of the impact (ALIR) of the Development Proposal will be drawn up, which will assess the potential impact of the project on the specified protected areas. The structure of the ALIR will comply with the requirements of Article 23 (2) of the Ordinance on Conformity Assessment and the criteria referred to in Art. 22 of the Ordinance on Conformity Assessment will be complied with and quantitative estimates will be used in line with Article 32 (2) of the Bio Diversity Act of expected losses or deterioration of the state of habitats (area) and species (size and density of populations) subject to protection in the protected areas in terms of representation of each habitat/species in a given protected area and in terms of the network of protected areas. Based on the identified impacts in the ALIR, specific workable and controllable measures mitigating the negative impact and aimed at prevention, reduction and elimination of the harmful impact during the implementation of the Development Proposal will be proposed and assessed. Also, option solutions within the meaning of § 3, item 7 of the Supplementary Provisions of the Ordinance on the Conformity Assessment for the implementation of the Development Proposal will be examined and assessed.

The report on assessment of the level of the impact (ALIR) will be prepared by experts meeting the requirements of Article 9 (1) of the Ordinance on Conformity Assessment.

8.2.2 Protected areas for wild birds

The list of these areas is included in item 2 of Annex No. 3 to the terms of reference, drawn up in accordance with the instructions of the Ministry of Environment and Water, given in the letter No. OVOS-1144/ 06.10.2011.

Based on the inspection made by the Ministry of Environment and Water pursuant to Article 39 (2) of the Ordinance on Conformity Assessment, the results of which are included in paragraph two of the Letter,

outgoing ref. No. OVOS-1144/06.10.2011 of the Ministry of Environment and Water, the Development Proposal is **permissible** in terms of the regimes of protected areas for wild bird protection.

9 ENVIRONMENTAL IMPACT ASSESSMENT IN A TRANSBOUNDARY CONTEXT

The Development Proposal for the South Stream Gas Pipeline on the territory of the Republic of Bulgaria is included in Annex I, item 8 of ***the Convention on Environmental Impact Assessment in a Transboundary Context (SG No. 86/1 October 1999, amended by SG No. 89/12 October 1999)*** – Pipelines for transiting of oil and gas with large diameters, requiring EIA in a transboundary context.

The gas pipeline route on the territory of the Republic of Bulgaria has a length of 538 km and is located entirely within the territory of the Republic of Bulgaria.

The distance of the projected route from the river Danube (the border between the Republic of Bulgaria and Romania) according to sectors is the following:

- Varna - Provadia sector and in parallel to the existing gas pipeline from km 0+000 to 59+000 – average distance – 120 km;
- Provadia – Vetrino sector and in parallel to the existing gas pipeline to Turkey from km 59+000 to km 70+000 - average distance – 115 km;
- Vetrino - Mirovtsi sector from km 70+000 to km 100+000 - average distance – 90 km;
- Mirovtsi - Popovo sector and in parallel to the national gas distribution network from km 100+000 to km 184+000 - average distance – 70 km;
- Popovo – Nikolaevo sector from km 184+000 to km 320+000 - average distance – 40 km;
- Nikolaevo – Selanovtsi sector from km 320+000 to km 395+000 - average distance – 30 km, and for the locality of the village of Selanovtsi at km 391+500 – the distance is 8,6 km;
- Selanovtsi - Kula sector from km 395+000 to km 525+000 – distance of 15 km, and for the locality of the village of Izvor at km 498+000 – the distance is 7,5 km;
  Kula – the border sector from km 525+000 to km 538+000 - the distance is 45 km.

The minimum distance of the gas pipeline from the border with Romania is in the sectors Nikolaevo – Selanovtsi, the locality of the village of Selanovtsi, Knezha Municipality at km 391+500, where the distance of the gas pipeline from the river Danube is 8,6 km, and Selanovtsi – Kula, the locality of the village of Izvor – km 498+000, where the distance of the gas pipeline to the river Danube is 7,5 km.

The gas pipeline route crosses the following big rivers (surface water bodies) flowing into Danube river:

- Beli Lom river, code BG1RL900R008;
- Rusenski Lom river, code BG1RL200R007;
- Yantra river, code BG1YN307R027;
- Osam river, code BG1OS700R011;
- Vit river, code BG1RL200R007;
- Iskar river, code BG1IS135R026;
- Ogosta river, code BG1OG307R013;
- Tsibritsa river, code BG1WO800R017;

- Lom river, code BG1WO600R012;
- Archar river, code BG1WO400R009;

Part of the locality of the village of Selanovtsi and the village of Izvor, where the route of the gas pipeline is at a distance from 7.5 km to 8.6 km from Danube river, are situated in the distribution area of the following groundwater bodies:

- Part of the locality of the village of Selanovtsi is situated in the distribution area of the groundwater body „Porovi vodi v kvaternera mezhdu reki Lom i Iskar", code BG1G0000QPL023, area of 2 890 km^2. The chemical and quantitative status of the groundwater body is good;
- Part of the locality of the Municipality Kula is situated in the distribution area of the groundwater body „Karstovi void v lomsko – Plevenska depresia", code BG1G000N1BP036, area of 6 573 km^2. The chemical status of the groundwater body is poor with deviation of the nitrates indicator due to diffuse sources of pollution – land and settlements without sewerage.

During the construction of the gas pipeline the activities are fully concentrated into the boundaries of the construction band, which is with width 45 m in agricultural areas and with width 32 m in forests. (*Annex 6: Scheme of the organization of the construction band)*
The excavation works for the preparation of the trench for laying the pipeline, affect the surface grounds to a dept of 2.5 m, with 1.9 m width of the bottom. The structure of the surface will be damaged only in the excavation boundaries.
Using the planned organisation of construction works 600 m gas pipeline is expected to be laid per day.

During the construction and operation of the gas pipeline discharging of waste water in ground and surface water bodies is not envisaged.

According to the design solutions the crossing of the water bodies will be made in one of the following ways:

- Trench crossing method (the necessary time for implementation of the crossing is up to 3 days);
- Horizontal drilling crossing.

During the construction of the gas pipeline through the surface water bodies increased muddiness of the water is expected. The made assessment shows that the impact is short-term, with no cumulative effect and is limited in approximately 100 m from the place of crossing of the water body along the river stream.

With reference to the mentioned above change in the chemical and quantitative status of the surface and ground water bodies affected by the implementation of the investment proposal is not expected.

The ground water situated in close proximity to Danube river are the following:

Layer 1- Neogene-Quaternary

- Quaternary - BG10000Qal1, BG10000Qal2, BG10000Qal3, BG10000Qal4, BG10000Qal5, BG10000Qal6, BG10000Qal7, BG10000Qal8, BG10000Qal9, BG10000Qal10, BG10000Qal11, BG10000Qal12, BG10000Qal13, BG10000Qal14, BG10000Qal15, BG10000Qal16, BG10000Qal20;
- Pliocene - BG10000Pl23, BG10000Pl24, BG10000Pl25, BG10000Pl26;

Layer 2 – Neogene

- BG1G00000N2034, BG1G00000N1035;

Layer 3 – Neogene - Sarmatian

- BG1G00N1bp0036, BG1G00000N1049;

Layer 4 – Upper Cretaceous

- BG1G0000K2m047;

Layer 5 – Triassic-Jurassic-Cretaceous

- BG1G0000K1b041, BG1G000Khb050;

The listed water bodies are not affected by the implementation of the investment proposal.

A notification to the Republic of Serbia and Romania was drawn up at an early stage with which the neighboring countries were informed about the investment intention of the Assignor - South Stream Bulgaria AD.

The notification of Romania is an expression of goodwill by the Assignor aimed at the best possible awareness of the public about its intentions.

With reference to the Notification of the Republic of Serbia a reply to the Ministry of Environment and Water of the Republic of Bulgaria with letter № 353-02-950/2012 from the Minister of Energy, Development and Environmental Protection of the Republic of Serbia was received. *(Annex 7)* According to the letter the Republic of Serbia declares that will not participate in EIA procedure of the investment proposal "South Stream gas pipeline on the territory of the Republic of Bulgaria".

Environmental assessment of the investment proposal was conducted at the stage of due diligence studies with a view to determine the admissibility of the project from the point of view of environment law in the Republic of Bulgaria and the Convention in transboundary context.

The results of the preliminary assessment to determine the impact of the construction of the gas pipeline on the environment in transboundary context are the following:

Gas Pipeline Construction Phase

- The investment proposal is not expected to have a negative impact on the environment on the territory of neighboring states (or of parts thereof) in transboundary context;

- No emissions are expected in the course of construction which might have a negative impact on the environment of the neighbouring countries - Romania and the Republic of Serbia;

- No groundwater bodies will be affected during construction which might have a negative impact in transboundary context;

- No negative environment impact in transboundary context is expected in the course of construction on the surface water bodies.

- The construction activities won't have a negative impact on the chemical and quantitative status of the groundwater bodies with a distribution area in the territories which the gas pipeline crosses.

The impact on rivers is assessed as insignificant, short-term (during the time of crossing the water bodies) with a possibility to restore them. Construction works in water bodies bring about muddying of water and the impact is limited to 100 km from the crossing point.

- There is no danger for the territory of Romania and the river Danube from impact of emergencies during construction due to the large distance of the gas pipeline from the river Danube and the border.

Gas Pipeline Operation Phase

- The operation of the gas pipeline is not expected to be detrimental to the environment on the territory of a third country (or of parts thereof);

- No negative environment impact is expected for the territories of neighbouring states as a result of emergencies related to gas leaks, fires or other risks.

No risk locations on the territory of Romania and the Republic of Serbia were identified in the course of the conducted studies on which the "Transmission Gas Pipeline South Stream on the Territory of the Republic of Bulgaria" investment proposal might have a negative impact in transboundary context.

The conclusion of the environment assessment on the pre-feasibility phase is that the investment proposal does not contradict the requirements of Bulgarian environment law and will not have a negative environment impact on the territories of the neighbouring states.

10 STRUCTURE AND CONTENT OF THE ENVIRONMENTAL IMPACT ASSESSMENT STATEMENT (EIAS)

The scope of the EIA research will meet the requirements of Article 96 (1) of the Environmental Protection Act and chapter three of the EIA Ordinance.

The statement shall report the results from the consultations conducted with the competent authority, specialized departments and institutions and the public and how they will be reflected in the project.

A Regulation (Guidelines) on the management of environmental and social aspects during the construction shall be developed, including a register of the obligations of the contracting authority and the main contractor for compliance with the requirements of the international environmental legislation, a procedure for change management of project decisions, etc.

A Regulation (Guidelines) on the management of environmental and social aspects during commissioning and during operation shall be developed in accordance with the requirements of the national legislation and the international environmental legislation.

The following indicative structure of the EIAS is proposed:
The EIA Statement shall comply with the legal requirements for structure and content and shall include the following main elements:

1. Summary of the Development Proposal for the construction, activities and technologies;
2. The options for location, studied by the contracting authority (with drawings and coordinates of the characteristic points in the established coordinate system of the country) and/or options to technologies and motives for the choice made for the study, taking account of the environmental impact, including "zero option";
3. Description and analysis of the components and factors of the environment and material and cultural heritage that will be affected most significantly by the Development Proposal, as well as their interaction;
4. Description, analysis and assessment of the presumable major impacts on the population and environment as a result of:
a) the implementation of the Development Proposal;
b) the use of natural resources;
c) emissions of hazardous substances during normal operation and emergencies, waste generation and resulting discomfort;
5. Information about the use of methodologies for projection and assessment of the environmental assessment;
6. Description of the measures envisaged to prevent, reduce or, where possible, eliminate major harmful impact on the environment and a plan for the implementation of these measures, including assessment of the health risk;
7. Statements and opinions of the public concerned, of the Ministry of Environment and Water and of other specialised departments and countries concerned in a transboundary context, as a result of the conducted negotiations;
8. Conclusion in accordance with the requirements of the legal framework;
9. Description of the difficulties (technical reasons, shortage or lack of data) in the gathering of information for the drafting of the EIA Statement;
10. Other information at the discretion of the competent authorities.

10. LIST OF ANNEXES TO EIAS

Annex 1 *– Report on the assessment of the level of impact of the Development Proposal (ALIR)*
Annex 2 *– Report on the results of the consultations held under EIAS*
Annex 3 *– Plan on the implementation of the measures under Item 5 of Article 14 (1) of the Ordinance on the Environmental Impact Assessment (EIA)*
Annex 4 *– Non-technical summary of EIAS within the meaning of § 1, item 27 of the Supplementary Provisions to the Environmental Protection Act (EPA)*
Annex 5 *– Map material including: route of the gas pipeline, involved and closely located rivers, water reservoirs, sources of drinking water supply with guarded sanitary zones, facilities, subject to health protection, natural landmarks, protected territories and areas (including a list),*

transport access scheme, important plant and ornithological sites, if any, in immediate proximity to the route.

11. STAGES, PHASES AND TERMS FOR DRAFTING EIAS

The stages, phases and terms for drafting EIAS will be specified after a contract conclusion between the Company and a selected contractor for drafting of EIAS and the Company will inform the Ministry of Environment and Water thereof on a timely basis.

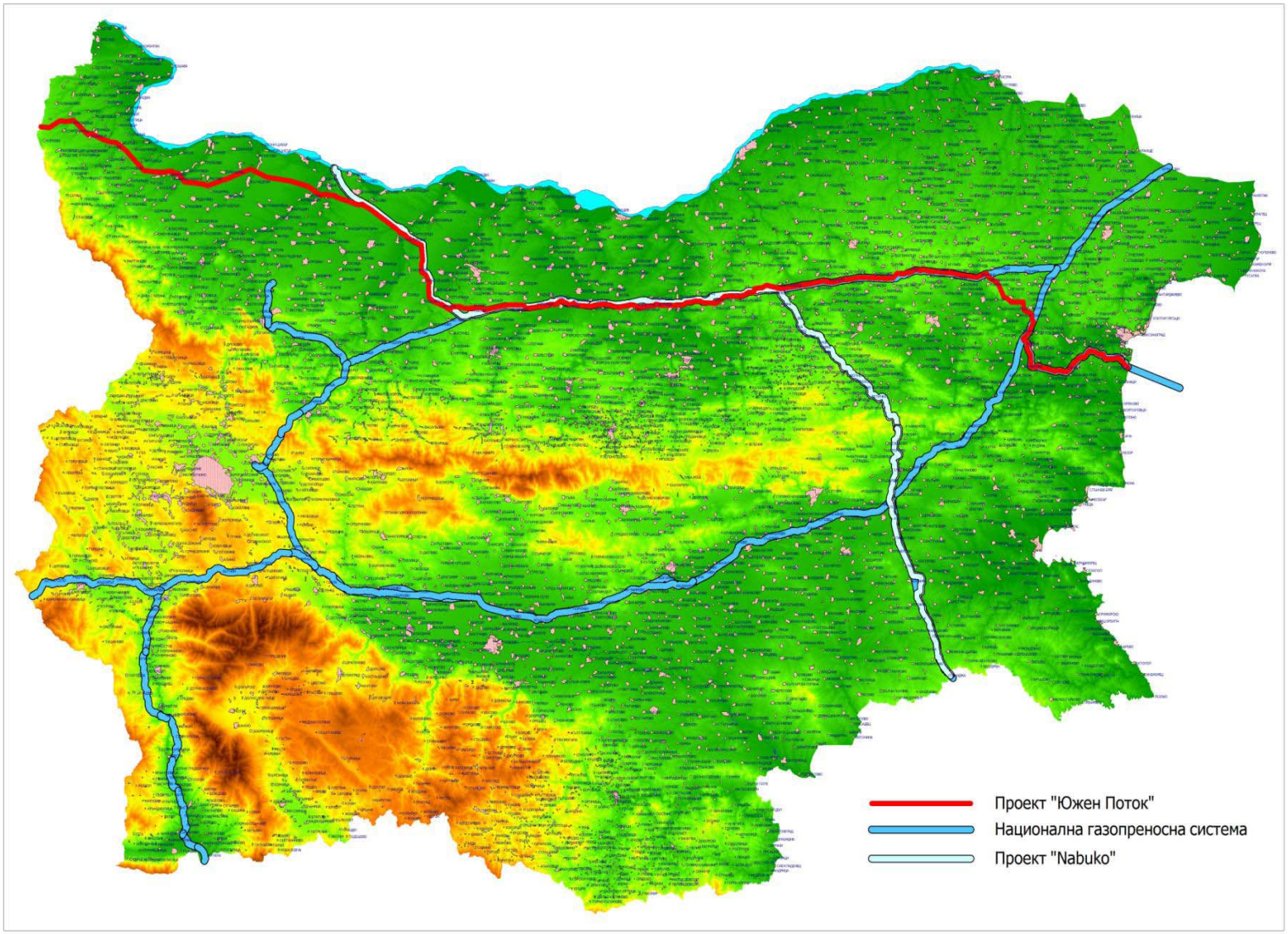
13. LIST OF ANNEXES TO THE TERMS OF REFERENCE

Annex 1 *– Scheme of the main route of the South Stream gas pipeline on the territory of the Republic of Bulgaria (ground section)*
Annex 2 *– Coordination register of the route, corridor and sites of the South Stream gas pipeline on the territory of the Republic of Bulgaria*
Annex 3 *–List of protected areas under the national legislation, which may be potentially affected by the investment proposal South Stream Gas Pipeline on the territory of the Republic of Bulgaria*
Annex 4 *– Requirements, information and instructions under Article 4a of the Ordinance on EIA*
Annex 5 *– Notification under Article 3 of the Convention on EIA in the format, adopted by Decision I/4 of the first meeting of the parties within the Convention (including in English with an enclosed summary of the Development Proposal)*
Annex 6 *– Scheme of the organization of the construction band*
Annex 7 *- Letter № 353-02-950/2012-02 from the Minister of Energy, Development and Environmental Protection of the Republic of Serbia*

I, Tania Kirova, hereby certify that my translation of the document, to which this is attached, from the Bulgarian into the English language is full, true and correct. The translation is of 64 (sixty four) pages.

Translator
Tania Kirova

Annex 1 **-** *Scheme of the main route of the South Stream gas pipeline on the territory of the Republic of Bulgaria (ground section)*



Annex 2 – Coordination register of the route, corridor and sites of the South Stream gas pipeline on the territory of the Republic of Bulgaria

Coordinates WGS84 - 35N

№	**X** /m/ **(north)**	**Y** /m/ **(east)**
1	4773171.57	576204.55
2	4772173.08	575201.60
3	4772347.89	574634.85
4	4773148.22	573468.11
5	4773405.31	573208.20
6	4774588.36	572395.75
7	4774872.32	571942.02
8	4775090.74	571695.66
9	4775424.43	571425.33
10	4775521.09	571216.07
11	4775705.94	570943.26
12	4775959.73	570677.07
13	4775776.64	570263.30
14	4775691.83	569899.75
15	4775611.76	568023.94
16	4775611.34	567981.65
17	4775629.45	567792.75
18	4775714.98	567346.14
19	4775602.18	567169.92
20	4775443.61	566628.90
21	4775551.36	566175.57
22	4775591.69	566096.28
23	4775591.66	566093.84
24	4775573.13	565900.42
25	4775835.39	565223.56
26	4776120.07	564912.57
27	4776429.98	564683.51
28	4777249.28	564296.76
29	4777242.63	564180.53
30	4777027.59	563870.26
31	4777029.32	563817.38
32	4777050.97	563400.79
33	4777175.76	562964.55
34	4777471.85	562434.04
35	4777573.76	562284.29
36	4777949.45	561829.56
37	4778094.97	561464.77
38	4778260.19	561189.26
39	4778355.81	561077.01
40	4778553.53	559575.94
41	4778178.48	559232.83
42	4777367.38	558677.96
43	4777174.87	558504.77
44	4776629.71	557871.83
45	4776544.82	557814.00
46	4776105.89	556994.61
47	4776094.61	555899.93
48	4776094.52	555889.36
49	4776196.42	555720.98
50	4776193.06	555716.94
51	4775691.15	555317.60
52	4775477.11	555081.00
53	4774660.87	553833.97
54	4774280.13	553717.39
55	4773796.66	553387.61
56	4773281.94	552749.65
57	4772676.31	552413.37
58	4772631.88	552412.90
59	4771790.85	551934.31
60	4771120.71	550839.79
61	4771115.13	550836.58
62	4771009.41	550658.30
63	4770683.70	550011.97
64	4770683.68	550009.53
65	4770687.68	548564.70
66	4770714.90	548330.90
67	4770909.19	547531.86
68	4771211.25	547049.55
69	4771159.19	545927.52
70	4771104.40	545873.36
71	4770812.05	545164.75
72	4770851.31	544887.75
73	4772104.49	540528.18
74	4772024.44	540325.20
75	4772051.94	540092.30
76	4772300.22	539052.48
77	4772512.17	538633.83
78	4772733.93	538374.63
79	4772728.12	538329.09
80	4772756.76	538088.08
81	4772766.53	538048.96
82	4772618.02	537903.32
83	4772317.56	537186.45
84	4772325.77	537061.90
85	4772390.72	536544.82

86	4772200.27	536233.36
87	4772238.77	535954.03
88	4772597.73	534716.11
89	4773556.91	533992.01
90	4773626.89	533994.91
91	4774361.21	534045.76
92	4774475.67	534060.64
93	4774998.11	534158.90
94	4775378.67	534087.85
95	4775562.93	534070.67
96	4775764.04	534090.81
97	4775985.27	534136.87
98	4776183.59	534043.16
99	4776194.69	534043.11
100	4777776.20	534061.23
101	4779106.37	533108.32
102	4779443.21	532951.42
103	4780922.88	532577.72
104	4781167.05	532547.29
105	4781697.52	532699.97
106	4782045.06	532918.51
107	4782200.99	532782.87
108	4782499.36	532004.65
109	4782925.67	531499.73
110	4783654.44	531071.47
111	4784161.33	530932.68
112	4784683.96	531080.57
113	4785054.82	531307.92
114	4785413.07	531688.81
115	4785658.43	532145.72
116	4787134.00	533678.24
117	4788056.83	533892.05
118	4788352.63	534191.76
119	4790563.13	535153.70
120	4790984.44	534801.75
121	4791625.16	534568.82
122	4791649.59	534568.70
123	4792856.93	534599.05
124	4794128.75	531928.79
125	4794924.61	531362.99
126	4797043.65	531137.50
127	4797059.68	527120.02
128	4797266.07	526514.37
129	4798700.50	524640.37
130	4799019.38	523749.24
131	4799546.01	523174.39
132	4803556.91	521346.26
133	4804378.09	520783.22
134	4804839.49	520219.78
135	4806662.81	517340.99
136	4806851.05	517121.11
137	4807709.89	516375.01
138	4807820.80	516316.46
139	4807531.21	515964.21
140	4807330.35	515555.07
141	4807202.52	515012.97
142	4806480.76	513487.60
143	4806384.41	513058.69
144	4806393.04	512928.32
145	4807320.49	505826.16
146	4807348.14	505688.52
147	4808198.05	502618.48
148	4808156.68	501728.93
149	4808155.55	501681.99
150	4808158.87	501596.19
151	4808621.74	496209.72
152	4808621.74	496206.48
153	4808913.11	492945.83
154	4808933.23	492820.40
155	4809343.07	490947.35
156	4809046.74	490021.08
157	4808999.44	489715.90
158	4809030.92	489468.29
159	4809360.68	488178.00
160	4809075.94	487199.03
161	4808728.11	486739.46
162	4808218.66	485000.63
163	4808178.21	484718.86
164	4808178.25	484699.43
165	4808184.44	484420.19
166	4807790.39	483403.39
167	4807723.52	483052.72
168	4807714.53	482228.63
169	4807714.56	482217.30
170	4807722.67	482090.23
171	4807922.46	480530.12
172	4806415.20	479112.94
173	4806099.88	478382.43
174	4806102.30	478317.67
175	4806200.63	476803.08
176	4806034.22	476429.24
177	4806035.51	476379.85
178	4806447.81	467962.53
179	4806432.92	464289.01

180	4806301.38	463963.63
181	4806241.47	463743.88
182	4805727.86	460472.14
183	4805719.44	460393.54
184	4805539.10	458071.64
185	4804803.79	455146.64
186	4804781.26	455027.44
187	4804610.47	453676.99
188	4804603.55	453552.22
189	4804609.92	453433.21
190	4804773.84	452068.86
191	4804755.37	452011.22
192	4804711.93	451716.92
193	4804732.26	451515.40
194	4805081.20	449814.76
195	4803982.01	444789.43
196	4803963.04	444665.35
197	4803807.53	442931.41
198	4803429.88	440996.16
199	4803422.47	440953.97
200	4802659.05	435879.56
201	4802657.00	435861.72
202	4802177.03	432235.28
203	4802168.36	432103.93
204	4802195.06	431878.14
205	4802933.26	428686.96
206	4803387.63	426603.20
207	4802598.17	425063.27
208	4802488.41	424645.57
209	4802444.11	423546.35
210	4802276.25	422388.97
211	4801641.21	422267.42
212	4800831.12	421340.65
213	4800711.22	419261.96
214	4799986.12	418227.91
215	4799836.77	417903.48
216	4799336.29	415966.38
217	4799303.87	415715.47
218	4799346.35	415426.59
219	4799488.89	414954.95
220	4799433.73	414659.98
221	4799410.84	413924.40
222	4799411.23	413893.60
223	4799448.02	413621.68
224	4799507.35	413411.67
225	4799434.93	412393.34
226	4799432.53	412321.96
227	4799454.14	412111.47
228	4799509.67	411856.01
229	4799346.45	409661.75
230	4796895.65	406666.41
231	4796670.06	406031.50
232	4796670.49	406000.69
233	4796849.82	400221.26
234	4796974.27	399767.29
235	4797392.05	399011.95
236	4797447.94	397144.25
237	4797093.62	395979.07
238	4797055.45	395788.69
239	4796860.76	393876.40
240	4796150.72	392621.73
241	4796020.83	392127.27
242	4796020.95	392119.98
243	4796033.01	390537.51
244	4796034.49	389693.06
245	4795798.51	389178.13
246	4795800.80	389105.97
247	4796008.46	386230.31
248	4795889.80	382700.93
249	4795889.29	382666.85
250	4795925.02	382399.75
251	4796191.88	381430.08
252	4796190.34	381201.28
253	4796088.82	381098.90
254	4795799.79	380478.86
255	4795645.92	378760.19
256	4795506.13	377514.69
257	4794541.57	374134.47
258	4794503.36	373859.47
259	4794898.23	373060.23
260	4795787.45	372385.62
261	4796058.13	370999.28
262	4795184.60	366203.16
263	4795168.15	366023.50
264	4795168.59	366001.59
265	4795204.64	364357.44
266	4795250.16	364081.63
267	4795951.28	361827.00
268	4796330.84	359364.09
269	4796050.34	358003.99
270	4796030.15	357801.52
271	4796059.63	357561.95
272	4796100.93	357394.04
273	4795865.98	356000.68
274	4795457.48	354734.13
275	4795409.64	354426.34

276	4795415.45	354311.22
277	4795706.86	351787.19
278	4795893.47	348326.09
279	4795995.57	347935.60
280	4796456.56	347003.83
281	4796035.24	346178.73
282	4795926.70	345723.42
283	4796020.85	345297.88
284	4797466.64	342208.70
285	4797305.63	341727.84
286	4796965.10	341417.20
287	4796708.28	341043.58
288	4796455.53	340403.84
289	4796118.72	339702.82
290	4796123.38	339599.86
291	4796294.93	337948.33
292	4795501.85	335262.17
293	4795460.99	334977.89
294	4795472.56	334822.33
295	4795531.58	334452.82
296	4794732.02	329016.03
297	4794721.27	328869.62
298	4794721.39	328864.75
299	4794728.59	327397.92
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305	4794611.56	312799.42
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310	4794864.40	306021.95
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314	4794735.32	301877.38
315	4794831.55	301475.76
316	4795358.74	300368.13
317	4795370.39	297875.41
318	4794461.74	296776.19
319	4794231.92	296137.38
320	4794375.36	295619.43
321	4796384.21	292288.25
322	4796475.50	291560.22
323	4796537.51	291315.28
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325	4797767.91	288456.36
326	4799386.41	286901.34
327	4800077.83	286621.17
328	4800100.04	286621.87
329	4801727.61	286656.98
330	4802031.44	286540.80
331	4802388.19	286474.16
332	4802422.62	286475.25
333	4804943.52	286561.37
334	4805427.01	286705.60
335	4805463.00	286727.82
336	4807706.11	285651.45
337	4808568.35	284062.37
338	4809445.67	283537.64
339	4809467.88	283538.36
340	4812923.15	283611.99
341	4813437.35	283767.83
342	4813784.92	283988.79
343	4815194.43	283961.10
344	4819020.30	283573.94
345	4820196.28	281042.26
346	4820314.96	280846.23
347	4820527.28	280574.76
348	4820725.62	279881.22
349	4820975.41	279451.60
350	4821111.11	279314.44
351	4821178.94	278975.99
352	4821458.35	278459.20
353	4822584.45	277355.54
354	4823634.50	275338.82
355	4823750.46	275163.11
356	4825254.87	273344.36
357	4832144.93	263549.38
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361	4833900.71	258568.30
362	4836863.76	249544.54
363	4837024.10	249242.80
364	4837420.36	248731.06
365	4837630.97	247568.68
366	4837612.06	246891.95
367	4837490.42	246608.69
368	4837409.74	246213.90
369	4837713.34	245571.20

370	4837968.01	244900.85
371	4837496.36	243534.76
372	4837442.16	243207.97
373	4837605.72	242656.91
374	4840929.05	237603.92
375	4842991.85	230472.50
376	4844441.52	220995.17
377	4844516.79	220738.39
378	4847442.97	214176.23
379	4843562.25	204400.30
380	4843498.82	204148.74
381	4843421.05	203493.53
382	4841179.69	196968.25
383	4841125.46	196642.58
384	4841180.39	196315.39
385	4841842.13	194398.27
386	4842662.99	187007.52
387	4843029.47	186337.91
388	4845869.10	184051.56
389	4845746.32	182838.22
390	4845741.11	182737.01
391	4846260.59	181857.12
392	4846673.22	181632.09
393	4846246.54	177212.88
394	4846242.29	177116.55
395	4846247.56	177007.76
396	4846987.39	170260.21
397	4847322.17	169615.20
398	4848799.39	168321.92
399	4850834.15	166129.36
400	4850882.23	166080.91
401	4854517.94	162659.10
402	4857509.85	158716.73
403	4857791.33	156344.03
404	4857835.01	156145.41
405	4858945.97	152814.09
406	4858988.25	152708.20
407	4860969.49	148456.68
408	4860753.03	147286.99
409	4860735.98	147104.60
410	4861015.77	146409.69
411	4865898.76	141336.22
412	4865702.33	139329.61
413	4865489.06	137662.10
414	4865480.41	137535.05
415	4865510.29	137294.01
416	4865750.65	136322.79
417	4863363.83	132123.77
418	4863234.19	131628.59
419	4863236.48	131547.25
420	4863520.02	128061.51
421	4864515.54	127139.77
422	4865514.50	128142.64
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424	4865253.57	131400.39
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426	4867815.45	136174.89
427	4867786.63	136415.91
428	4867494.86	137593.56
429	4867686.20	139089.36
430	4867689.07	139118.53
431	4867933.11	141601.78
432	4867937.85	141699.54
433	4867658.54	142395.21
434	4862811.73	147430.18
435	4862992.66	148408.16
436	4863008.63	148590.42
437	4862914.95	149013.61
438	4860823.45	153504.12
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440	4859461.73	159224.22
441	4859265.20	159712.58
442	4856057.86	163939.36
443	4855946.90	164063.66
444	4852274.60	167518.95
445	4850227.35	169725.23
446	4850153.62	169797.47
447	4848930.41	170868.26
448	4848244.89	177123.04
449	4848724.97	182099.00
450	4848730.39	182195.33
451	4848210.94	183074.89
452	4847801.77	183298.49
453	4847912.49	184391.37
454	4847917.72	184492.54
455	4847544.62	185273.48
456	4844602.51	187641.25
457	4843814.80	194731.65
458	4843767.05	194948.37
459	4843181.18	196643.03
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461	4845391.76	203149.10
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463	4849456.42	213828.52
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465	4849439.72	214607.11

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475	4839545.78	246378.13
476	4839604.64	246644.40
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478	4839631.30	247645.01
479	4839615.62	247824.47
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482	4838708.31	250335.51
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486	4836039.51	260605.69
487	4833869.58	264563.57
488	4833810.62	264659.25
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490	4826818.43	274593.09
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492	4824282.53	278423.71
493	4824096.30	278676.40
494	4823076.09	279676.67
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552	4796723.16	327974.66
553	4796720.07	328798.37
554	4797530.81	334312.61
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558	4798267.51	337570.39
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563	4798480.88	340089.74
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576	4797425.12	354324.43
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645	4803349.43	420553.29
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754	4778079.72	536069.59
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759	4775180.59	536163.84
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761	4774813.00	536164.17
762	4774288.30	536065.26
763	4774275.20	536107.63
764	4774421.95	536346.02
765	4774413.73	536471.35
766	4774374.33	536786.38
767	4774926.92	537515.50
768	4774898.26	537757.25
769	4774763.59	538300.57
770	4774777.17	538346.86
771	4774821.04	538641.09
772	4774581.55	539292.42
773	4774187.76	539754.33
774	4774070.70	540244.77
775	4774159.78	540472.04
776	4774120.34	540748.88
777	4772915.07	544941.71
778	4773136.08	545444.73
779	4773229.58	547433.51
780	4773231.01	547480.70
781	4772863.32	548257.91
782	4772770.56	548332.61
783	4772685.35	548688.01
784	4772682.88	549579.06
785	4772713.11	549611.39
786	4773252.64	550491.93
787	4773422.89	550537.05
788	4774420.97	551090.18
789	4774714.92	551338.53
790	4775158.88	551889.96
791	4775591.91	552023.31
792	4776134.80	552433.16
793	4777059.83	553846.74
794	4777544.89	554233.23
795	4777735.29	554433.38
796	4778139.63	554997.69
797	4778326.26	555550.70
798	4778331.08	555732.79
799	4778332.44	555763.68
800	4778095.78	556155.91
801	4778099.82	556511.20
802	4778603.36	557096.49
803	4779362.96	557616.92
804	4779471.41	557702.99
805	4780418.36	558566.32
806	4780744.63	559307.23
807	4780574.07	559868.75
808	4780520.35	559948.07
809	4780297.72	561632.66
810	4780070.29	562148.47
811	4779890.09	562360.66
812	4779746.80	562720.47
813	4779588.23	562987.77
814	4779170.88	563492.44
815	4779069.30	563675.51
816	4779229.04	563891.90
817	4779274.97	564757.31
818	4779300.85	564908.28
819	4778728.69	565814.61
820	4777614.28	566340.14
821	4777569.50	566531.68
822	4777612.37	566599.57
823	4777770.94	567140.41
824	4777752.82	567329.25
825	4777613.44	568056.01
826	4777679.26	569624.02
827	4777898.69	570118.63
828	4777971.13	570358.59
829	4778025.62	570686.54
830	4778039.57	570853.10
831	4777936.47	571297.35
832	4777790.72	571590.82
833	4777617.85	571839.04
834	4777265.24	572207.92
835	4777141.49	572477.61
836	4776862.12	572838.44
837	4776475.63	573150.84
838	4776169.89	573638.09
839	4775889.86	573931.52
840	4774689.36	574756.49
841	4773996.37	575768.16
842	4773171.57	576204.55

Annex 3 *List of protected areas under the national legislation, which may be potentially affected by the investment proposal South Stream Gas Pipeline on the territory of the Republic of Bulgaria*

The investment proposal affects the following protected areas within the NATURA 2000 network, the impact on which should be included in the subject of the Report on Assessment of the Extent of Impact (RAEI):

p.1 - Protected areas for protection of natural habitats and the wild flora and fauna:

BG0000500 Voinitsa,
BG0000513 Vartopski Dol (gully),
BG0000503 Lom River,
BG0000336 Zlatia,
BG0000614 Ogosta River,
BG0000508 Skat River,
BG0000627 Konounski Dol (gully),
BG0000613 Iskar River,
BG0000181 Vit River,
BG0000239 Obnova – Karman Dol (gully),
BG0000610 Yantra River,
BG0000231 Belenska Gora (forest),
BG0000173 Ostrovche,
BG0000138 Kamenitsa,
BG0000104 Provadijsko-Royaksko Plateau
BG0000103 Galata

p.2 – Protected areas for protection of the wild birds **(the orders for declaring them as protected areas are given in brackets):**

BG0002009 Zlatiata (No. РД – 548/2008, SG No. 83/2008),
BG0001013 Skrino (No. РД – 782/2008, SG No. 104/2008),
BG0002038 Provadijsko-Royaksko Plateau
BG0002060 Galata.

The Report on Assessment of the Extent of Impact (RAEI) of the Investment Proposal vis-à-vis the above-listed protected areas should be organized in compliance with the requirements of Article 23, paragraph 2 of the Ordinance on the Environment, and when identifying the extent of impact of the Investment Proposal on the protected areas the criteria as per Article 22 of the same Ordinance should be followed.

The RAEI should consider and assess the options for implementation of the Investment Proposal, doing so in line with the provision of § 3, point 7 of the Additional Provisions of the Ordinance on the Environment.

Detailed information about the protected areas, the territory covered by them, the subject and objective of the protection in them may be found at address http://www.natura2000.bg.org or in the European Commission website http://natura2000.eea.europa.eu.

NOTE: The information quoted above is contained in Section II of Letter of the MoEW Outgoing Ref. No. ОВОС – 1144/06.10.2011.

Annex 4 Requirements, information and instructions under Article 4a of the Ordinance on Environmental Impact Assessment (EIA)

A) Territory covered by the Investment Proposal (IP), which is under the remit of Danube Region River Basin Management Directorate (RBMD):

- The terrain intended for implementation of the IP falls within the water protection area, in which the water is sensitive to biogenic elements (nitrates vulnerable area) pursuant to Article 119a, paragraph 1, point 3 of the Water Act.

- The terrain intended for implementation of the IP falls within the borders of the following protected areas for water protection pursuant to Article 119a, paragraph 1, point 5 of the Water Act:

- Ostrovche, Code **BG0000173 –** this is an area for protection of habitats and biological species within the NATURA 2000 environmental network;

- Belenska Gora, Code **BG0000231**, this is an area for protection of habitats and biological species within the NATURA 2000 environmental network;

- Yantra River, Code **BG0000610**, this is a area for protection of habitats and biological species within the NATURA 2000 environmental network;

- Obnova – Karaman Dol (gully), Code **BG0000239**, this is an area for protection of habitats and biological species within the NATURA 2000 environmental network;

- Vit River, Code **BG0000181**, this is an area for protection of habitats and biological species within the NATURA 2000 environmental network;

- Iskar River, Code **BG0000613**, this is an area for protection of habitats and biological species within the NATURA 2000 environmental network;

- Konounski Dol (gully), Code **BG0000627**, this is an area for protection of habitats and biological species within the NATURA 2000 environmental network;

- Skat River, Code **BG0000508**, this is an area for protection of habitats and biological species within the NATURA 2000 environmental network;

- Ogosta River, Code **BG0000614**, this is an area for protection of habitats and biological species within the NATURA 2000 environmental network;

- Zlatiata, Code **BG0002009**, this is an area for protection of habitats and biological species, as well as an area for protection of birds within the NATURA 2000 environmental network;

- Lom River, Code **BG0000503**, this is an area for protection of habitats and biological species within the NATURA 2000 environmental network;

- Vartospki Dol (gully), Code **BG0000518**, this is an area for protection of habitats and biological species within the NATURA 2000 environmental network;

- Makresh, Code **BG0000521**, this is an area for protection of habitats and biological species within the NATURA 2000 environmental network;

- Vidbol, Code **BG0000498**, this is an area for protection of habitats and biological species within the NATURA 2000 environmental network;

- Voinitsa, Code **BG0000500**, this is an area for protection of habitats and biological species within the NATURA 2000 environmental network;

- The River Basin Management Plan (RBMP) contains no specific prohibitions or restrictions related to the implementation of the IP. The implementation of the IP should comply with the measures under the following programs: 7.1.3. Measures for protection of the water for household and potable water supply, including the measures for protection of the quality of such water, so as to reduce the treatment work for obtaining water of potable quality; 7.1.5.1. Measures for controlling emissions by setting prohibitions for introducing pollutants from such pollution sources, or requirements for an authorization and regular inspection of and updates about underground water; 7.1.6. Measures for setting prohibitions for introduction of pollutants from, diffused pollution sources and measures for pollution prevention and control; 7.1.7. Measures for preventing the water pollution with priority substances, and 7.1.8. Measures for prevention or reduction of the impact of emergency pollutions.

- The designed route of the South Stream gas pipeline on the territory of the Republic of Bulgaria in its section affecting the districts of Shoumen, Razgrad, Targovishte and Veliko Tarnovo, through the areas of the municipalities: Novi Pazar – the village of Yagnilo; Vetrino municipality – the villages of Sechishte, Pamoukchii and Stoyan Mihaylovski; Hitrino municipality - the villages of Trem and Tervel; Loznitsa municipality – the villages of Gorotsvet, Stoudenets, Sinya Voda, Manastirsko and Seydol; Popovo municipality – the villages of Drinovo, Kardam, Gagovo, Palamartsa, Kovachevets, and Popovo town; Byala municipality – the villages of Lom and Cherkovna; Strajitsa municipality – the villages of Nova Varbovka, Lozen and Vinograd, **does not cross protection areas with a specific spatial planning status, Band I of the Sanitation Protection Area (SPA)** pursuant to the provisions of Ordinance No. 3/16.10.2000.

– **The water sources for supply of household and potable water, which are operated by ViK OOD (Water and Sewerage Ltd.) operators and are located in the vicinity of the investment proposal area, have not been updated in terms of the dimensions of Bands II and III of the SPA;**

- The designed route of the South Stream gas pipeline on the territory of the Republic of Bulgaria in its section affecting the districts of Targovishte, Rousse and Veliko Tarnovo passes close to the following:

- Eren Bounar drainage unit of Yovkovtsi ViK OOD, Veliko Tarnovo city, in the land of Strelets village. **The drainage unit falls within the servitude of the designed route of the South Stream gas pipeline.** ViK Yovkovtsi, Veliko Tarnovo has an authorization for water intake. Order No. СОЗ-112/28.11.2006 issued by the Director of the Danube Region Water Basin Management Directorate, which has its center in Pleven city, stipulates a SPA around the water source in compliance with Ordinance No. 3/16.10.2000.

- Loznitsa drainage unit of Yovkovtsi ViK OOD Veliko Tarnovo city, in the land of Strelets village. ViK Yovkovtsi, Veliko Tarnovo has an authorization for water intake. Order No. СОЗ-115/28.11.2006 issued by the Director of the Danube Region Water Basin Management Directorate, which has its center in Pleven city, stipulates a SPA around the water source in compliance with Ordinance No. 3/16.10.2000. **The designed route of South Stream gas pipeline passes approximately 190 m to the north of the Loznitsa drainage unit.**

- Assenovtsi pump station (PS) of ViK Pleven EOOD with 3 shaft wells (ShW) located to the south of the village on the Osam River terrace. **ShW 1 is located approximately 400 m to the southwest, ShW 2 – approximately 250 m to the southwest, and ShW 3 –**

approximately 90 m to the northeast of the route. No Sanitation Protection Area (SPA) has been set up in compliance with the provisions of Ordinance No. 3/16.10.2000.

- 3 bunker pump stations (BPS) Letnitsa of ViK AD, Lovech town, with 3 shaft wells. ShW Smardishka Bara 1 is located at **approximately 370 m to the southeast**, ShW "Smardishka Bara 2 – **at approximately 50 m to the southeast**, and ShW Koula- water bodies – **at approximately 490 m to the southeast** of the gas pipeline route. An authorization for water intake from the water sources has been issued to ViK AD, Lovech town, but no SPA has been established pursuant to the provisions of Ordinance No. 3/16.10.2000.

- 2 water-caught springs (WcS) of ViK AD, Lovech town, in the land of Vladinya village – Tsarkvich 1 and Tsarkvich 2. The route passes at approximately **35 m to the north of WcS Tsarkvich 1 and approximately 90 m to the north of WcS Tsarkvich 2.** An authorization for water intake from the water sources has been issued to ViK AD, Lovech town, but no SPA has been established pursuant to the provisions of Ordinance No. 3/16.10.2000.

- Dragoulov Geran drainage unit of ViK EOOD, Pleven city, in the land of Kroushovitsa village, Dolni Dabnik municipality. The route passes at approximately **20 m to the east** of the drainage unit. No authorization has been issued for the water source and no SPA has been established pursuant to the provisions of Ordinance No. 3/16.10.2000.

- ShW ShW-Snails Farm – Tape and Kirovski – G. Dabnik, in the land of Gorni Dabnik village, with an issued authorization for water intake for the purpose of stock-breeding. The route passes at **approximately 270 m** to the west of the ShW.

- 2 ShWs at approximately 1,300 m to the southwest of Choukata water-catchment of ViK EOOD, Pleven city, in the land of Starosseltsi village. The route passes at approximately **1 300 m to the southwest** of the water-catchment. No authorization has been issued for water intake from the water sources and no SPA has been established pursuant to the provisions of Ordinance No. 3/16.10.2000.

• The designed route of the South Stream gas pipeline on the territory of the Republic of Bulgaria in its section affecting the districts of Vratsa, Montana and Vidin, passes close to the following:

- 3 drill pipe-wells ТК1, ТК2 and ТК3 in the Genera locality, the land of Mizia town, Mizia municipality, Vratsa district. An authorization for water intake for the water sources has been issued to ViK OOD, Vratsa town. Orders Nos. СОЗ-15/15.06.04 for ТК1, СОЗ-14/15.06.04 for ТК2 and СОЗ-16/15.06.04 for ТК3 issued by the Director of the Water Basin Management Directorate for the Danube Region, which has its center in Pleven, stipulate a SPA around the water sources pursuant to the provisions of Ordinance No. 3/16.10.2000. **At km + 406 of its route the gas pipeline passes at approximately 670 meters to the southwest of the external border of the SPA.**

- drill pipe-well ТК – 4 – for additional water supply to Voivodovo village, Mizia municipality, Vratsa district. An authorization for water intake for this water source has been issued by Mizia municipality, Vratsa district. A procedure is ongoing for establishing a SPA. **At + 405.7 of its route the gas pipeline will pass at approximately 345 meters to the southwest from the external border of the SPA.**

- An area of up to 1,000 m from the gas pipeline route, in which there are also sources for household and potable water supply to the population, for which sources the users have not yet filed applications for establishing of a SPA. There is a probability that when the

dimensions of the SPA are identified, the gas pipeline may fall within any of the bands of the respective areas of those sources;

- Drainage and facilities of the water supply system of Zlatia village, Valchedram municipality. An authorization has been issued for water intake from the source to ViK Montana OOD, but no SPA has been established pursuant to the provisions of Ordinance No. 3/16.10.2000. **At km + 436.9 of its route the gas pipeline passes at approximately 684 meters to the northeast; at +436.9 of the route – at a distance of approximately 525 meters to the southwest.**

– Further information about potentially existing SPAs established prior to the entering into force of the respective laws and bylaws shall be sought from the water service operator ViK OOD Montana and the ViK Association Montana.

- water-caught source (WcS) of ViK EOOD, Vidin city, for water supply to Vartop village, in the land of Lagoshevtsi village, Dimovo municipality. An authorization for water intake for this water source has been issued to ViK EOOD, Vidin, but no SPA has been established pursuant to the provisions of Ordinance No. 3/16.10.2000. **At km + 499.8 of its route the gas pipeline passes at approximately 550 meters to the northwest.**

- water-caught source (WcS) of ViK EOOD, Vidin city, for water supply to Brankovtsi village, Gramada municipality. An authorization for water intake for this water source has been issued to ViK EOOD, Vidin, but no SPA has been established pursuant to the provisions of Ordinance No. 3/16.10.2000. **At km + 517.3 of its route, the gas pipeline passes at approximately 970 meters to the southwest.**

- water-caught source (WcS) of ViK EOOD, Vidin city, for water supply to Kosta Perchevo village, Koula municipality. An authorization for water intake for this water source has been issued to ViK EOOD, Vidin, but no SPA has been established pursuant to the provisions of Ordinance No. 3/16.10.2000. **At km + 519.1 of its route, the gas pipeline passes at approximately 385 meters to the southwest.**

- water-caught source (WcS) of ViK EOOD, Vidin city, for water supply to Staropatitsa village, Koula municipality. An authorization for water intake for this water source has been issued to ViK EOOD, Vidin, but no SPA has been established pursuant to the provisions of Ordinance No. 3/16.10.2000. **At km + 534.6 of its route, the gas pipeline passes at approximately 1160 meters to the southwest.**

• **The investment proposal is admissible in terms of achieving** the environmental objectives and the measures for achieving good water condition, which are specified in the RBMP of the Danube region, provided that:

- ✓ the requirements of the Water Act are complied with;
- ✓ the route takes into account the location of the water sources for household and potable water supply and SPAs;
- ✓ measures are set for prevention and reduction of considerable harmful impacts on the surface water and groundwater condition.

B) Territory covered by the Investment Proposal (IP), which is under the remit of Black Sea Region River Basin Management Directorate (RBMD):

- In the vicinity of the gas pipeline route there are water-catchment facilities for household and potable water supply, around which SPAs either exists, or will be established. Therefore the investment proposal should comply with the prohibitions and restrictions for carrying out activities in such areas.

- Taking the foregoing into account, the investment proposal is **admissible** vis-à-vis the objectives and measures for achieving good water bodies condition, which are stipulated in the Black Sea RBMP.

NOTE: The information quoted above is contained in Section III of the Letter by the MEW Outgoing Ref. No. EIA – 1144/06.10.2011.

Format of Notification under Section 3
Of Convention on Environmental Impact Assessment
in a Transboundary Context ("The Convention")

Table 1

NOTIFICATION TO AN AFFECTED PARTY OF A PROPOSED ACTIVITY UNDER ARTICLE 3 OF THE CONVENTION

1. INFORMATION ON THE PROPOSED ACTIVITY	
(i) Information on the nature of the proposed activity	
Type of activity proposed	Construction and operation of large-diameter gas pipeline
Is the proposed activity listed in Appendix I to the Convention?	YES, point 8 of Appendix I
Scope of proposed activity (e.g. main activity and any/all peripheral activities requiring assessment)	Construction and operation of a land section of the route of a gas transmission pipeline, known as South Stream, for transit transportation of gas from Russia to the European market.
Scale of proposed activity (e.g. size, production capacity, etc.)	• Planned length of the land part subject of the proposed activity - 538 km; • Work pressure - 9,8 Mpa; • Planned production capacity - 63 billion m3 per annum; • Pipelines diameter - DN1400 /Du ("Ду") = 1400 (56")/; • Type of the pipelines – steel pipelines, L485M (X70M), in accordance with ISO 3183 classification;
Description of proposed activity (e.g. technology used)	**The main technological process** is related to transportation of natural gas
Description of purpose of proposed activity	Performance of transit gas transmission from Russia across the Black Sea to the central parts of the European Union aimed at increasing of the energy safety of the European countries – users of natural gas from Russia.

Rationale for proposed activity (e.g. socio-economic, physical geographic basis)	South Stream gas transmission pipeline is a completely new route for transit transmission of natural gas. Its realization will lead to: • diversification of the existing routes for import and transmission of natural gas; • increase of the capacity for transmission of natural gas to third countries through creation of the necessary technical and economic conditions on the territory of the Republic of Bulgaria; • attaining guarantees for energy security and independence, and avoidance or restriction of the negative consequences from possible interruptions of natural gas supply to the Republic of Bulgaria and third countries in the region and Europe; • achievement of better economic stability for Bulgaria and the entire region; • modernization of the gas infrastructure and accelerated economic growth for EU member states and their neighbors; • Significant increase of the power supply safety on the European continent through compliance with the most up-to-date environmental and technology requirements in the course of its construction.
Additional information/comments	
(ii) Information on the spatial and temporal boundaries of the proposed activity	
Location	The Republic of Bulgaria
Description of the location (e.g. physical-geographic, socio-economic characteristics)	The land section of the South Stream gas transmission pipeline, subject matter of the proposed activity, is situated entirely on the territory of the Republic of Bulgaria (referred to as the "Black Sea – Serbia" Route). Route's technological borders are: **a) starting point** situated south of Galata residential area, in Pasha Dere locality, Varna Municipality, Varna Region, Bulgaria, in proximity to the Chernomorets tourist hut, representing the first welded seam before the fencing of the entry safety valve of the receiving terminal for the gas on the

	Black Sea shore; **b) ending point** situated at the crossing of the state border between Bulgaria and the Republic of Serbia, south of Vrashka Chuka (Zajecar) border control point. The distance between the pipeline and the Danube River in the different sections is as follows: • Section Varna – Provadia and parallel to the existing pipeline, from km 0+000 to km 59+000 – average distance 120 km; • Section Provadia – Vetrino and parallel to the existing transit pipeline to Turkey, from km 59+000 to km 70+000 – average distance 115 km; • Section Vetrino – Mirovci, from km 70+000 to km 100+000; • Section Mirovci – Popovo and parallel to the national gas-transportation network, from km 100+000 to km 184+000 – average distance 70 km; • Section Popovo – Nikolaevo, from km 184+000 to km 320+000 – average distance 40 km; • SectionNikolaevo – Selanovci, from km 320+000 to km 395+000 – average distance 30 km, for the area of Selanovci at km 391+500 the distance is 8.6 km; • Section Selanovci – Kula from km 395+000 to km 525+000 – average distance 15 km, for the area of the village Izvor at km 498+000 the distance is 7.5 km; • Section Kula – Border, from km 525+000 to km 538+000 – average distance 45 km.
Rationale for location of proposed activity (e.g. socio-economic, physical-geographic basis)	The route is situated north of the Balkan in the middle of the Danube Plane. Relief is even, free of sharp differences in height. Realization of the proposed activity will have significant political and economic importance for the entire region, mainly by giving it greater sustainability. Realization of the proposed activity will provide an opportunity for more intensive development of gasification and will create a number of advantages for the people in the regions crossed by the gas

	pipeline, such as new jobs, improvement of the investment climate, increase of energy efficiency better general welfare, facilitation of introduction of innovations, etc.
Time-frame for proposed activity (e.g. start and duration of construction and operation)	Start of construction works - August 2013; Duration of the first stage of the construction works - by October 2015; Commissioning – December 2015
Maps and other pictorial documents connected with the information on the proposed activity	A map of the main route of the land section of the pipeline subject matter of the proposed activity is enclosed to this present notification. The elaboration of detailed maps is subject matter of the EIA Report which will be prepared by the appointed experts.
Additional information/comments	
(iii) Information on expected environmental impacts and proposed mitigation measures	
Scope of assessment(e.g. consideration of: cumulative impacts,evaluation of alternatives, sustainable development issues, impact of peripheral activities, etc.)	Upon preparation of the EIA Report the impact on the separate environmental components as well as the factors leading to pollution or damages of the environment will be taken into consideration in respect to the main route of the gas pipeline and the proposed alternatives. Cumulative impacts on the environment resulting from the realization of the gas pipeline and the presence of other accomplished or permitted investment proposals within the frame of the pipeline route will also be taken into consideration.
Expected environmental impacts of proposed Activity (e.g. types, locations, magnitudes)	During the construction more significant impact is expected on the soils, the flora and the fauna as well as on the landscape. The impact of the proposed activity on the components of the environment during the operation of the gas pipeline is expected to be insignificant save for the impact on the soils.
Inputs (e.g. raw material, power sources, etc.)	During the construction of the gas pipeline the following raw materials and power sources will be used: • ***earth*** At this stage no specific distribution of the land plots located within the route of the proposed activity can be made. • ***water*** During the construction of the gas pipeline water

	will be used for:: ✓ preparation of concrete mixtures and other construction solutions; ✓ damping of the temporary roads and construction sites aiming at preventing of dust emissions in the atmosphere; ✓ hydraulic tests of the gas pipeline; ✓ Daily needs of the stuff. The water quantity to be used during the construction will be insignificant. • ***energy sources*** Natural gas will be used as fuel for the compressor stations; fuels for the construction mechanization (mainly diesel) will be used as well. The electricity needed for welding works will be supplied mainly by diesel generators and for the main storages – by the electric grid. • ***mineral sources, inert materials, wood material*** The realization of the proposed activity is not connected with production or use of mineral or wood material. Inert materials will be used for the construction of the sites of the compressor stations, linear crane assembles, entrance and exit terminals, gas pipeline route facilities for crossing of other infrastructure and water objects, earth fortifications and swaths. The mineral sources, inert materials and wood material will be supplied from the commodity market.
Outputs(e.g. amounts and types of: emissions into the atmosphere, discharges into the water system,solid waste)	Emissions into the atmosphere are expected during the construction caused by the construction works (dust) and the working engines of the construction mechanization. During the gas pipeline commissioning significant quantity of waste waters is expected. There will be construction waste most of which will be earth. Hazardous waste can be generated on the sites for service and maintenance of the construction machines. The construction process will be source of noise and vibrations within the construction site coming from the construction mechanization; it will be also source of noxious physical factors such as heat, light, electromagnetic and ionic radiation during the welding works of the pipeline. All activities upon which waste will be generated will be performed in compliance with the

	effective legislation which will lead to maximum reduce of the expected emissions. During the construction process no soil pollution is expected.
Transboundary impacts(e.g. types, locations, magnitudes)	Eventual transboundary impact on the environment can be expected during the construction of the gas pipeline as it is expected that such impact will be insignificant and of short duration. Such impact could take the form of insignificant emissions of dust in the atmosphere in result of the construction works; and emissions of natural gas. Such eventual impact could be located within quite limited areas in Romania and Serbia. During the operation of the gas pipeline no transboundary adverse impact on the environment of another country (or parts thereof) caused by the proposed activity is expected.
Proposed mitigation measures (e.g. if known, mitigation measures to prevent,eliminate, minimize, compensate for environmental effects)	Proposed mitigation measures to minimize the impact on the environment during the construction of the gas pipeline are: • local narrowing of the construction corridor by mounting the line in a neighboring section and drawing it out in the narrowed corridor; • horizontal drilling under rivers and riversides aiming at avoiding the impact on the environment within and around main/tender streams; • sectional construction for avoiding the presence of constant open long-length excavation which cannot be crossed by wild animals; • seasonal works in some sections aiming at avoiding the nesting seasons and migrations; • providing of temporary shelters for the wild animals by the final restoration of the terrain; • special restoration of the soil and the flora; • Compensating planting along the corridor. Development and proposal of specific measures to prevent, limit and minimize the impacts of the

	proposed activity on the environment during the construction of the gas pipeline by type of the impact and in regard to the separate environmental components (transboundary impact inclusive) is the subject matter of the EIA Report. No adverse impact on the environment is expected during the operation of the gas pipeline.
Additional information/comments	
(iv) Proponent/developer	
Name, address, telephone and fax numbers	**South Stream Bulgaria AD** 8 Tri Ushi Str., 1000 Sofia, Bulgaria Tel: + 359 2 421 7248; +359 2 421 7251 Fax: +359 2 421 7257
(v) EIA documentation	
Is the EIA documentation (e.g. EIA report or EIS) included in the notification?	~~Yes~~ **No** ~~Partially~~
If no/partial, description of additional documentation to be forwarded and (approximate) date(s) when documentation will be available	The time-frame of the duration of the consultations and the exchange of additional documentation between the parties is defined on a case-by-case basis. The prepared EIA Report will be provided to the affected parties and will be subject matter of public discussions with the participation of the affected parties. The EIA decision will be also provided to the affected parties.
Additional information/comments	
2. POINTS OF CONTACT	
(i) Points of contact for the possible affected Party or Parties	
Authority responsible for coordinating activities relating to the EIA (refer to decision I/9, annex) - Name, address, telephone and fax numbers	**1. Serbia**: Ministry of Environment and Spatial Planning 1 Omladinskih Brigada Str. 11070 Belgrade Tel: +381 11 31 32 572 Fax: +381 11 31 32 574 **2. Romania** Ministry of Environment and Forests 12, Blvd. Libertatii, Sector 5, Bucharest RO - 040129 Telephone: +40 21 316 7735 Fax: +40 21 316 0421
List of affected Parties to which notification is being sent	Serbia, Romania
(ii) Points of contact for the Party of origin	

Authority responsible for coordinating activities relating to the EIA (refer to decision I/9, annex) - Name, address, telephone and fax numbers	**Ministry of Environment and Waters (MEW)** 22 Maria Louisa Blvd. 1000 Sofia Telephone: +359 2 988 2577 Fax: +359 2 986 2533
Decision-making authority if different than authority responsible for coordinating activities relating to the EIA - Name, address, telephone and fax numbers	**N/A**
3. INFORMATION ON THE EIA PROCESS IN THE COUNTRY WHERE THE PROPOSED ACTIVITY IS LOCATED	
(i) Information on the EIA process that will be applied to the proposed activity	
Time schedule	According to the Bulgarian law the general procedure of environmental impact assessment is carried out in the following sequence: **1.** Notification to the competent authorities and the affected communities about the investment proposal; **2.** Assessment by the competent authority (MEW) of the necessity for performance of EIA; **3.** Consultations for determination of the scope, contents and the form of the EIA Report (by the developer); **4.** Preparation of Terms of Reference for the scope and contents of the EIA Report (by the developer); **5.** Preparation of the Report (by experts appointed by the developer); **6.** Assessment of the quality of the EIA Report - by the MEW, within 30 days as from the submission of the EIA Report; **7.** Public discussions on the EIA Report, with the affected communities inclusive – the date of the first meeting is scheduled not later than 60 days as of submission of such request by the developer; the statements of the communities shall be presented wither at the meeting set for the public discussion or be sent to MEW within 7 days after the public discussion has been carried out;

	8. Passing of a resolution on EIA by the MEW – within 45 days after the public discussions have been carried out by taking into consideration of the results thereof; possibility for appeal of the EIA Resolution before the court within 14 days as from the date the affected parties have been notified about the resolution; entry into force of the resolution if no appeals have been submitted; **9.** Control by the MEW about the fulfillment of the conditions set out in the EIA Resolution; **10.** Actualization of the EIA Resolution in case of its expiry. At this stage all steps from p.1 to p.4 inclusive are fulfilled. The expected time-frame for elaboration of the EIA Report under point 5 is not later than 30 July 2013.
Opportunities for the affected Party or Parties to be involved in the EIA process	YES
Opportunities for the affected Party or Parties to review and comment on the notification and the EIA documentation	YES
Nature and timing of the possible decision	
Process for approval of the proposed activity	In case a significant adverse transboundary impact of the proposed activity is expected the affected party (as defined in the Convention) is given the opportunity to take part in the EIA Procedure. In such case after the developer notifies MEW about its investment proposal the EIA Procedure is carried out in the following way: **1.** The Minister of the Environment and Waters notifies the affected party or parties about his resolution and sets a term for response whether the affected party will take part in the procedure; attached to the notification will be a description of the investment proposal and available information (which does not represent a classified information under the Law on protection of classified information) about potential trasnboundary environmental impact as well as about the nature of the possible decision which will be taken by MEW; **2.** If the affected party responds that it intends to

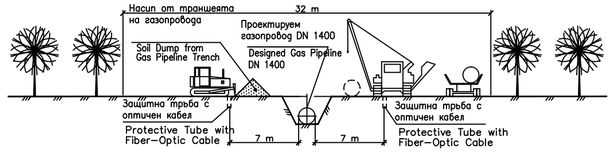
	participate in the EIA Procedure, a notification to the public is arranged in regard to the application of the trasnboundary procedure; **3.** Consultations about the procedure shall be carried out between the parties as the time-frame for the consultations shall be defined on a case-by-case basis; information about the main legislative requirement shall also be provided; **4.** The scope of the information to be included in the EIA Report by the developer shall also be determined, especially in regard to the aspects of the transboundary impact and the measures to prevent and mitigate such impact; **5.** An EIA Report shall be prepared as the developer shall be obliged to present to the competent authority (MEW) an additional copy of the report, translation of the whole report or part thereof, if so agreed between the parties, as well as translation of the non-technical resume to the EIA Report; **6.** An assessment of the quality of the EIA Report shall be carried out by the competent authority (MEW) as special attention shall be given to the transboundary impacts of the investment proposal and the measures for their mitigation and prevention; **7.** The EIA Report (and its translation, if agreed) and the translation of the non-technical resume shall be sent to the competent authority in the affected party as an opportunity shall be given for carrying out of consultations about: (a) the potential transboundary impacts and the measures for their mitigation and prevention; (b) possible proposed alternatives of the investment proposal; and (c) other matters of mutual concern; **8.** The documentation received from the carried consultations shall be provided to the developer;

	9. Public discussion on the EIA Report shall be carried out by giving an opportunity for a representative of the competent authority of the affected party and its public to take part in the discussion; **10.** The competent authority (MEW) shall pass a resolution about the EIA by taking into consideration the notes and suggestions made by the affected party participating in the EIA Procedure; **11.** The EIA Resolution shall be announced and notified to the affected Party; **12.** Control about the implementation of the EIA Resolution shall be carried out and, if so agreed between the parties, MEW shall notify the competent authority in the affected party about the control measures that have been taken and the findings that have been made.
Additional information/comments	
4. INFORMATION ON THE PUBLIC PARTICIPATION PROCESS IN THE COUNTRY OF ORIGIN	
Public participation procedures	In case of positive assessment of the quality of the EI Report the developer shall arrange public discussions on the EIA Report jointly with the affected municipalities and districts defined by MEW or by officer appointed by it. The developer and the competent bodies shall ensure public access to the EIA Documentation for a period of 30 days before the start of the public discussions. For the purposes of the public discussions the developer shall submit a written application to the affected municipalities and districts along with an offer for the place, the date and time of the meeting/s for public discussions, and about the place where the documentation can be publicly accessed and statements be submitted. The date of the first meeting is scheduled not later than 60 days as of the date the application has been submitted by the developer. The representatives of the public shall present their statements in writing at the meeting for the public discussion or shall sent them to MEW in regard to the

	EIA Resolution not later than 7 days after the public discussions have been carried out. Within 7 days after the public discussions the developer shall present to MEW the results thereof along with the statements and the protocols for the discussions that have been carried out.
Expected start and duration of public consultation	April 2013; expected duration of the public discussions – 50 days.
Additional information/comments	
5. DEADLINE FOR RESPONSE	
Date	
APPENDICES	1. SHORT SUMMARY of the investment proposal for construction and operation of a land section of the route of the South Stream Gas Transmission Pipeline prepared in English for the purposes of the notification to the potentially affected parties; 2. Map of the main route of the section of South Stream Gas pipeline subject matter of the proposed activity.

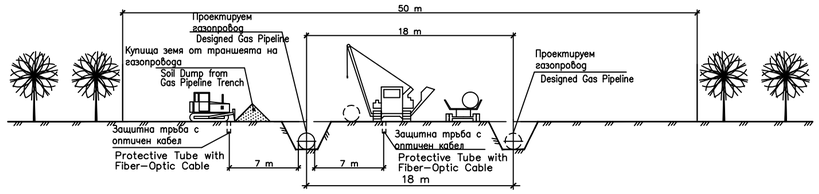
Строителна полоса на газопровода при неселскостопански земи

Allotment part for gas pipeline construction period on non–agricultural lands



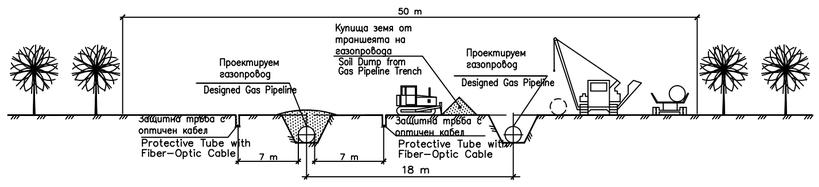
Строителна полоса на паралелни газопроводи при неселскостопански земи

Allotment part for construction period of parallel gas pipeline runs on non–agricultural lands



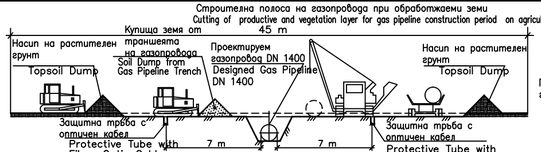
Строителна полоса на паралелни газопроводи при неселскостопански земи – II етап

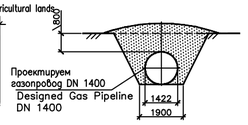
Allotment part for construction period of parallel gas pipeline runs on non–agricultural lands

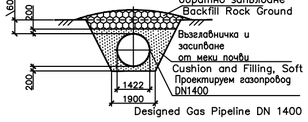


Строителна полоса на газопровода при обработваеми земи

Cutting of productive and vegetation layer for gas pipeline construction period on agricultural lands

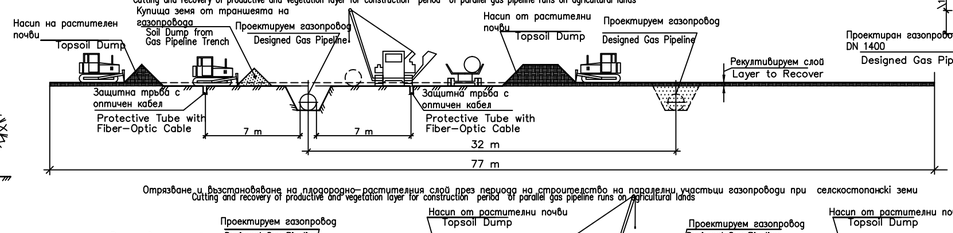


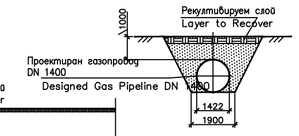




Отрязване и възстановяване на плодородно–растителния слой през периода на строителство на паралелни участъци газопроводи при селскостопански земи

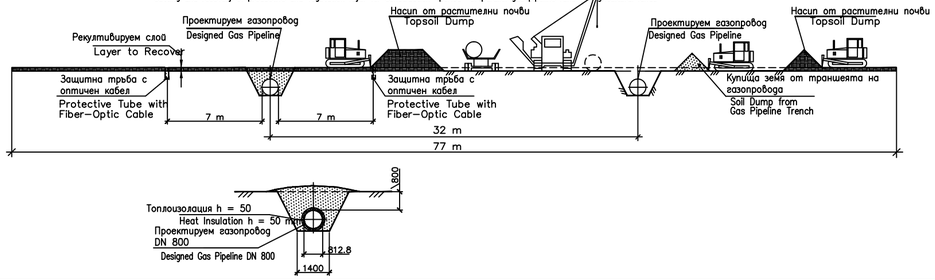
Cutting and recovery of productive and vegetation layer for construction period of parallel gas pipeline runs on agricultural lands





Отрязване и възстановяване на плодородно–растителния слой през периода на строителство на паралелни участъци газопроводи при селскостопански земи

Cutting and recovery of productive and vegetation layer for construction period of parallel gas pipeline runs on agricultural lands



02													
01													
Ревизия: Revision:	Дата: Date:	Описание / Description							Проверил: Checked by:		Одобрил: Approved by:		
Съгласували / Agreed by:													
Част: Part:	Т Tech	Арх Arch	К Cons	ГТ PP	Ел EL	ЕХЗ CP	ОВ HVAC	ТСВ COMM	АТП INSTR	ВнК WS&S	П ROAD	ИТП GEOL	Хидр HYDR
Подпис: Signature:													

Печат на проектант: Designer stamp:

Печат на консултанта: Consultant stamp:

Възложител: Client: South Stream Bulgaria AD ENERGISING EUROPE

Изпълнител: Contractor: Консорциум / Consortium Bulgaria GASTEC PJSC "YUZHNIIGIPROGAZ"

Обект: ПРЕНОСЕН ГАЗОПРОВОД "ЮЖЕН ПОТОК" НА ТЕРИТОРИЯТА НА РЕПУБЛИКА БЪЛГАРИЯ
Project: TRANSMISSION GAS PIPELINE "SOUTH STREAM" ON THE TERRITORY OF REPUBLIC OF BULGARIA

ИЗХОДНИ ДАННИ ЗА ПРОЕКТИРАНЕТО

DESIGN BASIS

	Име, фамилия: Name, surname:	Подпис: Signature:	Дата: Date:	Фаза: Phase:	ИДП: DB:
Инженер-проектировщик: Design engineer:	Алексей Петров Alexey Petrov			Част: Part:	Т Tech
Главный специалист: Chief specialist:	Евгений Зайцев Evgeny Zaytsev			Мащаб: Scale:	
Гл. Проектант: Chief designer:				List: Sheet:	
Зам. Р-л Проект: Dep. Proj. Manager:	Владимир Аксенов Vladimir Aksenov				
Управитель Проекта: Project Manager:	Валентин Станчев Valentin Stanchev				

Име на чертежа: Drawing name: Полоса строительства / Working Strip

Сигнатура / Code: 03-06/01-ЮПБ-ТП-ОП-П31.2-Т17 / 03-06/01-SSB-FEED-DB-EN1.2-Tech17

Име на файла / File name: 03-06/01-SSB-FEED-DB-EN1.2-Tech17

Format A4x5

РЕПУБЛИКА БЪЛГАРИЯ
МИНИСТЕРСТВО НА ОКОЛНАТА СРЕДА И ВОДИТЕ

Изх. № ОВОС-1144/...21.11.....2012 г.

„Южен поток България" АД	
Вх. №	569-00/01
Дата:	23.11.2012
Бр. стр.	2

ДО
Г-Н ГЕОРГИ ГЕГОВ
Г-Н ИГОР ЕЛКИН
ИЗП. ДИРЕКТОРИ НА
"ЮЖЕН ПОТОК БЪЛГАРИЯ" АД
УЛ. „ТРИ УШИ" № 8
1000 ГР. СОФИЯ

Относно: Процедура по оценка на въздействието върху околната среда (ОВОС) на инвестиционно предложение за „Изграждане на газопровод „Южен поток" на територията на Република България"

УВАЖАЕМИ ГОСПОДИН ГЕГОВ,
УВАЖАЕМИ ГОСПОДИН ЕЛКИН,

Във връзка с направеното на 21 април 2012 г. от страна на МОСВ уведомяване на Република Сърбия, съгласно чл. 3 на *Конвенцията по ОВОС в трансграничен контекст*, Ви информираме, че на 16 ноември 2012 г. в МОСВ е получен отговор на министъра на енергетиката, развитието и опазване на околната среда, съгласно който страната заявява, че няма да участва в процедурата по ОВОС на инвестиционното предложение за изграждане на газопровод „Южен поток" на територията на Република България.

По повод на гореизложеното, приложено към настоящето писмо Ви предоставяме копие на отговора на Република Сърбия за сведение и съобразяването му в крайния вариант на заданието за обхвата и съдържанието на доклада за ОВОС на инвестиционното предложение.

Приложение: съгласно текста.

С уважение,

ЕВДОКИЯ МАНЕВА
ЗАМ. МИНИСТЪР

София 1000, бул. "Мария Луиза" 22
Тел: 940 6279, Факс: (+3592) 988 53 16

Република Србија
Министарство енергетике,
развоја и заштите животне
средине
Немањина 22-26
11000 Београд
Србија

Republic of Serbia
Ministry of Energy,
Development and
Environmental Protection
22-26, Nemanjina Str.
11000 Belgrade
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Tel: +381 (0)11 361 7722 Fax: +381 (0)11 361 7588

Бр/N°: 353-02-950/2012-02
Датум/Date: 23.10.2012. године

MINISTRY OF ENVIRONMENT AND WATERS
MINISTER

22 Maria Luisa Blvd
Sofia 1000

Subject: Replay on the Notification of an investment proposal "South Stream" Gas Transmission Pipeline" on the territory of Republic of Bulgaria

Dear Mrs Karadjova,

Pursuant to Article 3 of the Convention on Environmental Impact Assessment in a transboundary context, we wish to inform you that we will not participate in the procedure for determining the scope and content of the Environmental Impact Assessment Study of an investment proposal "South Stream" Gas Transmission Pipeline" on the territory of Republic of Bulgaria.

The reason for this decision lies in the fact that it is a linear object which should be continued through the territory of the Republic of Serbia, where in accordance with the serbian regulations on the EIA, will be conducted Environmental Impact Assessment procedure for that part of the pipeline.

Based on information from Notifikation documentation we find that the implementation of the project in your country will not cause adverse impact in terms of environmental protection in the territory of the Republic of Serbia.

Sincerely yours

[redacted]
Professor Zorana Mihajlovic, Ph.D

cc: Ministry of foreign affairs of Republic of Serbia, Belgrade