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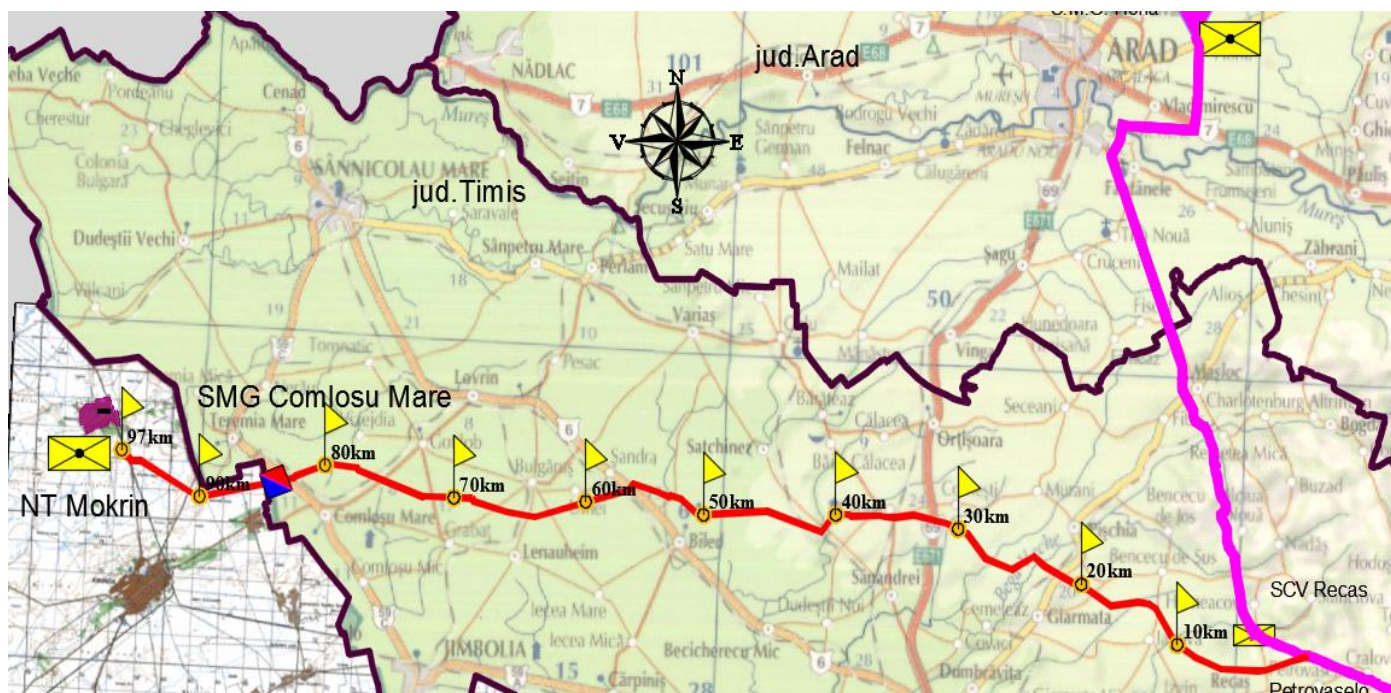
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DESIGN AND RESEARCH DIVISION

**PRESENTATION REPORT
to obtain the environmental permit
for the Project:**

"Interconnection of the Romanian National Gas Transmission System with the similar Gas Transmission System in Serbia; including power supply, cathodic protection and optical fiber"



THE NATIONAL GAS TRANSMISSION COMPANY TRANSGAZ S.A. MEDIAŞ
DESIGN AND RESEARCH DIVISION

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for the Project:

**“Interconnection of the Romanian National Gas Transmission System with the similar
Gas Transmission System in Serbia;
including power supply, cathodic protection and optical fiber”**

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PRESENTATION REPORT

I. PROJECT NAME:

Interconnection of the Romanian National Gas Transmission System with the similar Gas Transmission System in Serbia; including power supply, cathodic protection and optical fiber

II. HOLDER

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III. DESCRIPTION OF THE PHYSICAL CHARACTERISTICS OF THE PROJECT

3.1. Project Summary

This report analyzes the environmental impact of the project *Interconnection of the Romanian National Gas Transmission System with the similar Gas Transmission System in Serbia; including power supply, cathodic protection and optical fiber*.

The entity responsible for implementing the project is Transgaz S.A. Medias, the licenced operator of the Romania National Gas Transmission System.

The project envisages the construction of a new DN 600 gas transmission pipeline approximately 85,560 m long on the territory of Romania.

The projected investment objective will be located in Timis County, on the administrative territory of Recaș, Remetea Mare, Giarmata, Pișchia, Sânanđrei, Orțișoara, Satchinez, Biled, Șandra, Lenauheim, Gottlob and Comloșu Mare.

An end of the pipeline route will be on the territory of Recaș, Petrovaselo village, where it will be connected to the DN 800 BRUA pipeline and existing DN 500 West 1 and West 2 pipelines, and the other end will be in Comloșu Mare commune, at the border between Romania and the Republic of Serbia.

The pipeline route is represented in Figure no. 1.



Figure 1 - Interconnection of the Romanian National Gas Transmission System with the similar Gas Transmission System in Serbia; including power supply, cathodic protection and optical fiber - gas pipeline route

Transmission network technological facilities will be located on the pipeline route as follows: 14 valve stations (VS), 3 cathodic protection stations (CPS), and a proposed Commercial Gas Metering Station (GMS) to be located on the territory of Comloșu Mare, at approx. 400 m from the border with the Republic of Serbia.

The route of the gas pipeline crosses traffic routes (A1 railways, national roads, county roads, communal roads, railways), cadastral waters, valleys and canals, existing underground gas pipelines and sewerage pipes, etc.

The operational and constructive features of the project are summarized in Table no. 1.

Table no. 1 - Constructive and operational features of the project

Name	Measurement Unit	Size
Design pressure	bar	63
Minimum pressure at Mokrin (Serbia)	bar	39÷45
Minimum coupling point pressure (BRUA)	bar	50
Plan pipeline length	km	85.56 km
Nominal pipeline diameter	mm	600
External pipeline diameter	mm	610 (Ø 24")
Maximum flow rate	Sm ³ /year	1.6 bcm/year (183,000 Scm/h) - 2.85 mld (285,000 Scm/h)
Cadastral water crossings	Pc.	12
Channel crossings	Pc.	46
A1 railway crossings	Pc.	1
Railway passage crossing	Pc.	1
National roads crossings	Pc.	3
County roads crossings	Pc.	6
Communal roads crossings	Pc.	6
Access roads crossings	Pc.	11
Railway crossings	Pc.	7
Pressure relief valve stations (VS)	Pc.	7
Pressure monitoring valve stations (VS)	Pc.	7
Transgaz pipelines crossings	Pc.	4
Premiere Energy pipelines crossings	Pc.	2

Name	Measurement Unit	Size
Conpet pipelines crossings	Pc.	2
Delgaz pipelines crossings	Pc.	1
Cathodic protection stations (CPS)	Pc.	3
Gas Metering Station (GMS)	Pc.	1
PIG launching/receivind traps	Pc.	3
Telecommunication networks	Pc.	12

The design of the natural gas transmission pipeline was carried out in accordance with the Technical Rules for the Design and Execution of the Gas Transmission Pipelines approved by Order 118/2013 of the ANRE President. According to Government Decision 766/1997 and the Rules for establishing the construction importance categories, the gas pipeline belongs to the 'C importance building' category.

Designed works:

The technical documentation refers to the following works:

- DN 600 high pressure natural gas transmission pipeline;
- Interconnection of the designed pipeline with the National Gas Transmission System;
- Commercial Gas Metering Station for the bidirectional transited gas between Romania and Serbia;
- 14 isolation valve stations;
- 3 cathodic protection stations;
- Control, surveillance and data acquisition system, telecommunications system;
- New access roads;
- Roads, railways, watercourses, canals, etc undercrossings.

Description of the main objectives of the project

a. Gas transmission pipeline

The main technical characteristics of the gas transmission pipeline are the following:

- Design pressure: 63 bar;
- Pipeline nominal diameter: 600 mm;
- Pipeline external diameter: 610 mm (Ø 24 ");
- Pipeline length: 85.56 km;
- Maximum flow transmitted: 1.6 bcm / year – 2.5 bcm / year;
- The entire pipeline will be suitable for pig inspection.

The distribution of the natural gas transmission pipeline at the level of the territorial administrative units is summarized in Table no. 2:

Table no. 2 - Distribution of the gas transmission pipeline by administrative- territorial units

County	Administrative- territorial unit	Pipeline section length (m)	Kilometric position of the pipeline
TIMIȘ	Recaș town	11,056	km 0 – km 11 + 056
	Remetea Mare commune	6,434	km 11 + 056 – km 17 + 490
	Giarmata commune	8,866	km 17 + 490 – km 26 + 356
	Pișchia commune	3,334	km 26 + 356 – km 29 + 690
	Sânandrei Commune	2,578 + 5,720	km 29 + 690 – km 32 + 268 km 33 + 745 – km 39 + 465
	Orțișoara Commune	1,477	km 32 + 268 – km 33 + 745
	Satchinez Commune	9,652	km 39 + 465 – km 49 + 117

County	Administrative- territorial unit	Pipeline section length (m)	Kilometric position of the pipeline
	Biled Commune	6,148	km 49 + 117 – km 55+265
	Şandra Commune	7,598	km 55 + 265 – km 62+863
	Lenauheim Commune	13,034	km 62 + 863 – km 75+897
	Comloşu Mare Commune	9,663	km 75 + 897 – km 85+560
	TOTAL	85,560	

According to the Technical Rules for the Design and Execution of Natural Gas Transmission Pipelines, approved by the Order 118/2013 of the A.N.R.E. President, the working lane necessary for the DN 600 mm pipeline execution works is 20 m wide in arable, pasture, hedge and unproductive land, and 14 m wide for vineyards and orchards.

The gas transmission pipeline will be buried along its entire length, at a distance of at least 1.1 m between the ground surface and its upper generatrix. When undercrossing the traffic routes, the pipeline will be buried at a depth of at least 1.5 m, and for water undercrossings, at least 1.5 m from the boundary elevations established by the hydrological study. When crossing the traffic routes, the conditions for the execution of the works according to the Technical Rules for the Design and Execution of the Gas Transmission Pipelines, approved by Order 118/2013 of the A.N.R.E. President, as well as the STAS 9312/1982 provisions will be complied with.

The pipeline will be protected against external corrosion by insulation with special and cathodic materials, by means of the cathodic protection stations which will be mounted on its route.

b. Interconnection of designed pipeline with the NTS planned on the territory of the Recaş administrative - territorial unit, Petrovaselo village, with the following components:

- Special pressure perforation tee DN 800 / DN 600 at the coupling point with the BRUA pipeline;
- 2 Special pressure perforation tees DN 500 / DN 300, at the coupling points with the existing pipelines West I and II;
- DN 600 (ANSI 600) shut-off ball valve with flanges, mounted underground, electrically actuated when coupled to the BRUA pipeline;
- 2 flanged spherical shut-off valves DN 300 (ANSI 600), mounted underground, electrically actuated, when coupled to the West I and II pipelines;
- 2 spherical DN 600 (ANSI 400) ball shut-off valves with welding heads, mounted underground, electrically actuated, (1 piece at the entrance to the pig launching / receiving trap and 1 piece on the BRUA interconnection pipeline). They are each provided with a DN 400 bypass;
- 1 DN 300 mm spherical shut-off valve (ANSI 400) with welding heads, electrically actuated, mounted underground on the West II connection pipeline. It is equipped with a DN 200 bypass, which is equipped with a DN 200 (ANSI 400) adjusting valve between two DN 200 spherical valves (ANSI 400). The bypass valves are electrically actuated;
- 1 spherical shut-off DN 300 mm (ANSI 400) ball valve with welding heads, mounted underground, electrically actuated, mounted on the connection pipeline between the Dn 600 interconnection pipeline and the liquid accumulator;
- DN 600 pig launching / receiving trap at the Petrovaselo coupling point;
- Connecting pipelines;
- Access point to the Petrovaselo coupling point;
- BRUA and West 2 pipelines coupling point enclosure (including the separate enclosure for West I pipeline coupling) with concrete panels provided with access doors and secured at the top with barbed wire made of NATO steel, circularly arranged.

b. The Gas Metering Station planned to be carried out on the territory of the Comloşu Mare administrative - territorial unit, will mainly comprise the following:

- Pig launching / receiving trap at GMS Comloşu Mare to / from Petrovaselo;
- Pig launching / receiving trap in GMS Comloşu Mare to / from Mokrin (Serbia);
- Separation-filtration installation, comprising 3 identical filtering lines;
- Metering installation, comprising 3 identical metering lines on which an ultrasonic meter is mounted;
- Pressure and temperature transducers, indicator gauges, etc.;
- RTU SCADA equipment with remote transmission of parameters, pressure, temperature, status and position of the electrically actuated valves;
- Electrical and automation panels, power and signal cables;
- External lighting, earthing and lighting rod installations;
- Foundations and supports for the projected technological installations;
- Connection to the utilities to be carried out in the area: power supply (main and backup from the generator group), of the electrically actuated valves;
- Gas, flame and fire detection and warning systems, break-in detection and warning system for Ex environment, video surveillance system;
- Administrative building with the following spaces: dispatch room, control room, instrumentation panels room and electrical equipment, automation room, office space + training room, archive, dressing rooms and toilets, PSI room, air conditioning room, kitchen, lobby, porter's cabin;
- Rainwater system, parking, perimeter green space;
- Enclosure with prefabricated concrete panels, provided at the top with barred steel wire made of NATO steel circularly arranged.

d. Isolation valve stations

14 isolation valve stations with related facilities are planned to be located on the pipeline route at the railway crossings, according to Table no. 3.

Table no. 3 - Valve stations

Valve station no.	Railway	Crossing location	The km position (indicated on the pipeline route)	The area occupied definitively, m ²
VS 1	CF 213	between Giarmata and Pişchia	23+249	273
VS 2			23+335	45
VS 3	CF 310	between Carani and Sîndandrei	36+925	45
VS 4			37+050	273
VS 5	CF 217	between Hodoni and Sîndandrei	42+625	273
VS 6			42+720	45
VS 7	CF 218	between Şandra and Biled	57+020	273
VS 8			57+155	45
VS 9	CF 928	between Bulgăruş and Lenauheim	66+616	45
VS 10			66+702	273
VS 11	CF 217	between Gottlob and Comloşu Mare	77+985	273
VS 12			78+495	45
VS 13	CF 217	between Comloşu Mare and Teremia Mare	83+145	273
VS 14			83+275	45

According to the Technical Rules for the Design and Execution of Gas Transmission Pipelines, approved by Order 118/2013 of the A.N.R.E. President, isolation valves must be mounted in the case of the railway crossings. The isolation valves will be mounted underground, on concrete foundations, at the depth of the buried pipeline,

and at 1.1 m from the upper generatrix. The mounted valves will be full bore ball valves, equipped with quick-closing devices for pipeline damage situations. At each railway undercrossing, a pressure relief valve station will be mounted on one side and a pressure monitoring valve station on the other.

e. Digital data remote transmission system (optical fiber).

The communication support will consist of a group of optical fiber tubes. The optical fiber will be parallel to and of the same length to the pipeline route, and the optical fiber mounting works will be executed within the working corridor.

For the undercrossing of national roads, county roads, and railways, the optical fiber will be mounted in the protection casing of the undercrossing. For the undercrossing of water and irrigation channels with the ballasted pipeline, the optical fiber montage will be mounted in a protection tube mounted outside the ballasting system.

f. Pipeline cathodic protection system

Pipeline protection is achieved through passive protection and active protection. The passive protection of the pipeline consists of the outer three-layered polyethylene insulation of the pipeline. The active protection of the pipeline will be by 3 cathodic protection stations located according to Table no. 4:

Table no. 4 - Kilometric distribution of the cathodic protection stations

CPS	Location	Kilometric position
CPS 1	Coupling Petrovaselo	km 0 + 000
CPS 2	Hodoni Station, Satchinez commune	km 42 + 625
CPS 3	The Comloşu Mare Gas Metering Station	km 85 + 160

The anodic tap of the cathodic protection station shall be located at a distance of approximately 100 m from the pipeline. Cathodic protection monitoring is performed through the potential sockets located along the pipeline route.

g. Underground power supply installations required to power cathodic protection stations, valve stations and Comloşu Mare GMS. The power supply of the GMS and valves stations will be carried out from the existing 20KV and 0.4KV current networks in the area of the localities crossed by the Project.

h. Pig launching / receiving traps

For the cleaning and inspection of the pipeline during the operation period, three pig launching / receiving traps were foreseen.

A pig launching / receiving trap will be located at km 0, at the connection to the BRUA Petrovaselo and the West 1 and West 2 pipelines (Petrovaselo), and the other two on the premises of Comloşu Mare GMS, for the Romania - Serbia directio

OBSTACLE CROSSING

The natural gas pipeline will cross existing infrastructure elements, watercourses, drainage channels. Table no. 5 presents the obstacles / objectives crossed:

Table no. 5 - Obstacle crossing

Obstacles	Quantity (pcs.)	Name
Cadastral water crossings	12	Curașita (TA 1), Țiganului (TA 2). Ghertamoș (TA 3), Behela (TA 4). Unu (TA 5), Bega Veche (TA 6). Măgheruș (TA 7). Lacului (TA 8). Iercici (TA 9). Apa Mare (TA 10). Pământ Alb (TA 11). uncadastrated (TA 12)
Drainage channels crossings	48	Territorial-Administrative Unit Recaş: 2940 (THC 1) Channel, CES 34 (THC 2) Channel, CES 29 (THC 3) Channel, Valea Bisericii Channel, (THC 5) Channel, 3579 (THC 6) Channel. Territorial-Administrative Unit Remetea Mare: (THC 7) Channel, (THC 8) Channel, (THC 9) Channel, (THC 10) Channel, 552/3 (THC 11) Channel, 442 (THC 12) Channel, 540 (THC 14) Channel. Territorial-Administrative Unit Giarmata: 952 (THC 15) 22 and 519 (THC 18) Channel, 514 (THC 19) Channel, 512 11/3/66 (THC 23) Channel. Territorial-Administrative Unit Pișchia: Channel 336 (THC 24). Territorial-Administrative Unit Orțișoara: Channel (THC 25), Channel (THC 26). Territorial-Administrative Unit Șandra: Channel 74/1 (THC 27). Territorial-Administrative Unit Lenuheim: Channel 450/3 (THC 28), Channel 514/2 (THC 29), Channel 552/3 (THC 30), Channel 257 (THC 31), Channel 300/1 (THC 32)), Channel 30 (THC 33), Channel 9 (THC 34), Channel 22 (THC 35).
A1 railway crossings	1	A1 railway (between Giarmata and Murani, km 506 + 295)
Railway passage crossings	1	A1 passage (DJ 609E)
National roads crossings	3	DN 69, DN6, DN 59 C.
County roads crossings	6	DJ 691, DJ 692, DJ 693, DJ 594 B, DJ 594, DJ 594 A.
Communal roads crossings	6	DC 62, DC 61, DC 42, DC 37, DC 24, DC 15.
Service roads crossings	11	DE 2951, DE 3115, DE 299/2, DE 368/1, DE 1139/1/2 concreted, DE 1133/1 concreted, DE 399/1, DE 380/1, DE 529 asphalted funds, DE 388 concreted, DE 19 asphalted funds.
Railway crossings	7	CF 213, CF 310, CF 217, CF 218, CF 928, CF 217, CF 217.
Transgaz pipelines crossings	4	Recas Timisoara Pipeline, Fir 3, DN500, Recas-Timișoara Pipeline, Fir 2, DN 300, Recas-Timișoara Pipeline, line 1, DN 350, Sănandrei connection DN 150.
Conpet pipelines crossings	2	Conpet Pipeline Ø6.5 / 8 ", Conpet Ø89 Pipeline
Delgaz pipelines pipelines crossings	1	Delgaz Sud Ø150 Pipeline
Premiere Energy pipelines crossings	2	Premiere gn. Pipeline, Premiere g.n. DN 150 Pipeline

Construction site and pipe material warehouses

During the execution of the construction and assembly works, two pipe material (PMW) and two site managements (SM) will be temporarily arranged as follows:

- the Recaş pipe material warehouse, proposed to be located within the Recaş administrative - territorial unit, will have an area of approximately 2,800 m². Access to the warehouse will be from the existing service road in the area;
- the Lenauheim pipe material warehouse, proposed to be located within the Lenauheim administrative - territorial unit, will have an area of approximately 2,800 m². Access to the warehouse will be from DJ 594 B;
- Carani site management within the Sânanđrei administrative - territorial unit, will have an area of 15,000 sqm. The access to the site organization will be made from the communal road DC 42, connected to the county road DJ 692;
- Comloşu Mare GMS site management within the Comloşu Mare administrative - territorial unit, will have an area of approximately 1,032 square meters of the total area of 6,828 sqm for the Comloşu Mare GMS objective.

The land temporarily occupied by the pipe material warehouses and the site management is located mostly on the outskirts of the localities, and the category of use is agricultural land (A) and pasture land (PS). Upon completion of the works, the land will be restored to its initial condition.

Table no. 6 - Location of pipe material warehouses and site management

County	Territorial-Administrative Unit	Land use	Affected area [m ²]	Legal regime of Unincorporated/incorporated area	Use category
Timiş	Recaş	Recaş PMW	2,800	Outside the built-up area	A
		Access road Recaş PMW	33	Outside the built-up area	A
	Sânanđrei administrative - territorial unit	Carani SM	15,000	Outside the built-up area	PS
		Access road Carani SM	12	Outside the built-up area	PS
	Lenauheim administrative - territorial unit	Lenauheim PMW	1,339	Outside the built-up area	A
		Lenauheim PMW	1,461	Within the built-up area	A
		Access road Recaş PMW	62	Within the built-up area	A
	Comloşu Mare administrative - territorial unit	Comloşu Mare GMS SM	1,032	Outside the built-up area	A

3.2. Justifying the need for the Project

At present the Romanian and Serbian national gas transmission systems are not interconnected, which leads to the failure to meet the strategic objectives of the European Union regarding a fully operational gas market to increase safety of gas supply and energy security in the area. The implementation of the Project will lead to the achievement of the following objectives:

- the interconnection of the Romanian and Serbian national gas transmission systems;

- the diversification of sources of gas supplied to the consumers in the area by ensuring access to the Black Sea natural gas volumes;
- the development of a transmission capacity which will ensure the interconnection with the pipelines with potential Black Sea liquefied gas sources of supply (the AGRI Project);
- transmission to the European gas markets in the Black Sea area by interconnection with the Bulgaria - Romania - Hungary - Austria pipeline;
- security of gas supply to European countries through access to new gas sources;
- reducing dependency on gas imports by covering the steady and predictable consumption growth trends in European countries based on a steady medium and long-term decline in gas supplies from the Russian region;
- gas supply of the pipeline route bordering areas;
- the emergence of a new market for the Black Sea gas resources by taking over into the NTS.

3.3. Investment value

Estimated investment value: 246,631,300.61 lei (without the VAT).

3.4. Proposed implementation period

The estimated project implementation period is of approximately 12 months.

3.5. Drawings representing the project site boundaries, including any land area requested for temporary use (site plans and location)

The project location is presented in the following topographical plans:

- Development Site Plan, drawing no. 1277-PT-00, sc. 1: 100,000
- Development Site Plan, drawing no. 1277-00, sc. 1: 200,000
- Pipeline Section 1 Layout Plan, km 0 ÷ 5, drawing no. 1277-PT-01 sc. 1: 5,000
- Pipeline Section 2 Layout Plan, km 5 ÷ 10, drawing no. 1277-PT-02 sc. 1: 5,000
- Pipeline Section 3 Layout Plan, km 10 ÷ 15, drawing no. 1277-PT-03 sc. 1: 5,000
- Pipeline Section 4 Layout Plan, km 15 ÷ 20, drawing no. 1277-PT-04 sc. 1: 5,000
- Pipeline Section 5 Layout Plan, km 20 ÷ 25, drawing no. 1277-PT-05 sc. 1: 5,000
- Pipeline Section 6 Layout Plan, km 25 ÷ 30, drawing no. 1277-PT-06 sc. 1: 5,000
- Pipeline Section 7 Layout Plan, km 30 ÷ 35, drawing no. 1277-PT-07 sc. 1: 5,000
- Pipeline Section 8 Layout Plan, km 35 ÷ 40, drawing no. 1277-PT-08 sc. 1: 5,000
- Pipeline Section 9 Layout Plan, km 40 ÷ 45, drawing no. 1277-PT-09 sc. 1: 5,000
- Pipeline Section 10 Layout Plan, km 40 ÷ 45, drawing no. 1277-PT-10 sc. 1: 5,000
- Pipeline Section 11 Layout Plan, km 50 ÷ 55, drawing no. 1277-PT-11 sc. 1: 5,000
- Pipeline Section 12 Layout Plan, km 55 ÷ 60, drawing no. 1277-PT-12 sc. 1: 5,000
- Pipeline Section 13 Layout Plan, km 60 ÷ 65, drawing no. 1277-PT-13 sc. 1: 5,000
- Pipeline Section 14 Layout Plan, km 65 ÷ 70, drawing no. 1277-PT-14 sc. 1: 5,000
- Pipeline Section 15 Layout Plan, km 70 ÷ 75, drawing no. 1277-PT-15 sc. 1: 5,000
- Pipeline Section 16 Layout Plan, km 75 ÷ 80, drawing no. 1277-PT-16 sc. 1: 5,000
- Pipeline Section 17 Layout Plan, km 80 ÷ 85 + 560, drawing no. 1277-PT-17 sc. 1: 5,000
- Site layout plan VS 13, SR14, drawing no. 1277 -17 - 03 , sc. 1: 5,000.
- Site layout plan GMS Comloșul Mare, drawing no. 1277-PT-17-06, sc. 1:100.

3.6. Physical forms of the project (plans, buildings, other structures, construction materials, etc.)

The proposed works are located outside and within the built-up area of Recaș, Remetea Mare, Giarmata, Pișchia, Sânnandrei, Orțișoara, Satchinez, Biled, Șandra, Lenauheim and Comloșu Mare. The Comloșu Mare Gas Metering Station is located outside the built-up area of Comloșu Mare commune.

The land related to the proposed works belongs to the public and / or private domain of the administrative - territorial units or is the private property of natural and / or legal persons.

The total area temporarily occupied by the project execution work: $S = 1,747,143 \text{ m}^2$, out of which:

- 1,715,386 m^2 – straight pipeline, valve stations and Comloșu Mare GMS working corridor;
- 2,800 m^2 - Recaș pipe material warehouse, km 5 + 030;
- 33 m^2 - access road to Recaș PMW;
- 15,000 m^2 - Cărani site management, Sânnandrei administrative - territorial unit, km 37 + 200;
- 12 m^2 - access road to the Cărani SM;
- 2,800 m^2 - Lenauheim pipe material warehouse, at km 66 + 650;
- 62 m^2 - access road to Lenauheim PMW;
- 11,050 m^2 - valve stations, Comloșu Mare GMS and cathodic protection station power supply network working corridor.

The total area occupied definitively by the Project is $S = 10,977 \text{ m}^2$, out of which:

- 1,020 m^2 - Petrovaselo coupling (including enclosure);
- 170 m^2 - access road to the Petrovaselo coupling;
- 2,226 m^2 - valve stations (including enclosure);
- 733 m^2 - access roads to the valve stations;
- 6,828 m^2 - Comloșu Mare GMS and access road.

3.7. Specific features for the proposed project

3.7.1. Profile and production capacities

The proposed natural gas transmission pipeline having a length of 85,56 km on the territory of Romania, will ensure the interconnection between Romania and Serbia, through the connection between the BRUA gas pipeline and the Mokrin Technological Node in the Republic of Serbia. The foreseen transmission flow under the Project will be of 1.6 bcm / year, with the possibility to be increased to 2.5 bcm / year.

3.7.2. Description of the installation and technological processes on site

Equipment of the proposed function:

- *The pipe material*

The pipe material for the construction of the pipeline section was dimensioned according to the Technical rules for the design and execution of natural gas pipelines, approved by the A.N.R.E Order no. 118/2013. In order to establish the physical and chemical characteristics of the pipes used for the Project, the particularities of the pipeline location area will be taken into account, particularities requiring the division and fitting of the pipe material into localisation classes.

The L415NE material was chosen for the pipes. A negative tolerance of 8%, chosen according to SR EN ISO 3183 was considered in the calculation of the wall thickness. The pipe material will be externally insulated by the supplier and the internal roughness of the pipeline will be of 0.02 mm. Hot bends will be used for horizontal and / or vertical pipeline flow diversion, and for branches, forged tees with equal or reduced branches.

The metal works internally executed or purchased from manufacturers will take into account the fact that by its construction the pipeline will be piggable. In this respect, the welding of valves and fittings will comply with the manufacturing rules for ensuring the appropriate nominal diameters.

The protection casing to be used for the undercrossing of the traffic routes will be made of S 355 JR steel pipe, according to SR EN 10025/2004, and the seals between the casing and the pipe will be made with spacers and sealing bellows having the technical approval.

- Isolation Valve Stations

At the crossing of the 7 railways the isolation valves on the pipeline will be mounted underground, on concrete foundations, at the depth of the buried pipeline, and at 1.1 m from the upper generatrix. At each railway undercrossing, a pressure relief valve station will be mounted on one side and a pressure monitoring valve station on the other.

A pressure relief valve station (VS) consists of a Dn 600 ANSI 400 ball valve with hydro-pneumatic actuation, electrically controlled, mounted on the transmission pipeline. The Dn 600 valve is equipped with a Dn 150 bypass, having two Dn 150 ANSI 400 safety valves with electrical indication of the manually operated position, and two Dn 150 ANSI 400 balanced ball valves, also with electrical position indication and manually operated. Discharge is performed through a pressure discharger, located at approximately 30 meters, with the Dn 150 diameter. The pressure discharger is equipped with a Dn 150 ANSI 400 ball valve with electrical position indication and manual operated.

- PIG launching/receiving traps

The inspection and / or cleaning of pipelines is performed using the PIG (a tool made of electronic components which runs inside the pipeline driven by the gas flow, inspecting by ultrasound the the pipeline walls for their integrity). The piggable design of the pipelines supposes the providing of a suitable inner geometry of the pipeline and all of the pipeline elements, enabling the running of the pig inside the pipeline in optimum conditions. The pig launching / receiving traps are located above the ground and will have the following main components:

- pig launching / receiving trap;
- an installation for separating liquids / gas contaminants;
- tank for liquid / contaminant collection;
- purger;
- valve system for station operation;
- technological pipelines.

- Connection of the designed pipeline to BRUA / the National Gas Transmission System The connection of the new pipeline to BRUA-Phase 1 and the West I and II pipelines will be performed without their taking out of operation, by special tees pressure couplings. On the West II pipeline connection pipeline, on the bypass of the Dn 300 ANSI 400 valve, with welding heads, mounted underground, a flow control valve will be mounted to protect the West II pipeline in case of overpressure, considering that the two pipelines have different pressure regimes. The connection of the Dn 600 interconnection pipeline to the West I pipeline is performed downstream the Dn 300 ANSI 400 valve, which is equipped with a control valve on the bypass, meaning that no control valve is needed for connection to West I (to protect it in case of overpressure from the interconnection pipeline).

- General safety features of the Project

The project foresees the following safety systems:

- a. Optical fiber cable system - performs the following functions:
 - securing and detecting any pipeline-related intrusion and unauthorized digging;
 - notification of pipeline gas leaks;
 - data acquisition and commands from: Comloşu Mare GMS, pig launching / receiving traps, cathodic protection stations, pipeline-ground potential measurement points, valve stations (including transmission of fire and burglary data).
- b. Monitoring system for tracking unauthorized digging on the pipeline route - based on the capturing vibrations as electromagnetic pulses and executed on three levels:
 - level 1 - mounted at the valve station;
 - level 2 - the dispatching centre installed at Comloşu Mare GMS;
 - level 3 - mounted at the Dispatching Center.Data between Level 2 and Level 3 are sent through VPN and GPRS networks.
- c. Burglary alarm and surveillance system - will consist of two subsystems:
 - sensitive optical fiber (sensor cable) for perimeter detection at each valve station which sends data to a local burglary alarm. The burglary alarm centre will be connected via sensitive optical fiber and through a GPRS modem to the dispatching centre;
 - video surveillance system designed to focuss the closest room on the exposed area as soon as an alarm is generated. The information is available in real time to operators at the level 2 security dispatching centre (and obviously sent to level 3) which can decide if an intervention team is required on site.
- d. Surveillance and fire safety system - will be composed of fire station and fire sensors.

All the valve groups (14 on the entire route) will have a fire monitoring system. Fire alarms will be sent through the same data transmission systems as those for the burglary system. The main valves will have fire extinguishing systems.

- e. The data acquisition and commands - will be structured on levels and will include:
 - level 1 - mounted at the valve groups. At this level, all the 14 groups of valves will be fitted with automation and control panels with electric actuators. Pressure and temperature measuring transducers will be mounted. Data will also be obtained from the cathodic protection stations (3 cathodic protection stations) where these are mounted. The valves and the cathodic protection stations can be controlled by automation panels,
 - level 2 - the dispatching centre installed at Comloşu Mare GMS for acquiring the data upstream the Metering Station. At this level, the pipeline-ground potential data will be acquired. The pipeline-ground data at the mid-distance between two cathodic protection stations will be transmitted only through optical fiber;
 - level 3 - mounted at a Dispatching Centre which will communicate to the dispatching centre at the Comloşu Mare GMS. Data between level 2 and level 3 will be transmitted through the VPN and GPRS networks.
- f. Anti-corrosion protection system of the pipeline.

Cathodic protection monitoring is done via potential sockets located along the pipeline. There will be a number of 138 potential sockets: 65 - simple potential sockets with one terminal, 31 - potential sockets mounted on monobloc electroinsulated joints, 2 - potential sockets for data transmission, 12 - potential sockets with

protection device, 17 - potential sockets with zinc anodes, 11 - potential sockets with zinc anodes and protection device.

- Comloșu Mare Gas Metering Station

The Comloșu Mare Gas Metering Station will ensure the bidirectional metering of the natural gas transmitted between Romania and the Republic of Serbia and will include:

- entry / exit and pigging mode in Romania;
- by-pass mode
- separation / filtering mode;
- pay-check and measurement and verification mode;
- entry / exit and pigging mode in Serbia.

At the premises of the Metering Station an administrative building, utility facilities (water and sewerage, power supply), access ways and platforms for the operation of the objective will be located.

The newly designed technological installation will have the following configuration:

- DN 600 inlet / output connection pipeline;
- DN 600 Class 400 GMS inlet / output valve group;
- DN600 Class 400 GMS inlet / output pig traps;
- DN 500 Class 400GMS internal bypass module;
- DN 250 Class 400 separation-filtering installation;
- DN250 Class 400 pay-check metering system (measurement and verification), comprising the necessary equipment both for the measuring and control of the gas flow circulated through the GMS;
- Gas purging installation

The location of the new GMS designed along the pipeline will allow coupling via inlet / output connection pipelines with DN600 Class 400 valves. The Serbia-Romania input / output valve group is located at the entrance to the projected gas metering station Comloșu Mare GMS, and it ensures the possibility of isolating the GMS from the transmission pipeline.

To ensure the possibility of inspection and internal cleaning of the transmission pipelines, two pig stations are foreseen, one at the entrance/exit to/from the GMS in the Petrovaselo-Comloșu Mare direction for the gas flow to the Republic of Serbia and in the Comloșu Mare-Petrovaselo direction for the gas flow to Romania.

The internal bypass module will allow gas circulation inside the station as needed.

The projected separation and filtering installation will consist of three DN300 Class 400 filter -separators, of which two are active and one backup. The resulting liquid and solid contaminants will be collected in a 4m³ metallic double-wall underground tank.

The tank will be equipped with a tank leakage detection and permanent integrity monitoring system. The evacuation of the contaminants from the tank will be carried out through emptying and disposal by authorized operators. The pay-check measurement is done by using dual ultrasonic meters, equipped with flow computers and pressure and temperature transducers. The electronic systems of the used measuring equipment will ensure the quantitative and qualitative measurement of the gas flows through the calculation of volum and energy flows as well as the determination of gas composition, water dew point and hydrocarbons dew point.

The pay-check measuring module consists of three metering lines in parallel, two are active and one backup and operational in case of failure or maintenance works regarding one of the two active metering lines.

The gas purging system is used for the depressurization of the technological installation in case of interventions or maintenance operations. Gas is purged by two will be achieved by two metal pipes with a nominal diameter of 300 mm and a height of approximately 5.5 m from the ground level.

An electronic supervision system is foreseen for the centralization of all information transmitted by the process instrumentation and flow computers.

3.7.3. Description of the production processes of the required project, depending on the specificity of the investment, the products and by-products obtained, the size, the capacity

The specificity of the proposed investment is the transmission of gas through high pressure pipelines.

3.7.4. Raw materials, energy and fuels used and their provision.

The following types of raw materials and auxiliary materials are expected to be used during the execution period:

- pipe material manufactured according to the applicable standards for gas pipelines;
- ballast, sorts, sand;
- water used for technological sampling, spraying and domestic use within the site management;
- concrete used to create ballast, anchorages, reinforcements and other related structures;
- modular technological subassemblies (valves, fittings, etc.) used for valves and cathodic protection stations;
- welding materials (electrodes, wires, fluxes, protection gas, oxygen tubes);
- small materials (screws and bolts, fittings, valves);
- diluents, primer, paint;
- insulation materials;
- fuel, engine oils - for powering machines and vehicles

Fueling the machines and vehicles will be done from car tanks whenever necessary (only for small equipment from the work site). The machines will be brought on site in perfect running condition, accompanied by the technical revisions and lubricant changes. The change of lubricants will be carried out in specialized units where the hydraulic and transmission oils will be exchanged.

All the materials, fittings, works and accessories used shall be properly stored throughout the execution, in order to avoid damage, degradation or waste, according to Table no. 7.

Table no. 7 - Raw materials and auxiliaries used in the construction stage - management mode

Raw / auxiliary materials	Origin	Storage method	Hazard
Pipe material, fittings	Specialized manufacturers	On ramps, pipeline warehouses, and site management. At the work sites level, they will be stored very shortly, after digging the laying ditches, respectively before the installation.	Non-hazardous
Ballast, sorts, sand	Authorized gravel pits	Temporary storage at the work site is used immediately after digging the laying ditch	Non-hazardous
Prefabricated, metallic constructions, curves, pipe clamps, screws and bolts, fittings, valves	Specialized manufacturers	Storage in open spaces in site organization. Minor materials are stored in closed warehouses, site construction, pipelines depots	Non-hazardous
Welding materials (electrodes, wires, fluxes, protective gas, oxygen)	Specialized manufacturers	In closed, ventilated warehouses, as instructed by the suppliers	Non-hazardous/ hazardous
Rebar, reinforcing bars	Specialized manufacturers	Storage in open spaces	Non-hazardous
Concrete	Authorized concrete stations in the area	It is not stored. It is used directly on site in shuttering structures	Non-hazardous
Wood for shuttering	Timber manufacturers	Storage in open spaces	Non-hazardous
Fuels	Fuel stations	It is temporarily stored in tanks at the site organization level	Hazardous
Diluents, paints, primers	Specialized distributors	In closed, ventilated warehouses, as instructed by the suppliers	Hazardous
Lubricants and other petroleum products	Specialized distributors	Stores arranged for this purpose within the site organization	Hazardous

The entire set of materials to be used will be procured on a contractual basis to ensure the necessary quantities and pace of supply from third-party, specialized and licensed firms. The contractors' selection

process will also take into account the extent to which they comply with and apply the environmental standards in the production and the marketing of materials, as appropriate.

All the materials, fittings, works and accessories used in the execution of the natural gas pipeline will meet the manufacturing standards and regulations and will be accompanied by quality certificates that will be kept (archived) in order to be included in the TECHNICAL BOOK OF THE CONSTRUCTION.

Any replacement or change of material will only be possible with the written consent of the general designer and the beneficiary.

All the works foreseen in the project to be executed in the workshop will be accompanied by quality certificates which will include all the relevant information on the quality of the base materials and the additions from their production (pipe, flanges, fittings, studs, gaskets, welding electrodes, etc.)

When making the constructions in the workshop, account will be taken of the fact that the pipeline will be inspected by PIG by its construction.

Prior to the shipment to the site, all workshop fittings (including directional change curves) will be subjected to the resilience test and the outside surface will be protected with a primer coat.

Table no. 8 – New access roads

No. Crt.	UAT	NAME	Surface [sqm]
1	Recaş	Access road to Petrovaselo coupling, designed from DE 2560	170
2	Giarmata	Access road to SR1, designed from DE 547	220
3	Sânandrei	Access road to SR4, designed from DJ 692	112
4	Satchinez	Access road to SR5, designed from DE 1302	62
5	Şandra	Access road to SR7, designed from DE 230/1	81
6	Lenauheim	Access road to SR10, designed from DE 529	34
7	Comloşu Mare	Access road to SR11, designed from DE 490	164
8	Comloşu Mare	Access road to SR13, designed from DE 235	60
9	Comloşu Mare	Access road to GMS Comloşu Mare, designed from DE 19	87,5

The technological succession to achieve the new access roads to the valve stations is the following:

- the plotting of the works for the access path construction shall be carried out;
- the vegetation layer from the site dedicated to the access path shall be removed;
- a 20 cm coating of natural cylindrical aggregates shall be laid;
- a layer of crushed stone shall be laid over it, wedged and muddy, being 20 cm thick after the compaction;
- Depending on the configuration of the land, triangular gullies shall be executed.

The technical conditions that must be fulfilled by the construction materials used are those stipulated in SR EN 13043: 2003 and the foundation and reprofiling layer shall be made according to STAS 6400-84. The degree of compaction to be reached in these access paths is min. 95%. Also, for the access to the working corridor during the execution of the construction and assembly works, the consolidation of the existing operation dirt roads in the constructions area shall be achieved by consolidation.

3.7.7. Natural resources used in construction and operation

During the execution period, mineral aggregates (crushed stone, ballast, sand, gravel) will be used to make ballasts, anchorages, foundations, reinforcements and other related structures.

No natural resources for technological purposes are used during the operation period of the investment.
The project does not provide for demolition works.

3.7.8. Methods used in construction/demolition

The installation of the natural gas transmission pipeline will be carried out through several processes, according to the methodology presented in the normative "Technical Rules for the Design and Execution of Natural Gas Transmission Pipes", approved by A.N.R.E. by Order no. 118/2013.

Preparing the working corridor

The width of the working corridor, which will be temporarily occupied for the execution of the designed works, will be 20 m in arable, pasture, hay and unproductive land, and for vineyards, orchards the working corridor will be 14 m. in Figure 2.

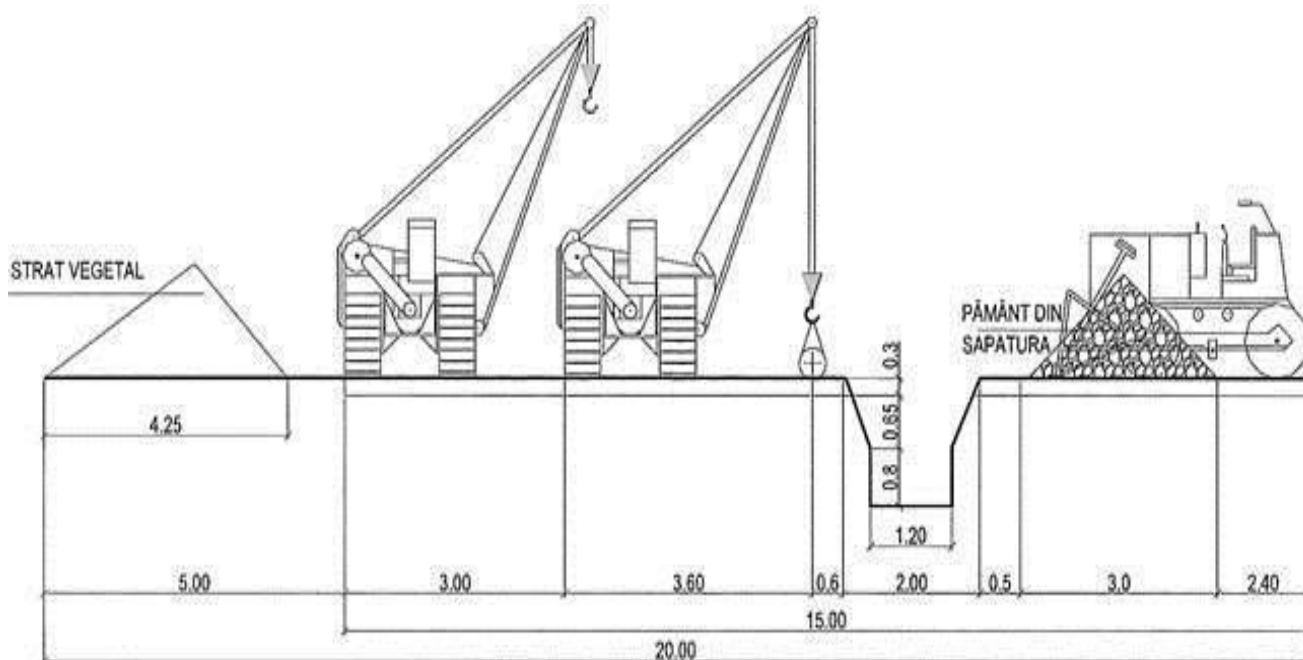


Figure 2. Scheme of the working corridor for the execution of the gas transmission pipe with DN 600

Digging the trench

The manner of execution of the trench (manual or mechanized) for the installation of the pipeline is determined according to the nature of the land, the volume of the earthworks, as follows:

- manually, in connection with the BRUA, WEST I and WEST II pipelines, respectively in the areas where the pipeline is installed at a small distance from other pipelines, sewers or existing underground, telecommunication and electrical installations in the vicinity and intersection of communication routes, as well as in places where digging equipment can not be accessed;
- mechanised, with rotary excavator and Castor excavator, in areas where access is possible, and for jobs requiring large volumes of land dislocations.

Before the start of the trench excavation, in order to identify the existing underground facilities (electrical cables, telecommunication cables, pipelines, sewers, etc.) in the vicinity or intersected with the designated pipeline, the constructor is obliged to contact their beneficiaries (owners).

In manual digging, safety measures will be taken to protect the diggers by supporting the trench's flanks, where the soil consistency is poor and it presents a danger of collapse. The pipe ditch will be constructed according to the Technical Rules for the design and execution of natural gas pipelines.

The pipeline ditch must be cleansed of boulders or other strong bodies which could damage the insulation when the pipe is in the final position.

When determining the depth of the trench, it will be taken into account that the installation of the pipeline in the final position will be below the freezing depth, respectively at a depth of at least 1,10 m measured from the surface of the ground to the crown of the pipe, except for the communication roads undercrossings, cases in which it will be mounted in accordance with the execution details from the drawn part of this documentation.

Also, the pipeline installation depth will be different from one case to another, but not less than 1.10 m to its crown, where it intersects other pipelines and underground facilities (waters, water pipelines, channels, etc.).

The evacuation of the earth resulting from the excavation shall be such that between the edge of the trench and the edge of the landfill on the shore there is a free area (bench) whose width must be:

- at least equal to the depth of the excavation, in the case of unsupported excavations;
- at least 0,50 m in the case of supported excavations.

Pipe jointing

The pipe will be joint by welding the ends of the pipes (head to head) by turning, forming the sections and in the position (in the trench) to form the pipeline, observing the quality coefficient of the welded joint at the value of 1 ($\varphi = 1$).

The welding pipe assembly shall be made in accordance with SR EN ISO 15613: 2004.

The welding control will be done by gamma or US (with registration insurance) 100%.

The technical conditions of quality and acceptability of the welded pipeline joints shall be in accordance with SR EN ISO - 5817.

The quality of the welds will be guaranteed by the manufacturing unit through a certificate of conformity or inspection.

Mounting the pipe

The assembly and launching of the pipeline in the ditch in the final position will be made according to the conditions offered by the land, respectively the constructions and the installations encountered on the pipeline as follows:

- on sections joined by wire welding on the edge of the trench and on the trench in a definitive position;
- the assembly of the pipeline into the trench in the final position will be done by welds executed "to a stand" in position holes.

The pipeline will be launched by placing it in the previously excavated trench using launching mobile cranes. Horizontal directional changes shall be made by hot bent curves with a bend radius of at least 5xDN. The installation of the pipeline in the vicinity or upon the crossing of other existing underground installations shall be made in accordance with the technical conditions set out in the notices and imposed by the owners of the respective networks.

The covering of the pipe

The filling with dirt of the trench after the installation of the pipe shall be done manually and mechanically, according to the "Technical Rules for the design and execution of natural gas pipelines".

The filling of the trench will be done with the dirt resulted from the excavation and deposited on the edge of the trench, finally laying down the vegetal layer deposited separately. After the pipe is laid into the ditch, the coating is made with low-grained soil not to damage the insulation and it is executed manually in successive layers of $10 \div 15$ cm until the crown of the pipe is covered with 30 cm. Each layer is compacted separately. The remainder of the filling will be mechanized in layers of $20 \div 30$ cm, also well compacted.

The compaction of the fillings will be carried out with the manual rammer and with the mechanical rammer at the optimum compaction humidity through a variable number of overlapping passages over each layer.

The degree of compaction will be achieved at the compaction level of the surrounding natural soil. Optimum compaction humidity is ensured by manual spraying in narrow places and by mechanical spraying in large spaces to achieve the required moisture content.

The constructor has the obligation to restore the affected land to the condition it was before the works were executed. In the agricultural fields, after covering the pipeline, the vegetation layer will be restored so that after the compaction the land reaches the initial profile.

Obstacles crossing

On its route, the pipeline will intersect roads, channels, waters, railways as obstacles and protected natural areas, the details of the works will be developed at the FEED stage.

The crossing of national, county, communal, private or operating roads and railways will be carried out in accordance with the provisions of the Order no.118 / 2013 regarding the Technical Norms for the Design and Execution of the Natural Gas Transmission Pipelines and the STAS 9312- 87 - Railways and pipeline roads sub-crossings. Undertraversing solutions will also take into account the conditions imposed by the administrator or owner of the respective communication path, under the law.

Upo undercrossing the presented national roads, communal roads and railways the designed pipe shall be mounted in a protective tube DN 800, material S 355 JR according to SR EN 10219 / 1-2006.

On upgraded roads (asphalt/concrete) and railways, the protective tube will be mounted by horizontal drilling/tapping, and on non-modernized roads the protective tube is installed in an open ditch.

Crossing water courses and drainage channels

The waters which will be intersected by the natural gas pipe at the starting point (coupling in the BRUA pipeline in the area of Petrovaselo) to the exit of Comloșu Mare, situated in the hydrographic basins: B.H. Bega (V-I) and B.H. Aranca (IV-2) are presented in table no. 9.

The design of the water courses crossings with the projected natural gas pipeline was carried out in accordance with the provisions of the "Technical Rules for the Design and Execution of the Natural Gas Transmission Pipelines".

For the designed works A.N.A.R. - I.N.H.G.A. developed the hydrological study on "Maximum flows with 1% probability of exceeding in the watercourses and Banat hydrographic space".

The crossing of the watercourses will be carried out by installing the pipeline in an open trench and the laying depth of the pipeline will be at least 1.5 m under the elevation rates established by the hydrological study.

**Table no. 9 - Crossings of waters by the natural gas transmission pipeline from
B.H. Bega and B.H. Aranca**

Tag No.	Water course name	Section	Crossing length (m)
1	r. Curașita	Recaș	30,6
2	r. Valea Țiganului	Recaș	29,5
3	r. Ghertamoș	Ianova	49,4
4	r. Behela	Ianova	25
5	r. Unu	Giarmata	32,2
6	r. Bega Veche (Beregsău)	Giarmata	46,8
7	r. Magheruș	Pișchia	28,8
8	p. Lacului	Cornești / com. Orțișoara	28
9	r. Iercici	Hodoni / com. Satchinez	36,2
10	r. Apa Mare	Biled	130,7
11	r. Pământ Alb	Șandra	33,9
B.H. ARANCA			
12	Uncadastrated creek	Comloșu Mare	24,1

The bottom of the trench will be smooth to ensure a continuous pipeline installation without sharp edges or objects that can damage the pipe or its insulation, or it will be protected by installing a 10-15 cm protection layer on the trench bottom or by mechanical protection.

The solid material resulting from the preparatory work will be stored outside the work area without affecting the free flow of the surface waters. In order to secure the crossings, measures will be taken to ensure the stability of the riverbed and banks in their area.

When undercrossing the irrigation water and channels with the ballasted pipe, the optical fiber assembly will be performed as follows:

- The metal protective tube 0168.3 x 4.5mm shall be positioned over the entire length of the ballasted pipeline, insulated by PE and cathodically protected;
- Inside the metal tube, the 0 125 x 7.1 mm HDPE tube should be placed, and at the ends of the metal tube, heat-shrinkable sleeves will be mounted;
- Inside the HDPE tube of 0 125 x 7, 1 mm, 2 HDPE tubes of 0 40 x2,3 mm shall be mounted;
- optical fiber will be mounted in one of the tubes, the other one will be for backup;
- 0 125 x 7, 1 mm HDPE tube will cover the length between the two chambers placed on one side and the other of the crossing.

The junction boxes must be mounted at a distance of at least 1 m and maximum 2 m to the crown of the pipeline, on both sides of the undercrossing.

Upon completion of the crossing works, the land occupied by access roads and working platforms will be dismantled and restored to the initial use.

The undercrossings works will be signaled according to the regulations in force.

Technological probes and tests

After the pipeline is launched and covered with earth, it is subjected to pressure testing to verify its mechanical strength. The pressure test is performed after grounding to reduce the influence of temperature variations on its performance and its results. The resilience test phase can be achieved either by the pneumatic or hydraulic method, depending on the localisation class of the pipe sections, in accordance with the provisions of the "Technical Rules for the design and execution of natural gas pipelines." After the resilience test, the tightness test is carried out: the pressure trials represent a decisive phase, and the verifications will be certified in the minutes signed by the State Inspection of Construction, Beneficiary, Designer and Constructor.

3.7.9. The execution plan, including the construction phase, commissioning, exploitation, repair and subsequent use

Estimated implementation period - about 12 months.

Estimated deadline for commissioning the investment - July 2020.

The gas transmission pipeline has a duration proposed in the FEED of at least 40 years of safe operation and technological efficiency, without major revisions or major maintenance works. Maintenance works of the auxiliary elements (valves, valve stations, cathodic protection stations, etc.) will be required according to their technical norms so that the operation of the pipeline is carried out safely.

3.7.10. Relationship with other existing or planned projects

As part of the option analysis, the local public administrations in the localities crossed by the project were consulted on the selection of the gas transmission pipeline route, obtaining their opinions for the final version adopted. The works needed to achieve the project, do not overlap with other existing or planned projects in the area.

3.7.11. Details of the alternatives which have been considered

In the first stage, in the Prefeasibility Study stage, three potential options of the interconnection pipeline of the National Gas Transmission System in Romania with the similar Natural Gas Transmission System of the Republic of Serbia, were analyzed:

- **Option 1** - 94.5 km gas transmission pipeline, of which on the territory of Romania - about 77.2 km, located on the administrative territory of the town of Receaş and the communes Remetea Mare, Giarmata, Pişchia, Sîndreii, Orţişoara, Satchinez, Biled, Şandra, Lenauheim, Gottlob and Comloşu Mare, having the coupling point in BRUA - PHASE 1 pipeline, inside the Receaş Technology Node;
- **Option 2** – a 98.5 km gas transmission pipeline, of which on the territory of Romania - about 81.1 km, located on the administrative territory of the town of Receaş and the communes Remetea Mare, Giarmata, Pişchia, Sîndreii, Orţişoara, Satchinez, Biled, Şandra, Lenauheim, Gottlob and Comloşu Mare, having the coupling point upstream of the Receaş Technological Node, in the BRUA - PHASE 1 pipeline, in the area of Petrovaselo, on the TAU Receaş territory;
- **Option 3** - a 97 km long gas transmission pipeline, out of which on the territory of Romania - about 85 km affects the administrative territory of Receaş and the communes of Remetea Mare, Giarmata, Pişchia, Sîndreii, Orţişoara, Satchinez, Biled, Şandra, Lenauheim, Gottlob and Comloşu Mare, having the coupling point upstream of the Receaş Technological Node, in the BRUA - PHASE 1 pipeline, in the area of Petrovaselo, on the territory of TAU Receaş.

Following the analysis of the route options to the SPF phase, presented in the Area development Plan - Drawing no. 1277-00, scale 1: 200,000, Option 3 was selected from the point of view of the relationship with the protected natural areas, this option implied a shorter route through the protected natural areas compared to the options 1 and 2. Option 3 also provides for the localisation of the metering gas station out of the protected areas, compared to Options 1 and 2, which imply its placement inside the ROSCI0287 Comloşu Mare.

In the second stage, in the Feasibility Study stage, two options, presented in the Area Development Plan - Drawing no. 1277-00, scale 1: 100,000, had to be analysed:

- gas transmission pipeline with coupling in Petrovaselo, Recaş town;
- gas transmission pipeline with coupling in TN Recaş.

Following the technical-economic analysis and considering the land ownership constraints in the TN Recaş area, the option that proposes the construction of the natural gas pipeline in the length of 85,560 km and coupling in Petrovaselo, the town of Recaş, was selected.

The optimization and selection of the final gas transmission pipeline was made taking into account the following criteria:

- avoiding landslides;
- the need for minimum land arrangements;
- technical, economic and construction considerations as well as possibilities for monitoring the pipeline during operation;
- minimal impact on the environment;
- ensuring the conditions for the mechanized execution of the excavation and construction-assembly works;
- operational safety;
- observance of safety distances to neighboring objectives;
- Minimizing social impacts.

3.7.12. Other activities that may occur as a result of the project

The project does not generate additional activities.

3.7.13. Other authorisation required for the project

The notices and settlement agreements established by the Town planning Certificate no. 06 of March 26, 2018 issued by the Timis County Council.

Water management no. 321 / 28.11.2018 issued by the Banat Water Basin Administration.

IV. DESCRIPTION OF THE SITE RECOVERING WORKS IN THE INVESTMENT IMPLEMENTATION AREA

Upon the completion of the execution works for the gas transmission pipeline, the constructor/ contractor has the obligation to restore the temporarily occupied land to the initial condition it was before the works were executed. Thus, for the rehabilitation of the site along the pipeline, leveling, compaction, fertilization and redeposition of the fertilized layer will be required at the beginning of the work on the pipeline route.

The fertile soil is removed from the working aisle and stored separately from the dirt resulting from the ditch digging for the pipe installation.

After completion of the works related to the installation of the pipeline, the trench will be covered with the dirt resulting from the excavation and deposited on the edge of the trench, then the vegetation layer, stored separately, will be deposited so that the land will reach after the compaction the initial profile and use category.

The fillings are executed manually in successive layers of 10-15 cm until the crown of the pipe is covered with 30 cm. Each layer is compacted separately. The remainder of the filler will be executed mechanically, in layers of 20-30 cm, also well compacted.

Compaction of the fillings will be accomplished with the manual and mechanical rammer at the optimum compaction humidity through a variable number of overlapping passages over each layer.

The resulting surplus of soil will be spread on the working corridor, resulting in an elevation of approx. 3 cm, which will not affect the use of the land. If it is imperative to keep the initial level of the land, the resulting dirt surplus will be transported in tarps-covered dump trucks and stored in locations established with the authorities in the area to backfill the surrounding areas and cover the bumps/holes in the area.

Where the situation so requires, in the case of agricultural or wine-growing land, after the completion of the works, the temporary work area will be plowed, mined and fertilized with chemical fertilizers to preserve its vegetable properties for future crops. If the field crossed by the pipe was pasture, the seeds will be spread by hand, which will be buried with the rake and hand roller. The water required for watering the surfaces will be transported with the tank.

The contractor will also rebuild all the roads he uses to access the work site.

V. DESCRIPTION OF THE PROJECT LOCATION

5.1. The border distance for the projects falling under the Convention on Environmental Impact Assessment in a Crossborder Context, adopted at Espoo on February 25, 1991, ratified by Law no. 22/2001

The proposed investment will be located in Timis County, on the administrative territory of Receaş and Remetea Mare, Giarmata, Pişchia, Sânandrei, Orţişoara, Satchinez, Biled, Şandra, Lenauheim, Gottlob and Comloşu Mare.

The natural gas pipeline having an estimated overall length of about 97 km, out of which 85.56 km on the territory of Romania, will have the crossing point of the Romania - Republic of Serbia border located at the level of TAU Comloşu Mare, about 2.5 km from the residential areas of the locality.

The objective of the Comloşu Mare Gas Metering Station will be located at a distance of approximately 400 m from the Romania - Republic of Serbia border.

According to the information currently available, there are no ongoing projects in the border crossing area and no other investment is envisaged.

5.2. Localisation of the site in relation to the cultural heritage according to the List of Historical Monuments and the National Archaeological Repertoire

On the basis of the National Archaeological Repertory provided by the Emergency Ordinance no. 43/2000 and the updated Historical Monuments List approved by the Order of the Minister of Culture and Religious Affairs no. 2314/2004, the archaeological sites from the pipeline working corridor and its vicinity were identified.

The route of the natural gas pipeline crosses the archaeological site Valul Roman II (RAN code 157692.02), located at about 3.4 km N from the town of Cerneteaz, Giarmata commune.

The following archaeological sites have been identified in the vicinity of the pipeline:

- The archaeological site of Ianova-Ianova East (code RAN 158430.02) - Ianova locality, Remetea Mare commune;
- The archaeological site of Giarmata-Valea Bencecului NV-2 (RAN code 157255.07) - Giarmata town, Giarmata commune;

- The archaeological site of Cornești - Accead South Valley (RAN code 158047.13) - Cornești town, Orțișoara commune;
- The archaeological site of Cornești-Cornet (RAN code 158047.14) - Cornești town, Orțișoara commune.

In order to obtain the opinion of the Timis County Cultural Directorate, on the basis of the methodology developed within the project, field research was carried out by certified specialists. The archaeological discharge will be carried out in areas for which archaeological heritage will be identified.

5.3. Maps, site pictures that can provide information on the physical characteristics of the environment, both natural and artificial

The site localisation of the proposed project is presented in the Area development Plan, Drawing No.1277-00, Scale 1: 100000.

The graphical representation of the project facilities in the plan is indicated in the 1: 10000 appended layout plans. Localisation plans have been developed, according to the legislation in force, in STEREO 70 coordinates, and the field measurements and surveying, as well as the further data processing, were performed on the basis of the official documents and information provided by the local ANCPI structures.

The geographical coordinates of the project site are presented as a digital vector in the Stereo 70 national projection system of the site, in the Appendix to this report.

5.3.1. Current and planned land uses both on site and neighboring areas

The land for the project implementation works is part of the public and/or private field of the administrative - territorial units, or it is the private property of natural and/or legal persons.

According to the town planning certificate, the current land use category is agricultural (arable, pasture, meadow, vineyards, orchards), non-agricultural (water, Channels), areas related to communication routes (highways, national roads) and railways.

The legal framework for access to the land, the consent of the landowners and the right to use is regulated by Law no.123 / 2012 - Electricity and Gas Law.

All the lands that are temporarily occupied will be restored to their initial condition and category after the completion of the construction works.

5.3.2. Zoning and land use policies

The destination of the land according to PATJ Timiș - area for natural gas transmission pipeline.

The design of the investment complied with the provisions of PATJ Timiș, PUG and PUZ endorsed and approved from the areas crossed by the natural gas transmission system.

The data on the affected areas and the land categories crossed by the working corridor necessary for the construction of the natural gas pipeline, as well as the data on the landowners, are being identified by an authorized company.

5.3.3. Sensitive areas

Protected natural areas

The route of the pipeline intersects (between km 80 + 927 and km 83 + 233) the natural protected area of Community interest ROSPA0142 Teremia Mare -Tomnatic, the length of the overlapped pipe section with this Natura 2000 site being approximately 2306 m.

Inside ROSPA0142 Teremia Mare - Tomnatic it is necessary for the VS 13 valve station to be constructed before crossing the railway line CF 217 and DN 59C (Jimbolia - Sânnicolau Mare). GMS Comloșu Mare is located at a distance of approx. 1300 m from the Natura 2000 site. Localisation of the project in relation to other protected natural areas in the region:

- the pipeline route is located at a distance of approx. 100 m from ROSCI0402 Valea din Sânnandrei;
- the pipeline route is located at a distance of over 1100 m from ROSCI0115 Mlaștina Satchinez and 2.740 from Rezervația Mlaștinile Satchinez;
- the pipeline route and GMS Comloșu Mare are situated at a distance of over 2,200 m from ROSCI0287 Comloșu Mare;

All the other components of the project, including site management and pipe warehouses, are located outside the protected natural areas.

5.3.4. Details of any site location option that has been considered

The analyzed site options are presented in chapter 3.5.11

VI. DESCRIPTION OF ALL POSSIBLE SIGNIFICANT EFFECTS OF THE PROJECT ON THE ENVIRONMENT

A. Pollutant sources and installations for the containment, evacuation and dispersion of the pollutants into the environment

6.1. Protection of water quality

Sources of water pollutants, evacuation site or the emissary

During the implementation period of the project, the main potential sources of water pollution are represented by:

- pollution sources at the level of work sites represented by machines that can generate during their operation effluents with potential pollutant factor for the water environmental factor, because of accidental leaks of hydrocarbon, lubricants, hydraulic oils etc. Also, in the work stages, as a result of the removal of soil, excavation or temporary deposits (dumps) of excavated soil, the waters that wash the sites can acquire a certain load of particles in suspension;
- sources of pollution during the execution of the open water undercrossings that may cause the risk of damage to the banks and local pollution of waters with hydrocarbons, lubricants due to inappropriate maintenance of the equipment;
- the sources of pollution at the level of the site organization resulting mainly from the poor management of the wastewater generated at the site and the improper disposal of the wastes;
- the sources of pollution at the level of the pipe warehouses represented by the inappropriate storage of the materials used in the execution of the project, the rainwater collection method.

The potential impact on the surface waters can be manifested during the execution of the water undercrossings. The waters that will be intersected by natural gas pipeline crossings are characterized within the Banat Hydrographic Management Plan, approved by HG 859/2016 - M.O. 1004 bis / 14.12.2016, as heavily modified waters and the works do not constitute a potentially significant hydromorphological pressure in accordance with the environmental objectives of the Water Framework Directive (WFD), transposed into national law by the Water Law no. 107/1996 as subsequently amended and supplemented.

For this purpose, within the design of the solutions proposed in the project and for the achievement the objectives of the project, the principles of the MMDD Order no. 1163 of 2007 on "Approving measures for

improving the technical solutions for the design and realization of the hydrotechnical works for the arrangement and restoration of the water courses, in order to achieve the environmental objectives in the water field".

For the design of the works in the crossing sections of the water courses, hydrogeological studies have been carried out to determine the level of extraordinary waters and general affections, by adopting appropriate constructive solutions based on hydrological calculations and depending on the morphological and geological conditions of the area. The crossed waters are poorly highlighted morphologically, they have a large major riverbed and slopes with low inclines, with banks not affected by excessive erosion, collapses, etc. In general, banks are devoid of tree vegetation, and the land use category on both banks is - hayfield/agricultural land.

The achievement of this investment does not affect the framework scheme of the river basins management and does not adversely affect the existing facilities in the area.

During the operating period, under normal operating conditions, the natural gas pipeline is not a source of pollution of the surface waters and groundwaters. The impact during the pipeline operation is generally expected to be limited to domestic wastewater and rainwater discharges on the site of the GMS Comloșu Mare.

The proposed facilities for the GMS Comloșu Mare's collection and disposal of household wastewater / rainwater include separate collection systems for domestic waste water collection (rainwater basin) and rainwater. Since the effluent volumes will be relatively low and the discharges will be carried out in accordance with the national quality standards, no significant impacts on water resources are expected during operation, and therefore the impact is considered to be low.

Wastewater treatment or pre-treatment plants

No wastewater treatment or pre-treatment plants are provided for during the construction period.

To ensure the protection of the groundwater and surface water, the following measures must be complied with during the construction period:

- Preliminary cleaning with compressed air line of the pipe before any hydrostatic test;
- The equipment must not have losses (leakings) of fuel or lubricant, by maintaining it in accordance with the technical book and legal requirements;
- In the case of repair intervention on machines, they will be withdrawn in specialized workshops, where all the environmental protection measures will be taken during the repairs;
- Refueling and lubrication will be performed in specially arranged places, avoiding any loss;
- It is forbidden to uncontrollably store waste from the activity and hand it over to authorized economic operators for disposal / recovery / recycling;
- Providing mobile ecological toilets on the basis of contracts with authorized operators, which will also ensure adequate collection and disposal services for this type of wastewater;
- The pressurized water will be discharged into authorized treatment plants;
- Restoration of river banks and slopes of watercourses and land improvements Channels;
- Carrying out the crossings of the watercourses in the periods with small waters;
- Compliance with the provisions of the technical project regarding the pipe protection system and the quality of the materials, in order to avoid corrosion processes.

During the operating period, the administrative building of G.M.S. Comloșu Mare will be equipped with sewage and collecting system of the wastewater. Discharges from the site will be performed by authorized operators at the nearest treatment plant, respecting the limits for the relevant pollutants in the NTPA 002 normative on concentrations of quality indicators contained in wastewater discharged into municipal sewerage networks, approved by Government Decision no. 188/2002, modified by GD no. 352/2005.

Any impurities resulting from the PIG inspection process of the pipe will be collected in a double-walled metal tank and discharged by authorized operators.

The following measures are proposed to avoid and reduce a potential impact on the environmental water factor:

- Ensure the proper operation of all the facilities and equipment and the specific stocking and storage conditions of the raw materials, waste and supplies resulted on the site;
- Permanent control of the pipeline status, periodic inspections, rapid intervention in case of damage;
- A permanent stock of non-combustible absorbent materials will be held for use in case of accidental pollution;
- Regular inspection of the sewerage network, waste water collection basins / tanks and impurities resulting from the PIG inspection process.

6.2. Air protection

Emission sources in the air

During the execution of the natural gas transmission pipeline, the activities generating air pollutants are the following:

- Activities in the working corridor: excavation/digging operations, filling of the pipe laying ditch, restoration of the land to its initial condition;
- Electrical welding of pipe sections and protection of fittings by painting.
- Transportation of materials and personnel with means of transport and the operation of machinery;
- Activities related to site management and the pipe warehouses.

The emissions of pollutants generated during the execution period are fugitive, intermittent, and the main atmospheric pollutants in the working areas (working site, access roads, site management, pipe warehouses) are the particulate matter and sedimentable dusts. In smaller quantities there will also be pollutants from the combustion processes of the machinery/transportation and from the pipeline welding and painting processes.

For the implementation of the investment objective, non-polluting and non-energy technology solutions were selected to carry out all the operations related to the construction stages, based on advanced mechanical processes that ensure minimization of the building time and low emissions.

During the operational period, the project facilities are not considered as sources of atmospheric pollution because the technological process of transmitting natural gas under normal operating conditions is not an emission generator.

The technological process of natural gas transportation is continuously monitored by advanced automation systems that allow for surveillance to detect possible gas leakage during operation, periodic inspection of the technical condition by in-line inspection using intelligent PIG devices, through pressure and tightness tests.

Installations for the containment and dispersion of pollutants into the atmosphere

G.M.S. Comloşu Mare is equipped with a methane gas discharge system in case of interventions or maintenance operations for depressurization of the technological installation. Two metal baskets with a diameter of 300 mm and a height of 5.5 m from the ground floor were provided for the discharge of gas into the atmosphere.

6.3. Protection against noise and vibration

Sources of noise and vibration

The noise and vibration sources during the execution of the works are represented by the equipment necessary for digging and ditching the trench and carrying out other construction-assembly works, the transmission and

handling of the pipeline sections, the transmission of the personnel. Since they have to be approved, the noise and vibrations generated are within acceptable limits, and the impact is within permissible limits. During the exploitation period, the project objectives are not sources of noise and vibration.

Facilities and equipment for protection against noise and vibration

No special arrangements or equipment for protection against noise or vibrations during the execution of the works are provided, since the level produced by them is insignificant.

To prevent and decrease the potential discomfort of the population, in order to reduce the noise and vibration levels, the following measures will be taken during the execution period:

- The use of machinery and equipment whose noise and vibration levels are within the permissible limits;
- Avoiding night work (08.00 p.m - 07.00 a.m.) close to residential areas;
- Localisation of temporary sound absorbing panels on sectors with sensitive receivers during the execution of the works.

6.4. Protection against radiation

Radiation sources

In the activity carried out after putting into operation the pipeline there will be no radioactive substances and no artificial sources of radiation will emerge.

In the process of controlling the quality of the electrical welds used for jointing the pipes, the gamagraphic method will be used, the degree of radiation is low and falling within the permissible limits and no additional protection measures other than those taken by the specialized laboratory are required.

Radiation protection arrangements and equipment

Not applicable.

6.5. Soil and subsoil protection

Sources of pollutants for soil, subsoil and groundwater

Possible sources of local soil pollution in the implementation process:

- any technical defects in the machinery;
- spilling waste oils and fuels on the ground;
- Inappropriate storage of the waste resulting from activities;
- Non-observance of the areas intended for parking the equipment and storage of the materials.

During the operation period no emissions with pollution potential for the soil are anticipated. Accidental pollution may occur because of the non-compliant disposal of waste, the spilled quantities and concentrations remaining low (domestic wastewater emptying tanks, liquid impurities reservoirs from the pigging process).

Works and equipment for soil and subsoil protection

During the execution of the pipeline, the following works are provided for the soil/subsoil protection:

- The trench digging operation will be carried out in conjunction with the general flow of the works related to the pipe to reduce the duration of the trench opening, in order to avoid spillages, water fillings, infiltrations in the lower layers, landslides;
- The vegetal layer will be stored separately for its use when restoring the land at the end of the works;
- After laying the pipeline, the trench filling should be properly compacted to avoid rainwater infiltration through the sandy rocks into the pipeline's trench;

- Maintenance of the access ways will be achieved by setting up a convex road profile with the most prominent part towards the road axis. This structure will facilitate the lateral drainage of the rainwater on the surface of the access ways and thus avoid erosion and spillage;
- Creation of small retention basins with the role of dissipating, respectively settling the rainwater drainage force, to be achieved along the temporary access ways from the level of the working corridor;
- During the performance of the works, appropriate rooms will be arranged for the categorization of the waste and contracts will be concluded with the economic operators authorized to take them over, according to the environmental laws in force.

In the case of permanent and temporary occupied land plots, the following mitigation measures are proposed:

- Sizing of the works to the strictly necessary surface;
- Strict delineation of the working corridor;
- At the stage of closing the working sites, careful steps will be taken to restore the initial state of the morphology of the land and to restore the vegetal soil cover, and appropriate measures should be taken to restore the ground vegetation.

6.6. Protection of the terrestrial and aquatic ecosystems

Identification of the sensitive areas that may be affected by the project

The pipeline route intersects (between km 80 + 927 and km 83 + 233) the natural protected area of Community interest ROSPA0142 Teremia Mare-Tomnatic, the length of the overlapped pipe sector with this Natura 2000 site being 2306 m.

Inside ROSPA0142 Teremia Mare-Tomnatic it is necessary to create the VS 13 valve station before crossing the railway line CF 217 and DN 59C (Jimbolia - Sânnicolau Mare). GMS Comloșu Mare is located at a distance of approx. 1300 m from the Natura 2000 site.

Localisation of the project in relation to other protected natural areas in the region:

- the project route is located at a distance of approx. 100 m from ROSCI0402 Valea din Sânnandrei;
- the project's route is located at a distance of more than 1100 m from the Mlaștina Satchinez ROSCI0115 and 2.740 from Rezervația Mlaștinile Satchinez;
- the pipeline route and GMS Comloșu Mare are located more than 2,200 m away from ROSCI0287 Comloșu Mare.

All the other components of the project, including the site management and pipeline warehouses, are located outside the protected natural areas.

Works, equipment and measures for the protection of the biodiversity, nature monuments and protected areas:

- The localisation of the site organization, the pipe material warehouses and the waste storage areas shall be carried out outside the limits of the protected natural areas;
- Compliance with the working lane and avoiding the impact of additional surfaces than those foreseen by the project;
- Compliance with the Technical Rules regarding the design and execution of natural gas pipelines regarding the preparation of the land surface for the construction and installation works;
- At the end of the construction works, the temporarily occupied land will be restored, so that the vegetation characteristic of the area can be restored on the lands affected by scraping, digging, settling;
- Appropriate storage of the vegetation layer and provision of rainwater drainage so that the soil does not change its characteristics and can be reused;

- Minimization of the permanently occupied areas and their localisation as far as possible in areas that have lost their ecological functions;
- Ensure the legally required limits for machine noise emissions and correct machine maintenance;
- The measures proposed in Chapter X to mitigate the impact on the protected natural areas shall be complied with.

6.7. Protection of the human settlements and other public interest objectives

Identification of the public interest objectives, distance from the human settlements, historical and architectural monuments, other areas on which a restriction regime is in place

When selecting the pipeline route and the localisation of the above ground facilities, the PUGs of the localities crossed by the project were analyzed and the route alternatives were analyzed so as to avoid as much as possible the urban areas and the inhabited areas. Data was also collected in order to identify the cultural, historical and archaeological heritage to determine the distance of these objectives from the pipeline. The localisation of the project in relation to the crossed localities is summarized in the table below:

Table no. 10 - Project localisation in relation to the localities crossed

Tag No.	Locality	Project distance from the locality (km)
1	Petrovaselo (Recaş town)	0,45 km
2	Recaş town	0,4 km
3	Izvin (Recaş town)	1,6 km
4.1	Ianova (Remetea Mare)	0,63 km
4.2	Ianova (Remetea Mare)	0,27 km
5	Giarmata (without the new neighborhood)	1,75 km
6	Pișchia	3,3 km
7	Cornești (Orțișoara)	1,46 km
8	Carani (Sânandrei)	0,52 km
9	Hodoni (Satchinez)	0,48 km
10	Biled	0,3 km
11	Uihei (Șandra)	1,6 km
12	Bulgăruș (Lenauheim)	2,7 km
13	Lenauheim	1,12 km
14	Grabach (Lenauheim)	1,2 km
16	Comloșu Mare	0,24 km

The commercial gas metering station Comloșu Mare will be located more than 1500 m away from the inhabited areas.

Works, equipment and measures for the protection of human settlements and protected and/or public interest objects

In order to protect the human settlements and other public interest objectives, please find below the criteria that were taken into account when selecting the optimal route option:

- choosing the route so as to avoid the localities' built-up area;
- selecting a minimum length of the pipeline route so as to maintain a balance between the technical, economic, social and environmental factors;

- choosing the route of the pipeline so as to avoid crossing sensitive obstacles or areas as far as possible;
- identifying the public interest objectives of historical and architectural monuments and other restricted areas;
- identifying the non-productive land areas for the site management and for the warehouses.

During construction, the constructor will comply with the cleanliness and occupational safety and hygiene rules in constructions so as not to damage the surrounding area, the natural setting, the environment and ecosystems.

The design provides for safety and surveillance systems during the operation period, pipeline route signaling system, valve stations for intervention in case of damages, wastewater collection and waste storage facilities within the GMS Comloşu Mare, so it is estimated that the potential impact on local communities is insignificant during the operation period of the investment.

6.8. Prevention and management of site-generated waste during project implementation / operation, including disposal

6.8.1. Wastes generated during project design and operation

During the implementation period

During the execution of the works, the following main categories of waste are generated:

- household and similar waste (paper, plastic, glass, food waste)
- packaging waste;
- technological waste (metal, waste oils, oil filters, electrode scraps, contaminated textiles, etc.)
- inert waste (earth, sand, gravel, concrete) from excavations, road development and rehabilitation.

List of the main categories of waste and estimated waste quantities to be generated in the construction are presented in the table below:

Waste Code	Waste name	Estimated quantity to be generated	Physical state
17 04 07	Metallic waste	1 to	S
17 02 01	Wood waste (carpentry, shuttering)	0,1 to	S
17 09 04	Mixtures of construction waste, other than those specified in 17 09 01, 17 09 02 and 17 09 03	10 to	S
20 01 01 20 01 02 20 01 08 20 03 01	Municipal and assimilable waste, including fractions collected separately	0,5 to/month	S
15 01 01 15 01 02 15 01 04 15 01 07	Packaging waste (paper and cardboard, plastics, metallic, glass)	0,1 to	S
15 01 10*	Packagings containing residues or that are contaminated with dangerous substances	0,01 to	S
15 02 02*	Absorbents, filtering materials (including oil filters with no other specification), polishing materials, protective clothing contaminated with dangerous substances	0,1 to	S

Note:

- *Waste coding was carried out in accordance with the List of Wastes in Annex 2 of the Government Decision 856/2002 on waste management records and for the approval of the wastes list, including hazardous wastes;*
- *Wastes marked by an asterisk (*) are considered as hazardous waste.*
- *Solid-S, Liquid - L, Semisolid-SS*

In the operation period, the main categories of wastes generated are the following:

- technological waste (metal, wood, waste oils, oil filters, electrode scraps, contaminated textiles, etc.) resulting from maintenance operations;
- liquid impurities from the pipeline cleaning operation (by intelligent PIG) and from the gas filtration plant in GMS Comloşu Mare;
- household waste - from the work of the personnel working at GMS Comloşu Mare.

6.8.2. Waste management

Both during the project implementation and operation stage the following measures regarding waste management will be applied:

- the management of all the categories of waste will be carried out in accordance with the provisions of Law no. 211/2011 on the waste regime (republished), as subsequently amended and supplemented, with particular regard to the application of the waste hierarchy, namely: prevention, preparation for reuse, recycling, other recovery operations (eg energy recovery), elimination,
- waste management must be carried out without endangering the human health and without harming the environment, in particular:
 - without risk to air, water, soil, fauna or flora;
 - without creating discomfort because of noise or odors;
 - without adversely affecting the landscape or areas of special interest.
- all types of waste will be collected selectively, by categories, in suitable containers. Containers for temporary waste storage will be labeled with the code of the stored waste
- within the site management, the provision of adequate, waterproofed spaces for the temporary waste storage by categories shall be ensured
- domestic waste will be stored in europubel type containers that will be handed over to the sanitation company in the area- it is forbidden to mix different categories of hazardous waste as well as hazardous waste with non-hazardous waste,
- waste records and management will be done in compliance with the provisions of Government Decision 856/2002 on waste management records and the approval of the list of wastes including hazardous waste,
- all waste generated will be recovered/disposed of by authorized operators,
- waste shipment will be carried out in compliance with the Government Decision no. 1061/2008 on the transmission of hazardous and non-hazardous waste on the territory of Romania,
- for all waste generated on the site, the constructor shall conclude contracts with authorized economic operators, fully respecting the provisions of Law no. 211/2011 on the waste regime (republished), as subsequently amended and supplemented.

6.9. Managing toxic and dangerous substances

The toxic and dangerous substances to be used during the execution period are:

- fuel (diesel) used for transmission equipment and vehicles;
- lubricants required for the operation of machinery and equipment;
- paints, diluents - used to protect the transmission pipeline.

Fueling and vehicle oil changes will be performed in specialized and licensed units for such activities. Fueling (diesel) of the machinery and equipment will be done from existing tankers in the site management. At the same time, for the welding and cutting operations, oxygen and acetylene cylinders should be used. These will be stored in specially arranged spaces in the site management, the handling and use of which is carried out only by specially trained personnel.

During the execution of the works, mainly related to the natural gas pipeline, paints, diluents, adhesives will be used. These will be stored in the original packaging, properly labeled, requiring storage in covered areas on impermeable surfaces.

The table below provides information on the chemical substances and preparations to be used during the project implementation period.

Table no. 11 - Information on the substances or preparations used during the implementation period

Name of the raw material, chemical substance or preparation	Destination	Used quantity	Classification and labeling of chemical substances or preparations*		
			Category**	Hazard	Hazard statements
Diesel	Machinery	nd	P	Flammable liquid, category 3; May be fatal if swallowed and penetrated into the respiratory tract; Acute Toxicity, Category 4 Inhalation; Skin corrosion / irritation, category 2 Susceptible to causing cancer, category 2 May cause organ damage in case of prolonged or repeated exposure, category 2; Toxic to aquatic life, with long-lasting effects	H226 H304 H332 H315 H351 H373 H411
Oxygen	Welding operations	nd	P	May cause or intensify fires; May explode to heat	H270 H280
Acetylene	Welding operations	nd	P	Extremely flammable; May react explosively in the absence of air; May explode to heat	H220 H230 H280

* Classification of the substance according to EC Regulation no. 1272/2008 CLP

** P - substance classified as hazardous; N - substance classified as non-hazardous

During the operation stage, the materials used will be mainly those provided for in the maintenance work (paints, lubricants, oxygen tubes). In the technological process related to GMS Comlosu Mare no dangerous chemical substances and preparations should be used.

The handling, storage, transmission of the dangerous chemicals and preparations is carried out in compliance with the conditions provided for in the safety data sheets of each product used and in compliance with the rules of occupational health and protection.

All chemical substances and preparations will be accompanied by the Safety Data Sheets, in order to obtain from the suppliers technical sheets that meet the requirements of Regulation no. 1272/2008 and Regulation 1907/2006 (REACH) as regards their content.

B. Use of natural resources, in particular soil, land, water and biodiversity

During the execution period, mineral aggregates (crushed stone, ballast, sand and gravel) will be used to make ballasts, anchorages, foundations, reinforcements and other related structures.

The implementation of the project will lead to the final removal of some land plots in the case of the above ground site installations and the temporary removal of some land plots in the working aisle and in the site management.

The temporarily occupied lands on which the pipeline installation works will be carried out will be restored to their initial category of use.

No natural resources for technological purposes are used during the operation period of the investment

VII. DESCRIPTION OF THE ENVIRONMENTAL ASPECTS LIKELY TO BE SIGNIFICANTLY AFFECTED BY THE PROJECT

7.1. Impact on population, human health, fauna and flora, soil, uses, material assets, water quality and quantity regime, air quality, climate, noise and vibration, landscape and visual environment, historical and cultural heritage, and interactions between these elements. Nature of impact (ie direct, indirect, secondary, cumulative, short, medium and long term, permanent and temporary, positive and negative)

Impact on population and human health

The potential impact on human population and human health during the execution period can be generated by the following factors:

- loss of income due to the final land occupation (direct, long-term, permanent, negative impact);
- loss of income due to temporary occupation of the land (direct, medium-term, temporary, negative impact);
- possible damage to local roads due to site traffic (direct impact, short-term, temporary, negative impact);
- noise and vibrations generated by the site traffic (direct, short-term, temporary, negative impact);
- air pollution as a result of the execution and transmission of powdery materials (direct, short-term, temporary, negative impact);
- use of local labor force (direct, short-term, temporary, positive impact).

The impact on human population and human health can be assessed as insignificant, with works to be carried out generally outside the inhabited areas and the activities associated with the execution period will be temporary sources of discomfort.

While complying with the measures provided for the safe operation of the pipeline, there will be no direct influence on the population and human health. The investment will contribute to the economic development of the area.

Impact on wild fauna and flora

The potential impact on flora and fauna can be generated by the following factors:

- noise pollution in the working area (direct, short-term, temporary, negative impact);
- loss of habitat by permanent occupation of the land (direct, long-term, permanent, negative impact);
- loss of habitat by temporary occupation of land plots (direct, medium-term, temporary, negative impact);
- preparation of the land surfaces for the construction and assembly works, which require the removal of the vegetation layer (direct, short-term, temporary, negative impact);
- crossing water courses can lead to increased turbidity, damage to the habitats in the bank area (direct, short-term, temporary, negative impact).

No significant negative impact on flora and fauna is expected under the conditions of the measures provided for in the project.

Impact on soil and land use

The implementation of the project involves the separate removal of the vegetation layer on the pipeline working corridor.

The potential impact on the soil can be generated by the following factors:

- soil pollution due to inadequate waste management, wastewater and leakage of fuels and lubricants used for the operation and maintenance of the equipment (direct, short-term, temporary, negative impact);
- modification of the soil structure that can lead to the decrease of soil fertility as a result of the construction works related to the trench for the pipe installation (direct, short-term, temporary, negative impact).

The impact on land use can be generated by the following factors:

- final removal of some lands from the agricultural use in the case of above ground installations (direct, long-term, permanent, negative impact);
- temporary removal of some lands from the agricultural use in the work area and in the site management area (direct, medium-term, temporary, negative impact).

The works will be carried out in compliance with the project implementation phases, the observation of the technological discipline during the construction-assembly operations, the proper disposal of the waste and the land reclamation program specified in the FEED, so it is appreciated that the impact on the soil will be reduced.

Impact on material goods

The implementation of the project will have no impact on the material goods.

Impact on the quality and quantity of water

The potential impact on the surface water can be manifested during the execution of the water crossings.

The crossed water courses are poorly highlighted morphologically, they have a large major riverbed and slopes with low inclines, with banks unaffected by excessive erosion, collapses, etc. In general, banks are devoid of tree vegetation, and the land use category on both banks is - hayfield/agricultural land.

The waters that will be intersected by the natural gas pipeline crossings are characterized within the Banat Hydrographic Management Plan, approved by Government Decision 859/2016 - M.O. 1004 bis / 14.12.2016 as heavily modified waters, and the works do not constitute a potentially significant hydromorphological pressure in accordance with the environmental objectives provided by the Water Framework Directive (WFD), transposed into national law by the Water Law no. 107/1996, as subsequently amended and supplemented.

The achievement of this investment does not affect the river basin management framework scheme and does not adversely affect the existing objectives in the area.

The potential impact is generated by the following factors:

- Increase of water turbulence due to the execution of the pipe laying ditches (direct, short-term, temporary, negative impact);
- Accidental spills of fuels and lubricants when carrying out the works of waters crossing (direct, short-term, temporary, negative impact);

- Accidental pollution in case of direct discharge of the water used in pressure tests (direct, short-term, temporary, negative impact);
- Inappropriate domestic sewage management (direct, short-term, temporary, negative impact);
- Inappropriate waste management (direct impact, short, temporary, negative impact).

The impact on the above ground water courses is temporary, the affected areas will be restored during the execution of the project, and at the completion of the works.

It is appreciated that under the conditions of the measures envisaged in the project and the execution technology, the works will not generate a significant negative impact on the water environment factor, they will not affect the water quality in the working area, the physico-chemical, biological and bacteriological quality parameters remaining within acceptable limits.

During the operation period, the impact is mainly associated with the risk of altering the groundwater quality due to inadequate domestic sewage and waste management or accidental pollution on the GMS Comlosu Mare site (direct, local, short-term, negative impact).

By ensuring the technical/organizational conditions and observance of the operating technology, it is appreciated that the work carried out on the GMS site will not have a negative impact on the above ground water and underground water during the operation period.

Impact on air and climate quality

During the execution of the works, the sources of air pollution are the soil stripping and excavation works, the manoeuvring of the excavated soil, the engines of the motor vehicles and the execution equipment, the transport of the materials, as well as the welding works of the pipe sections and the protection of the fittings by painting.

In these circumstances, the potential impact on air and climate is generated by the following factors:

- Dust pollution due to soil excavation and stripping, manoeuvring of the excavated soil (direct, short-term, temporary, negative impact);
- Pollutants produced by combustion emissions (exhaust gas) from the machinery engines (direct, short-term, temporary, negative impact);
- Air pollution due to the transmission of powdery materials (direct, short-term, temporary, negative impact);
- Emissions of volatile organic compounds from the painting operations (direct, short term, temporary, negative impact).

The operation of the machines at the work sites is intermittent, the motors being sources of punctual and momentary emissions, which lead to an insignificant impact on the air. The paint-protected surfaces are also low, being applied only to above ground installations.

The impact of noise and vibration

During the execution period, the noise and vibration sources are represented by the equipments necessary for digging and covering the trench, the transmission and handling of the pipeline sections and those associated with the means of transmission necessary during the execution of the works. As the machinery and equipment used must be homologated, the noise and vibrations generated are within acceptable limits, the impact is insignificant and within the permissible limits.

Impact on landscape and visual environment

The impact on the landscape is generated by the following factors:

- The change of land use during the execution of the works related to the pipe (direct, medium-term, temporary, negative impact);
 - Above ground installations of the natural gas transmission system - gas Metering Station, valves and cathodic protection stations (direct, long-term, permanent, negative impact).
- Given that the works will generally be carried out on agricultural land, in anthropized areas, the impact on the landscape is considered insignificant.

Impact on historical and cultural heritage

The potential impact on the historical and cultural heritage can be generated by the following factors:

- Accidental and involuntary destruction/deterioration of artifacts which can lead to the irreversible loss of cultural heritage elements during the soil clearing and the construction of the pipe laying ditch (direct, local, permanent, negative impact);
- Damage caused by vibrations to historical monuments or buildings in an archaeological site caused by the operation of heavy-duty vehicles during the execution period (temporary, definitive, monumental, negative impact).

Impact on interactions between the environmental components

Taking into account all the activities necessary for the realization of the project, it is estimated that there is no impact on the interactions between these components while complying with the execution technology and the reduction measures provided for in the project.

Nature of the impact

The implementation of the project has a direct negative impact on the short-term environmental factors during the period of the works execution and an insignificant negative direct and permanent impact during the operation period by definite removal of some lands from the initial use.

7.2. Expansion of the impact (geographical area, human population/ habitats/ affected species)

The impact on the environmental components will be local, both during the project and operation period. During the operation period it is estimated that the impact will be insignificant under the circumstances of exploitation and proper maintenance of the natural gas transmission pipeline and the objectives related to it.

7.3. Magnitude and complexity of the impact

The project under scrutiny is part of the natural gas transmission sector and involves the construction of a pipeline with an overall length of approx. 85.56 km, including facilities and related equipment.

From the analysis of the impact on each environmental component one can appreciate that the implementation of the project has a negative negative impact which is manifested locally and temporarily on the environmental factors including the protected natural areas affected during the execution period and the permanently reduced impact due to the final removal from the initial use of some land areas.

7.4. Impact probability

By complying with the implementation plan and the measures envisaged to decrease the impact on the environmental factors, the likelihood of occurrence of events that increase the pressure on the environmental factors will be reduced.

The natural gas transmission system will be equipped with the devices, equipment and personnel necessary to prevent and eliminate possible fires caused by natural causes (earthquakes, landslides) or human actions. In relation to the measures adopted by the project for the reduction of the technical risk, during the operation phase, the measures for preventing, combating and decreasing the impact in case of damages must be complied with.

7.5. Duration, frequency and reversibility of the impact

The impact on the environment is generally reduced during the execution of the project, of low intensity and reversible. In certain situations, such as the final land occupation, final set-aside, assembly of the surface installations, the impact duration extends over the pipeline's operation period and the impact is irreversible.

7.6. Measures to avoid, reduce or improve the significant impact on the environment

Measures to reduce the impact on the population and human health

Considering the impact associated with the construction works, the following measures are proposed:

- Compensation of the affected landowners in accordance with the legislation in force;
- Infrastructure maintenance and restoration if it is affected by heavy traffic;
- Signaling the working areas with safety margin markings within the work perimeter;
- Reduction of the machinery speed on the access roads to reduce dust emissions during periods of drought, noise, incidents, etc;
- The use of vehicles, machinery and equipment, technically compliant with the best available technologies, whose noise and vibration levels are within the permissible limits;
- The night work (08.00 p.m.-07.00 a.m) close to residential areas will be avoided;
- In the periods of intense traffic (material transmission, etc.) the access ways will be splashed;
- Bringing the temporarily affected land to its initial state;
- The location of temporary phono-absorbing panels on the sectors with sensitive receivers, on the duration of the works.

Measures to reduce the impact on fauna and flora:

- The localisation of the site management, the pipe material warehouses and the waste storage areas shall be carried out outside the limits of the protected natural areas;
- Compliance with the working corridor and avoiding the impact on additional surfaces than those foreseen by the project;
- Compliance with the Technical rules regarding the design and execution of natural gas pipelines about the preparation of the land surface for the construction and assembly works;
- At the end of the construction works, the temporarily occupied land will be restored, so that the vegetation characteristic of the area can be reinstalled on the lands affected by scraping, digging, settling;
- Appropriate storage of the vegetation layer and ensuring rainwater drainage so that the soil does not change its characteristics and can be reused;
- Minimization of the permanently occupied areas;
- Ensure legally required limits regarding the machine noise emissions and correct machinery maintenance;
- the measures proposed in Chapter X shall be complied with in order to decrease the impact on the protected natural areas.

Measures to decrease the impact on land and land use:

During the execution period it is recommended to comply with the control program in execution phases as well as the proper storage of the vegetal soil layer in order to restore the land quality through plowing, fertilization and harrowing works.

In order to avoid soil pollution, the following measures are proposed:

- Compliance with the project execution stages, the technological discipline during the construction and assembly operations and the land restoration program specified in the initial technical design;
- Strict delimitation of the working area and dimensioning of surface works determined by the project;
- Ensure an adequate system of collecting and evacuation of domestic waste waters, rainwater and technological waste generated in the site construction, pipe material warehouses and working sites;
- Appropriate waste management generated during the project execution;
- It is prohibited to dispose of waste oils, fuels, unpurified waste water on the ground;
- Only access roads and parking areas for work equipment will be used;
- It is forbidden to store the pipe material outside the working area;
- The trench digging operation will be carried out in correlation with the general flow of the pipeline assembly works to reduce the length of the trench in order to avoid spillages, water fillings, leakage in the lower layers, landslides;
- The vegetal layer will be stored separately for use in the restoration of the land at the completion of the works;
- After laying the pipeline, the trench filling should be properly compacted to avoid precipitation water infiltration into the pipeline trench.

Measures to decrease the impact on the water quality and quantity

Considering the potential impact on the water environment factor, the following measures are proposed:

- Compliance with the Water Management Notice no. 321 / 28.11.2018 issued by the Banat Basin Water Administration;
- During the execution of the investment works, it is forbidden to extract sand and gravel from the riverbed without the permission and authorization of the territorial water management authority;
- Appropriate maintenance of the equipment that performs crossing works of the water courses;
- Appropriate collection and management of wastewater so as to eliminate the possibility of discharges into the watercourses;
- The storage of materials, waste and equipment stationing into the riverbeds or banks is prohibited;
- During the execution of works for crossing the watercourses, the constructor has the obligation to ensure the normal water drainage;
- Works designed on the riverbed will not be carried out during high water periods;
- In order to secure the crossings, measures will be taken to ensure the stability of the riverbed and banks in their area;

- Correct dimensioning of the pipeline elements protection solutions in order to preserve the morphology and water flow dynamics at the level of the riverbed; immediate correction of the possible banks erosion by appropriate solutions;
- Water reuse for the pressure tests by transferring volumes from one segment to another, as they are completed;
- Vehicle routes will be limited and reduced to the strict minimum, requiring the use of existing access networks to avoid additional loads of the water courses with suspended particles that can be washed from the sites affected by erosion and compaction; repeated crossing through the riverbed will be strictly avoided.

Measures to decrease the impact on the air and climate quality

During the construction and assembly works, the following measures are proposed to reduce the impact:

- Use of equipment and machinery in accordance with the best technology;
- Periodic technical inspections of the vehicles and equipment used to carry out the works;
- Excavation works will not be performed in extreme weather (strong wind, rain);
- Reducing the running speed on public roads of the heavy duty vehicles used for transmission of the materials;
- The transportation of powdery materials shall be carried out in means of transport covered with a tarpaulin;
- Periodic wetting/spraying of the access roads and surfaces with dust generation potential during the periods of drought.

During the operation period under normal operating conditions, there are no sources of atmospheric pollutants. In order to prevent and reduce the emissions that may occur in the event of failure of the pipeline, the following measures are foreseen:

- SCADA control system that allows monitoring and control of operations in the real-time gas transmission system, as well as emergency stop, fire detection at the technological installations;
- Valve system for separating the damaged pipe section;
- Establishing an adequate pipe protection system in order to avoid corrosion and wear processes;
- A schedule of current revisions will be prepared and complied with.

Measures to reduce the impact of noise and vibration

During the construction and assembly works, the following measures are proposed to reduce the impact:

- The use of machinery and equipment whose noise and vibration levels are within the permissible limits;
- The night work (08.00 p.m.-07.00 a.m.) close to residential areas will be avoided; Compliance with the permissible limits set by the current noise regulations;
- The location of temporary sound absorbing panels on sectors with sensitive receivers during the works.

During the operation period no special noise reduction measures and equipment are required, the transmission pipes, the valve and cathodic protection stations are not noise-generating sources. The noise level associated with the operation of GMS Comloşu Mare facilities and equipment will not exceed the permissible limit of the site, according to SR 10009-2017 Acoustics, Permissible limits of the ambient noise level.

Measures to decrease the impact on the landscape and the visual environment

Considering the potential impact on the landscape and the visual environment, the following measures should be complied with:

- The temporarily occupied lands will be brought to the initial condition at the completion of the works;
- Elements built through the project will not be arranged in areas of value for the landscape;
- The site management and the pipe material warehouses should be located as far as possible in areas with developed infrastructure, in the vicinity of the existing county/ communal roads, in order to avoid land damage by setting up new access roads;
- Places for cleaning the tires of the vehicles, whether manual or mechanized, should be provided before entering the public roads;
- The morphological restoration of the initial landforms will begin immediately after completion of the construction activities;
- Planting green spaces on the GMS Comlosu Mare site;
- Maintenance of buildings, including fences during the operating period.

7.7. The croo border nature of the impact

Project size

The project envisages the implementation of a gas pipeline with a diameter of 600 mm, a pressure of 63 bar, length of 85.6 km on the territory of Romania (Timis County), including the installations and equipments related to the pipeline. The proposed investment will ensure the connection between the BRUA gas pipeline and the existing pipelines West 1 and West 2 and the Mokrin Technological Node from Serbia.

By creating the interconnection, the bidirectional gas flow, from Romania to Serbia, will be ensured and vice versa, at a maximum transmission flow of 2.5 billion Scm/year (285,000 Scm/ h).

The investment is found on the list of major projects proposed by Transgaz in the "Development Plan of the National Gas Transmission System for the Period of 2017-2026" approved by A.N.R.E. by Decision no. 910/22.06.2017. The project responds to the objectives of the European energy policy to achieve interconnections with similar gas transmission systems in the neighboring countries in order to create the technical and technological conditions for ensuring the security of gas supply, according to the provisions of the Council Directive 2004/67 / EC of the European Union from 26 April 2004 on measures to guarantee the security of gas supply, transposed by the Law 346/2007.

Also, the Romania-Serbia interconnection project is in line with Serbia's Energy Development Strategy by 2025 for the period 2017-2023.

On the territory of Romania the pipeline intersects the following obstacles: A1 highway, national roads, county and communal roads, railways, cadastral and non-cadastral waters.

The pipe will be buried along its entire length. The laying depth of the pipe is approx. 1.1 m between the surface of the ground and its crown, with the exception of the communication channels, where the depth of the pipeline is at least 1.5 m and the water crossing, where the laying depth will be at least 1.5 m under the scouring rates, established by the hydrological study.

The total area temporarily occupied to achieve the objective is about 174.7 ha and the estimated area to be occupied permanently is about 1.1 ha.

Location of the Project

The designed investment will be located in Timis County, on the administrative territory of Recaş and Remetea Mare, Giarmata, Pişchia, Sânandrei, Orţişoara, Satchinez, Biled, Şandra, Lenauheim, Gottlob and Comloşu Mare.

The gas transmission pipeline, with an overall estimated length of approx. 97 km, out of which 85.56 km on the Romanian territory, will have the border crossing point of the Romania - Republic of Serbia border, located at the level of TAU Comloşu Mare, about 2.5 km from the residential areas of the locality. The position of the crossing point of the Romanian-Serbian border was established along with the representatives of the Natural Gas Transmission System of the Republic of Serbia.

The objective of the Comloşu Mare Gas Station will be located at a distance of approximately 400 m from the Romania - Republic of Serbia border. No objective to be protected has been identified, the closest living area is within 2 km on the Romanian territory.

According to the information currently available, there are no ongoing projects in the border crossing area and no other investment is envisaged.

In the area of the pipeline interconnection, at the border between Romania and the Republic of Serbia, the land has the category of agricultural use, the temporarily occupied land area to be completely restored after the completion of the works.

Within approximately 1 km relative to the pipeline location in the border region, there are no sensitive or ecologically important areas (wetlands designated by the Ramsar Convention, national parks, nature reserves, scientific sites or important sites from archaeological, cultural or historical point of view).

On the territory of Romania, the closest residential area (Comloşu Mare) is more than 2 km away from the interconnection area. The protected natural areas ROSPA0142 Teremia Mare - Tomnatic and ROSCI0287 Comloşu Mare are located more than 1.5 km from the interconnection area of the pipeline at the border.

Characteristics of the potential impact on the environment in a cross border context

The natural gas transmission pipeline is an underground, watertight construction, the impact being manifested during the execution period, within the working area

The following measures have been taken to prevent and decrease the potential impact:

- solutions for the foundation and laying of the gas pipeline have been adapted to the geotechnical land category where they are located;
- choosing the optimal laying depth of the pipeline and using a suitable corrosion protection system to avoid local surface defects on the pipeline and to ensure a low level of the technical accidents risk during the operation;
- the pipeline is designed underground below the freezing depth and the equipment is designed to operate within the temperature range of $+50^{\circ}\div-30^{\circ}\text{C}$ so that the operation and performance of the transmission system are not affected by extreme negative or positive temperatures;
- no physical and geological processes and negative phenomena have been identified on the project site and on the adjacent land, that would jeopardize the stability of the project's objectives.
- according to the "National Management Plan, 5th Section - Natural Risk Areas", the GMS site area overlaps with the area without potential for landslides;
- the project is not affected by changes in the average precipitation values, the pipeline localisation is not in areas with high risk of flooding;

- for a safe exploitation, the works were dimensioned in sections of water courses crossings at the maximum flows with an exceedance probability of 1% in the natural flow regime on the watercourses riverbed, by the ballast of the pipeline in the areas prone to flooding and afforestation;
- the pipeline's route avoids shallow underground water areas as well as designated sanitary areas.

From the perspective of the potential effects on the environment, we anticipate that they are favorable to the implementation of the project for the following reasons:

- **the "water" environmental factor:** there are no systematic sources of pollution of groundwater or surface water during the project implementation and operation; the quality and quantity regime of the water will not be affected during the project implementation period;
- **the "air" environmental factor:** the only source of air pollution during the execution period is represented by the equipment available; the operation of the machines at the work stations is intermittent, which makes the emissions generated by the motors to be pointy and momentary, leading to an insignificant impact on the air;
- **the "soil" environmental factor:** the impact due to land use change will be very small considering the land where the pipeline is planned to be, ie more than 90% of the route is arable land, the natural and anthropic impact is for a short period of time (execution period), after which the measures taken by the project lead to the restoration of the land to its initial condition.
- **the "sub soil" environmental factor:** the impact will be negligible;
- **the "biodiversity" environmental factor:** the implementation of the project will not affect the integrity of the protected natural areas or the species of Community interest they host, it will not reduce the natural habitats areas, will not reduce the populations species of Community interest within the natural areas, will not have a significant impact on the agroecosystems and common fauna species, considering their lack of conservative importance and the fact that they are not focus areas (feeding, breeding, wintering, passage) for the species of Community interest.
- **Public health:** given that the pipeline's route and project objectives are located in regions outside the urban settlements, and the project's construction phase is mainly a rapidly evolving transient activity, the impact generated during the construction will be reduced and manifested on short term. No emission levels, including waste that would constitute additional pressure on the population's health in the project area, are generated during the project's implementation and operation.

By adopting the constructive measures, the observance of the execution and exploitation technology, the implementation of the proposed measures for reducing the proposed impact, the minimal probability of any negative impact on the population and human health is reduced, both during the execution of the works and during the period operation and closing/decommissioning period.

The project does not foresee complex works and activities leading to a significant negative impact on the environmental factors, so no negative impact is expected in a cross border context.

VIII. ENVIRONMENTAL MONITORING PROVISIONS

During the execution of the works, the constructor will develop an environmental quality monitoring program, focusing on the quality of the discharged water, the emissions into the atmosphere and the noise. For the control of the pollutants emissions into the environment over the implementation period, it is proposed to implement a monitoring program that will include at least the following:

Table no.12 - Monitoring the environmental factors during the execution period

Environmental factors	Frequency	Responsibility
Water	Prior to evacuation to the emissary or sewerage network the quality of the waters is monitored (including them within the limits required by NTPA 001/2002, respectively NTPA 002/2002, as applicable)	General contractor
Air	Daily visual monitoring of the machinery and motor vehicles operation	General contractor
Noise	Quarterly monitoring of the noise level on the OS and DMT limit and in the work areas of the Natura 2000 site	General contractor
Wastes	Monthly - records of the wastes management	General contractor

In order to prevent environmental pollution during the exploitation of the analyzed objectives in the activity area, the following measures are required:

- identifying the sources of pollution (leaks, breaks, damage);
- continuous observation and control of the natural gas transmission pipeline route;
- establishing an adequate monitoring system;
- preliminary planning of the pipeline overhauls. It is based on the following indicators:
 - statistical data on the corrosion of the pipes on the pierced places;
 - plotting the accidental locations with the digging specification;
 - the date and procedure for repairing the section of the pipeline to be repaired;
 - information on serious pipeline accidents indicating the causes, dates to be taken from the reports.

The pipeline operation will be monitored continuously through the SCADA (surveillance, control and data acquisition) system that will be installed together with the pipe.

During the execution and operation of the installation, the following applicable environmental regulations should be complied with:

A. General Regulations

- GEO no. 195/2005 on environmental protection, approved with amendments by Law no. 265/2006, as subsequently amended and supplemented;
- Law no. 292/2018 on the assessment of the impact of certain public and private projects on the environment.

B. Air environmental factor

- Order no. 462/1993 on atmospheric protection, and the methodological norms for determining the emissions of atmospheric pollutants produced by stationary sources, as subsequently amended and supplemented.
- Law no.104 / 2011 on ambient air quality, as amended and supplemented;
- STAS 12574/87 air quality conditions in protected areas.

C. Water environmental factor

- Law no. Water Act as subsequently amended and supplemented
- Law no. 458/2002 on the quality of drinking water, as amended and supplemented
- GD 188/2002 for the approval of some norms regarding the discharge conditions in the aquatic environment of the waste waters, as amended and supplemented

D. Soil environmental factor

- Order 756/1997 on the approval of the Regulation on the assessment of environmental pollution (reference values for traces of chemical elements in the soil).

E. Protection against noise and vibration

- GD no. No 1756/2006 on the limitation of the level of environmental noise emissions from equipment intended to be used outside the buildings
- SR 10009-2017 Acoustics. Permissible limits of ambient noise level
- STAS 6156-86 Protection against noise in civil and social-cultural construction. Acceptable limits and acoustic insulation parameters

F. Waste

- Law no.211 / 2011 (republished in 2014) on the waste regime, as subsequently amended and supplemented
- Law no. 249/2015 on the Management of Packaging and Packaging Waste, as subsequently amended and supplemented
- GD no. 235/2007 on waste oil management.
- GEO no. 5/2015 on electrical and electronic equipment waste
- GD no. 856/2002 on the waste management record and on the approval of the list of wastes, including hazardous wastes.
- GD no.1061 / 2008 on the transmission of hazardous and non-hazardous waste on the territory of Romania.
- GD no. 170/2004 on the management of used tires.

G. Biodiversity

- Government Emergency Ordinance no. 57/2007 on the regime of natural protected areas, the conservation of natural habitats, wild flora and fauna and the subsequent additions.
- OM 19/2010 for approving the methodological guide on the adequate assessment of the potential effects of plans or projects on protected natural areas of Community interest.

These regulations are not restrictive. If environmental issues arise during the execution or operation of the work, the constructor and the beneficiary shall take measures that comply with the laws in force and prevent pollution.

IX. Justification of the project classification, as appropriate, in the provisions of other national laws transposing Community legislation (IPPC, SEVESO, COV, LCP, Water Framework Directive, Air Framework Directive, Waste Framework Directive, etc.)

Not applicable.

X. WORKS REQUIRED BY THE SITE MANAGEMENT

10.1. Works necessary for the management of the construction site and pipe material warehouses

For pipeline construction, along the route, two site managements and two pipe material and other equipment warehouses were envisaged.

The area temporarily occupied by the Cărani site is about 15,000 sqm and the area occupied by the Recaș and Lenauheim pipeline is approximately 2800 sqm, each. The management of the construction site required for the GMS construction works will be set within the 6828 square meter area allocated to the facility and it will occupy an area of approximately 1032 square meters.

The implementation of the project will be carried out in a rational sequence of works, giving priority to those who reduce the costs of organization (setting very short and short-term storage places, developing access routes from the existing roads to the intervention points, judicious establishment of the works' approach on the intervention points, as well as the order and priority of the underground or aboveground works, as appropriate, etc.).

For the execution of the workshop metal works, the constructor will use its own production facilities/workshops. The metallic structures will not be stored or will be transported to the locations of the intervention points in the period immediately prior to the installation.

The Carani site management on the above-mentioned area does not involve special works for its achievement, it respectively involves the removal and preservation of the topsoil (in a storage site at the limit of the site management), ballasting, bringing 1-2 containers on site, as well as finally, bringing the land to its initial condition with completion of the works (collecting, loading and removing the ballast and restoring the vegetation layer to the initial site).

Within the area of the site management, where appropriate and as required, the constructor will arrange storage areas for raw materials and construction materials, pipe material and fittings, equipment and machinery. The materials will be stored on assortments and types, so as to exclude the danger of overturning, rolling, knocking, fire, etc., the size and weight of the stacks will ensure their stability.

The management of the site will not be provided with accommodation, workers being accommodated in hotel units or boarding houses in the area. The site management and pipe material warehouses will be provided with ecological toilets to serve the constructor's staff.

The utilities necessary for the site management and warehouses (electricity, telephony, technological water, transmission of water required for the technological pressure tests involving tanks) will be ensured by the constructor's care.

The waste resulting from the activity of the works contractor will be collected from the working site, will be transported and stored temporarily at the site's own collection point or pipe material warehouses, as the case may be. The collection activity will be organized and carried out under supervision, so that the amount of waste in the site/working area is kept at a minimum, in order not to induce additional risk factors in terms of health and safety at work.

The waste disposal from the site/workplaces shall be done only with appropriate means of transport and only at authorized waste disposal sites. The liability for breaching this provision rests solely with the constructor, and the recipient has no liability in this case.

The temporary waste storage areas shall be appropriately arranged, delimited and secured against unauthorized entry and equipped with appropriate collection/storage bins, sufficient and appropriate for the environmental protection. According to the legal provisions, the selective collection of the waste, for which this is required, will be ensured.

The works required for the site management consist mainly of:

- arranging the surface for the site management;
- arranging the access routes;
- fencing the site's management;
- providing utilities;

- arranging the spaces necessary for carrying out the activity specific to the organization of the site (eg living spaces, office spaces, changing rooms, kitchen, dining room, containers for waste disposal, fuel storage, machinery parking area, PSI point, sanitary group, etc.);
- organizing the necessary premises for the temporary storage of the materials, taking the specific measures for conservation during storage and avoiding degradation;
- staff training and taking measures to comply with the rules on Safety and Health at Work, fire prevention and extinguishing, and environmental protection.

10.2. Location of the site organization and pipe material warehouse

The site organization and locations of pipeline warehouse have been established outside the protected areas. The table below shows the locations where the site organization and pipe material warehouses are expected to be located:

Table no. 13 – Location of site management and pipe material warehouse

Tag No.	Type of management	Localisation	Position of the pipeline by kilometers
1	Site management Carani	Sânandrei, Timiș County	37+200 – 37+350
2	Pipe material warehouse Recaş	Recaș, Timiș County	5+032 – 5+102
3	Pipe material warehouse Lanauheim	Lenauheim, Timiș county	66+660 – 66+700
4	Site management GMS	Comloșu Mare, Timiș County	85+071

10.3. Description of the environmental impact of the site management works and pipe material warehouses

The potential impact of a site management is generated by the following factors:

- Toxic emissions in air and water, wastes;
- Changes regarding the composition of the soil due to traffic and stationing of machines and materials;
- Landscape impact during the period of the existence of the site management.

Toxic emissions in the air will fall within the maximum allowable limits of Order 462/1993, for water discharge will be provided appropriate collection and evacuation system so that the quality limits established by G.D no. 188/2002as subsequently amended and supplemented, and the noise and vibration level will be within the limits allowed by SR 10009: 2017 and within the limits stipulated by Order of the Minister of Health no. 119/2014 for the approval of Hygiene and Public Health Standards on the living environment of the population. The impact of the machines activity on air and water is reduced in the situation of strict compliance with environmental protection standards.

The manufacturer has the obligation, through his activity carried out on the site, not to affect the natural environment from the work area and its vicinity. The personnel will be trained for the compliance with the cleaning within the management sire and hygiene standands.

10.4. Sources of pollutants and installations for retention, evacuation and dispersion of pollutants in the environment during the site management

The machines and motor vehicles used in the transportation of materials, workers are temporary sources of noise pollution, dust, emissions and vibration.

The constructions that will be carried out, do not represent pollution sources for water, air, soil. Residual or toxic substances that could alter the environment quality, are not evacuated.

All the emissions resulting from the machined involved in the execution works as well as the ones resulting from the period of operation will comply with the regulations and the legislation on environment protection in Romania.

The project is not characterised by the generation of noise or vibration of high intensity. The level of noise during the operation of site management falls within the admissible one, special protection not being necessary.

Regarding the fuels and lubricants that will be used by the constructor, his activity will be carried out according to the regulations in force, the potential effects and risks being the common ones for construction works.

The location will be surrounded in order to avoid the accidentally/unauthorised access.

The collection and storage of wastes will be ensured according to the hygiene standards in force in order to meet the conditions imposed by the environment protection.

10.5. Equipment and measures to control the emissions of pollutants in the environment

The works included in the project fall within the category of works with medium difficulty, execution having a minimum risk margin.

The constructor will take all the measures required in order to remove the possible risks regarding the occupational protection and safety, but also having the obligation to ensure a good organisation of work, as well as appropriate technical equipment.

Throughout the operation period of the site management and pipe material storage measures will be taken so that sources of pollutants do not exist for surface water or groundwater.

In order to ensure the safe operation of the installations, tracking, maintenance, technical inspection and repair works will be carried out volume and periodicity of which are presented in the legal standards.

Throughout the operation period of the site management and pipe material storage, the facilities of water supply and evacuation of sewage will comply with the legislation in force.

The concentrations of polluting substances in the air will be below the admissible concentrations. The constructor who performs the construction works has to improve the technological performance in order to reduce the emissions and not to exploit installation which pass the maximum allowable limits.

Throughout the period of deployment of the construction works, measures will be taken so that pollutants for soil do not exist. Any emission on soil will be eliminated.

No other areas of land, excepting the ones approved by the papers regulated by authorities, will be damaged.

The machines that leaking or their technical condition, documented by notices, does not comply with the legal requirements, are not permitted.

The residual or toxic substances that alter the soil quality, are not evacuated.

The collection, storage and disposal/recovery of waste will be provided by according to the legislation in force in order to fulfil the conditions required by the environment protection.

All the generated waste will be collected in the particular storage place and separated into containers by categories in order to be given to the economic operators authorised for recovery/recycling/disposal.

The waste from ferrous and nonferrous metal will be collected only in places that are specially designed for recovery/reuse and they will be delivered to the economic agents authorised for their takeover.

The management of substances and hazardous material will be in accordance with the provisions of the law and requirements of the authorities. These products will be stored – transported – handled – used and

evacuated according to the security sheets and legal requirements. In case of incidents regarding hazardous substances cleaning measures will be taken immediately while complying with the protection methods and the reduction of the environmental impact.

At the end of the construction works, the waste will be evacuated and all the used equipments, materials and structures for the fulfilment of constructions will be eliminated.

The construction works will be executed in accordance with the provisions of the FEED, of the conditions laid down by permits, agreements and authorisations obtained from the competent legal authority, of all the quality rules.

XI. RESTORATION OF THE SITE AT THE END OF INVESTMENT, IN CASE OF ACCIDENTS AND/OR AT THE CESSATION OF THE ACTIVITY, IN THE EXTENT THAT THESE INFORMATION IS AVAILABLE

11.1. Proposed constructions for the restoration of the site at the end of the investment, in case of accidents and/or at the cessation of the activity

The constructor has the obligation to restore the damaged land to its initial state before the execution of the construction works. The land on which the pipeline mounting works are executed will be recovered to its initial category of use. On the agricultural land, after the covering of the pipeline, the topsoil will be recovered so after the subsidence, the site has its initial profile.

The plugging of the pipeline with soil, after the mounting in the excavation will be made manually and mechanized according to the "Technical standards for the design and execution of gas transmission pipelines", approved by the Order of the A.N.R.E. President no. 118/2013. The plugging of the ditch will be made with soil resulted from digging and stored on the edge of the ditch, and in the end the topsoil stored separately will be laid.

After the launching of the pipeline in the ditch, the cover with soil will be made so that the hardbodies do not damage the insulation. The filling is executed manually, in successive layers of 10 – 15 cm until the crown of the pipeline is covered with 30 cm. Every layer is compacted separately. The rest of the filler is placed mechanically with layers of 20÷30 cm, also very well compacted. The compaction of the fillers will be made with a hand beetle and mechanized to the optimal humidity of compaction by a variable number of overlapping passes over each layer. The compaction will be achieved at the compaction level of the surrounding natural land. The optimum humidity of compaction is ensured by manual spraying in tight places and by mechanical spraying in wide open places, in order to supplement the required level of humidity. In agricultural lands, after the covering of the pipeline, the topsoil will be restored so that after subsidence the site will reach its initial condition.

Before laying the topsoil, the compacted soil will be dug, will be turned away on a thickness of 10 cm and will be leveled with a rack in order to assure the connection with the topsoil. The topsoil will be laid in a uniform layer of 30 cm thickness on the horizontal site or with a 20% slope and thickness of 20cm to the embankments with a larger slope than 20%. If the site crossed by the pipeline was a pasture land, some seeds will be spread, which will then be buried with the garden rack and a hand roller. The water needed to water the surfaces will be transported with the tanker. Also, the construction worker will restore all the roads used for the access to the location of the constructions works.

11.2. Issues related to the prevention and response to accidental pollution cases

In the following table measures and responsibilities are proposed for avoiding the production of the accidental pollution.

Activity	The nature of pollution	Measures proposed	Responsible person
Site Management	Pollution of soil, groundwater with domestic sewage in case of damages	Remediation of damages	Construction worker
	Pollution of soil with hydrocarbon as a result of non maintenance of the machines	Maintenance of machines in a good condition Remediation of the contaminated area	
Site of the construction works	Pollution of soil with hydrocarbon as a result of non maintenance of the machines	Remediation of contaminated area	Construction worker
Period of operation	Explosion followed by fire	Interruption of the gas supply Intervention for fire-fighting	Operator of the gas pipeline

In the event of an accident occurring in the natural gas pipeline, one should act according to the intervention program in case of damages or calamities prepared within SNTGN Transgaz SA for the operation of the facilities.

In cases of emergencies or accidental situations, hierarchically all the situations of abnormal operation are reported and which reduce the security in operation and, especially, the appearance of pipeline cracks, areas of landslides which affect the pipeline, technical condition of the pipeline and reinforcement in the proximity of constructions, industrial, social objects, roads, railways, crossing water, etc. In case of damages on pipelines, the following measures are imposed:

- The remediation of defects, mounting of reinforcement, pipelines and crossing coupling, etc, are executed without fluid pressure in the section included between the two consecutive isolation valve, taking due account of the following:
 - The cessation of the gas flow and purging of the pipeline;
 - The blocking of the valves and marking with warning plates in order to avoid their accidental opening during the works;
 - At the handling points and at the location of the works means of telecommunication will be assured in order to maintain the connection between the team members, brigade office, unit dispatch and means of transmission for possible intervention.
- The pipelines will be operated only after the carrying out of all the test laid down in the project in order to have the certainty of good state of operation.

In the event of accidental pollution immediate action is taken to remove the cause and limit the effects through:

- the announcement of the persons or teams responsible for combating pollution in order to immediately take measures and actions needed to eliminate the causes of pollution and to diminish their effects;
- information on pollution abatement operations by eliminating the causes that produced it and its effects;
- training of the intervention teams and staff.
-

11.3. Issues relating to the closure/ decommission/ demolition of the facility

Not applicable.

11.4. Ways to restore the initial condition/ restoration for subsequent use of the site

The site will be restored to the initial category of use by the performance of the following works:

- the withdrawal of the machines and work equipment;
- the discharge of the site of all materials and categories of waste;
- spreading the fertile soil layer on the trail with prior scaling of the land in areas with intense subsidence;
- levelling of the site;
- sowing where necessary;
- the soil will be fertilized by administration of fertilizer, if necessary;
- the reception of the site restoration works in the initial use category signed by the land owner and the beneficiary of the investment.

XII. ANNEXES

- | | |
|---|----------------|
| - Development Site Plan, drawing no. 1277-PT-00 | sc. 1: 100,000 |
| - Development Site Plan, drawing no.1277-00 | sc. 1: 200,000 |
| - Pipeline Section 1 Layout Plan, km 0 ÷ 5, drawing no. 1227-PT-01 | sc. 1: 5000 |
| - Pipeline Section 2 Layout Plan, km 5÷10, drawing no. 1227-PT-02 | sc. 1: 5000 |
| - Pipeline Section 3 Layout Plan, km 10÷15, drawing no. 1227-PT-03 | sc. 1: 5000 |
| - Pipeline Section 4 Layout Plan, km 15÷20, drawing no. 1227-PT-04 | sc. 1: 5000 |
| - Pipeline Section 5 Layout Plan, km 20÷25, drawing no. 1227-PT-05 | sc. 1: 5000 |
| - Pipeline Section 6 Layout Plan, km 25÷30, drawing no. 1227-PT-06 | sc. 1: 5000 |
| - Pipeline Section 7 Layout Plan, km 30÷35, drawing no. 1227-PT-07 | sc. 1: 5000 |
| - Pipeline Section 8 Layout Plan, km 35÷40, drawing no. 1227-PT-08 | sc. 1: 5000 |
| - Pipeline Section 9 Layout Plan, km 40÷45, drawing no. 1227-PT-09 | sc. 1: 5000 |
| - Pipeline Section 10 Layout Plan, km 40÷45, drawing no. 1227-PT-10 | sc. 1: 5000 |
| - Pipeline Section 11 Layout Plan, km 50÷55, drawing no. 1227-PT-11 | sc. 1: 5000 |
| - Pipeline Section 12 Layout Plan, km 55÷60, drawing no. 1227-PT-12 | sc. 1: 5000 |
| - Pipeline Section 13 Layout Plan, km 60÷65, drawing no. 1227-PT-13 | sc. 1: 5000 |
| - Pipeline Section 14 Layout Plan, km 65÷70, drawing no. 1227-PT-14 | sc. 1: 5000 |
| - Pipeline Section 15 Layout Plan, km 70÷75, drawing no. 1227-PT-15 | sc. 1: 5000 |
| - Pipeline Section 16 Layout Plan, km 75÷80, drawing no. 1227-PT-16 | sc. 1: 5000 |
| - Pipeline Section 17 Layout Plan, km 80÷85+560, drawing no. 1227-PT-17 | sc. 1: 5000 |
| - Site layout plan VS 13, VS 14, drawing no. 1277 -17 - 03 | sc. 1: 5000 |
| - Site layout plan GMS Comloşul Mare, drawing no. 1277-PT-17-06 | sc. 1:100 |
| - Stereo 70 coordinates inventory of the Project site. | |

XIII. BIODIVERSITY AND INFORMATION ABOUT THE NATURAL PROTECTED AREAS OF COMMUNITY INTEREST PRESENT IN THE PROJECT AREA

13.1. Short description of the Project and the distance from the natural protected area of community interest, as well as the geographical coordinates (Stereo 70) of the Project site

The Project provides for construction works on the territory of the Timis County related to a new DN 600 85,560 m long gas transmission pipeline. An end of the pipeline route will be on the territory of Recaş, Petrovaselo village, where it will be connected to the DN 800 BRUA pipeline and DN 500 West 1 and West 2 pipelines, and the other end will be in Comloşu Mare commune, at the border between Romania and the Republic of Serbia.

The designed investment objective will be located on the administrative territory of Recaş, Remetea Mare, Giarmata, Pişchia, Sânnandrei, Orţişoara, Satchinez, Biled, Şandra, Lenauheim, Gottlob and Comloşu Mare. Technological facilities related to the transmission network will be located on the pipeline route as follows:

- 14 valve stations (VS)
- 3 cathodic protection stations (CPS)
- Comloşu Mare Gas Metering Station (GMS).

Table no. 14 – Constructional and functional characteristics of the project

Name	Unit of measurement	Size
Design pressure	bar	63
Minimum pressure in Mokrin point (Serbia)	bar	39÷45
Minimum pressure in the coupling point (BRUA)	bar	50
Plane pipeline lenght	km	85.56 km
Nominal diameter of the pipeline	mm	600
Outer diameter of the pipeline	mm	610 (Ø 24")
Maximum flow rate	Sm ³ /year	Maximum 285 000 Sm ³ /h
Cadastral water courses crossing	Pc.	12
Channel crossing	Pc.	46
A1 highway crossing	Pc.	1
Highway passage crossing	Pc.	1
National roads crossing	Pc.	3
County roads crossing	Pc.	6
Communal roads crossing	Pc.	6
Service roads crossing	Pc.	11
Railway crossing	Pc.	7
Valve stations (VS)	Pc.	14
Transgaz Pipelines	Pc.	4
Premiere Energy Pipelines	Pc.	2
Conpet pipelines crossing	Pc.	2
Delgaz pipelines crossing	Pc.	1
Cathodic protection stations (CPS)	Pc.	3
Gas Metering Station (GMS)	Pc.	1

By the construction of this pipeline the following objectives will be achieved:

- Achievement of the interconnection of the National Gas Transmission System of Romania with the similar system of the Republic of Serbia;
- Diversification of the gas supply sources of the consumers in the region, by assuring the access to the Black Sea gas volumes;
- Development of a transmission capacity that will ensure in the future the interconnection with the pipelines that will have potential sources of supply the liquefied gas from the Black Sea shore (AGRI Project);
- Transmission to the European gas markets in the Black Sea area by interconnection with the Bulgaria - Romania - Hungary - Austria pipeline;
- Security of gas supply of European countries through access to new gas sources;
- Reduction of the degree of dependence on gas imports by covering the steady and predictable increasing tend of the consumption in European countries amid a steady decrease medium and long term of gas deliveries from Russia;
- Gas supply of bordering areas related to the route of the designed natural gas pipeline;
- Occurrence of a new gas market for the gas sources from the Black Sea by taking over in the NTS.

The the construction works will be executed in the order of the operations related to the technological process of pipeline installation according to the provisions of "Technical standards for the design and execution of the gas transmission pipelines" approved by the Order of A.N.R.E. President no. 118/2013. The pipeline will be designed so as to allow for the cleaning and inspection by intelligent PIG.

The depth of laying of the pipeline is approx. 1.1 m between the soil surface and its crown, except for the undercrossing of the communication paths, where the depth of laying of the pipeline is minimum 1.5 m and the water undercrossing where the depth of laying will be at least 1.5 m under the elevation rates established by the hydrological study.

According to the provisions of Order no. 118/2013 regarding the approval of the Technical rules for the design and execution of the gas transmission pipelines, the width of the working corridor for the installation of the pipeline DN 600, is 20 m in agricultural and non-productive land. The land is affected by the proposed construction works part of the public and/or private field of the administrative – territorial units or it is private property of natural and/or legal person.

The legal framework for access in the field, obtaining the consent of the land owners and the right to use it in order to assure the operation is regulated by the Law no. 123/2012 – The updated Electricity and Gas Law no. 185/2016 concerning some measures necessary for the implementation of projects of national importance in the field of natural gas. All the land temporarily occupied will be returned to the category and initial condition after completion of the construction works.

The total area of land that will be occupied by the construction works of the investment objective is approx. 175.8 ha, of which the land occupied temporarily is approx. 174.7 ha and the land occupied permanently is approx. 1, 1 ha, the land being located in the buildup/outside the buildup areas of the localities.

Obstacles crossing

Along the route, the gas transmission pipeline crosses the following obstacles: access ways (A1 Motorway, National Roads DN, DJ County Roads, DC Roads, CF Railways), cadastral waters and hydrochannels.

The crossing of the water courses will be done through an open ditch with a leaked pipeline and the communication routes (A1 highway, national roads, county roads and communal roads and railways) will be crossed by horizontal drilling.

Pipeline route

The pipeline will be placed in the Western part of the country and it is located in Timiș County.

The length of the natural gas pipeline route is approx. 85, 56 km. A situation regarding the distribution of natural gas pipelines divided into territorial administrative units is summarized in the table below.

Table no. 15 – Distribution of the natural gas pipeline on UATs

Item no.	UAT	Length of the pipeline section (m)	Kilometric position
1.	Recaș City	11,056	km 0 – km 11 + 056
2.	Remetea Mare Commune	6,434	km 11 + 056 – km 17 + 490
3.	Giarmata Commune	8,866	km 17 + 490 – km 26 + 356
4.	Pișchia Commune	3,334	km 26 + 356 – km 29 + 690
5.	Sânandrei Commune	2,578 + 5720	km 29 + 690 – km 32 + 268 km 33 + 745 – km 39 + 465
6.	Orțișoara Commune	1,477	km 32 + 268 – km 33 + 745
7.	Satchinez Commune	9,652	km 39 + 465 – km 49 + 117
8.	Biled Commune	6,148	km 49 + 117 – km 55 + 265
9.	Șandra Commune	7,598	km 55 + 265 – km 62 + 863
10.	Lenauheim Commune	13,034	km 62 + 863 – km 75 + 897
11.	Comloșu Mare Commune	9,663	km 75 + 897 – km 85 + 560
	TOTAL	85 560 m	

Cathodic protection stations (CPS)

A summary of the position of the cathodic protection stations along the pipeline route is indicated in the table below.

Table no. 16 – Distribution of the cathodic protection stations by kilometres

CPS	Location	Position by kilometer
CPS 1	Petrovaselo Coupling	Km 0 + 000
CPS 2	Valve station Hodoni, Satchinez commune	Km 42 + 625
CPS 3	Gas Metering Station, Comloșu Mare	Km 85 + 160

Valve stations (VS)

A summary of the position of valves by kilometres along the pipeline route is indicated in the table below.

Table no. 17 – Valve location by kilometer

No. valve station	Name of railway	Crossing location	Km position (indicated on the pipeline wire)
VS 1	CF 213	between Giarmata and Pișchia municipalities	23 + 249
VS 2			23 + 335
VS 3	CF 310	between Carani and Sânandrei municipalities	36 + 925
VS 4			37 + 050
VS 5	CF 217	between Hodoni and Sânandrei municipalities	42 + 625
VS 6			42 + 720
VS 7	CF 218	between Șandra and Biled municipalities	57 + 020
VS 8			57 + 155
VS 9	CF 928	between Bulgăruș and Lenauheim municipalities	66 + 616

No. valve station	Name of railway	Crossing location	Km position (indicated on the pipeline wire)
VS 10			66 + 702
VS 11	CF 217	between Gottlob and Comloșu Mare municipalities	77 + 985
VS 12			78 + 495
VS 13	CF 217	between Comloșu Mare and Teremia Mare municipalities	83 + 145
VS 14			83 + 275

Positioning of the project in relation to the protected natural areas of Community interest

The pipeline route intersects (between km 80 + 927 and km 83 + 233) the Special Protection Area ROSPA0142 Teremia Mare -Tomnatic, the length of the overlapped pipeline sector with this Natura 2000 site being of 2306 m.

Inside ROSPA0142 Teremia Mare-Tomnatic it is necessary that the VS 13 valve station is constructed before crossing the railway line CF 217 and DN 59C (Jimbolia - Sânnicolau Mare). GMS Comloșu Mare is located at a distance of approx. 1300 m from the Natura 2000 site.

The localisation of the project in relation to other protected natural sites in the area:

- the route of the project is at a distance of approx. 100 m from ROSCI0402 Valea Sănandrei;
- the project route is located at a distance of over 1100 m from ROSCI0115 Mlaștina Satchinez and 2.740 Rezervația Mlaștinile Satchinez;
- the route of the pipeline and GMS Comloșu Mare are located at a distance of more than 2,200 m from ROSCI0287 Comloșu Mare.

All other components of the project, including site management, are located outside the protected natural areas. The STEREO 70 Coordinates of the project are presented in the Appendix to this report.

The positioning of the project in relation to the protected natural areas in the implementation area is indicated in Figures no. 3-8.

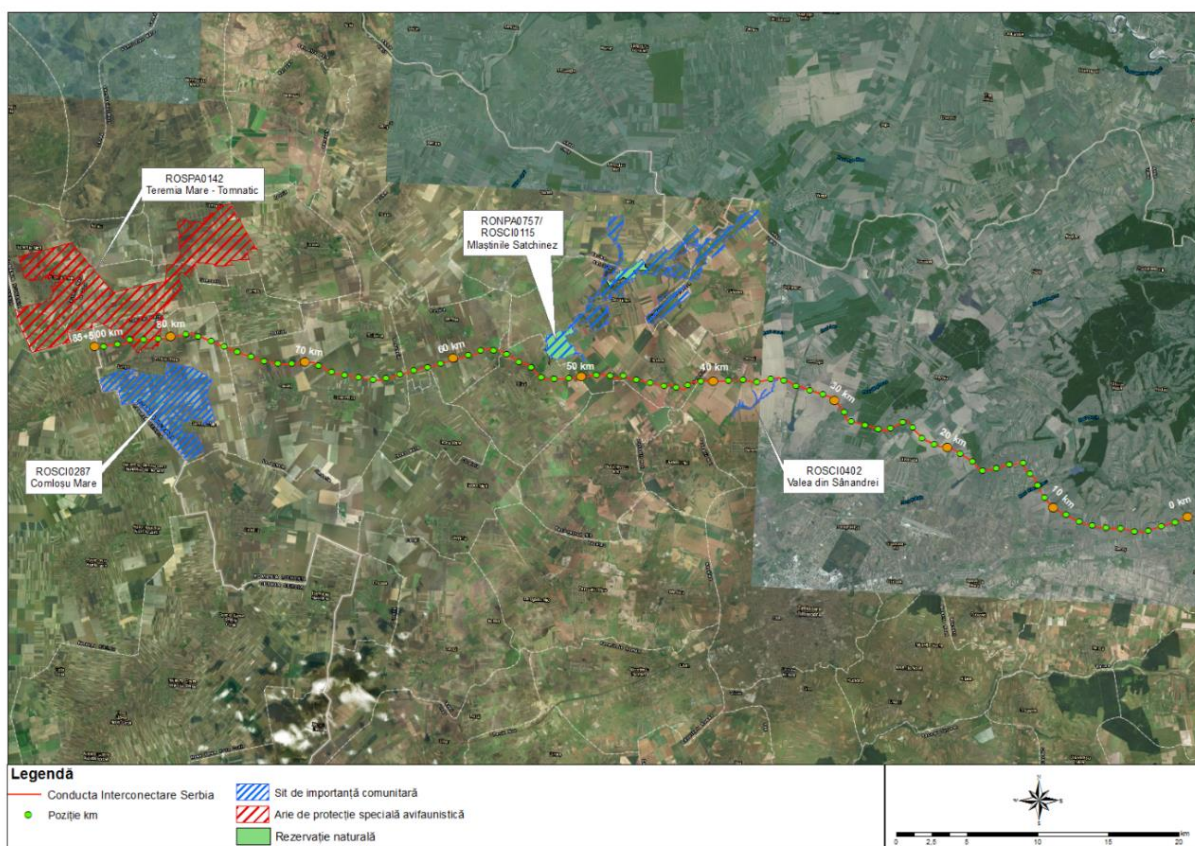


Figure 3 – Overall map concerning the overlapping of the project with the protected natural areas



Figure 4 – Detailed map concerning the localisation of the project from ROSCI0402 Valea din Sâandrei

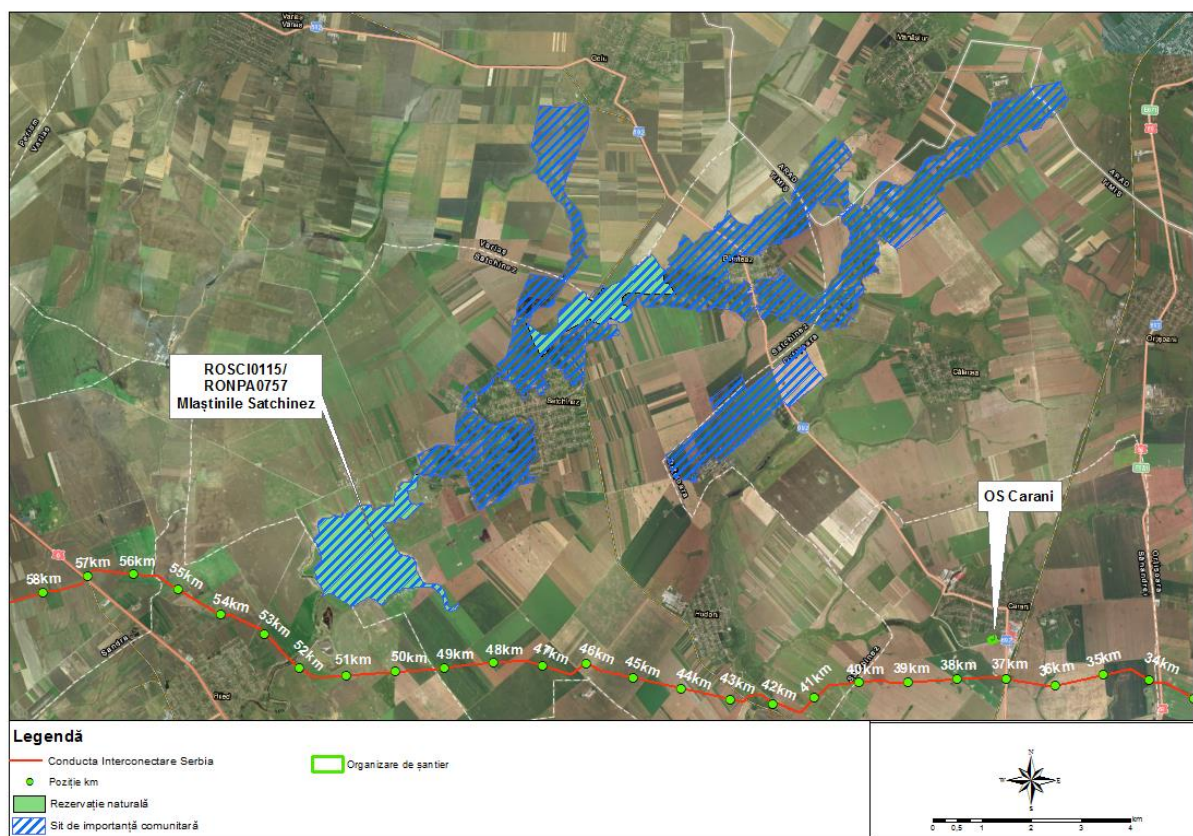


Figure 5 – Detailed map concerning the localisation of the project from ROSCI0115/ RONPA0757 Mlaştinile Satchinez

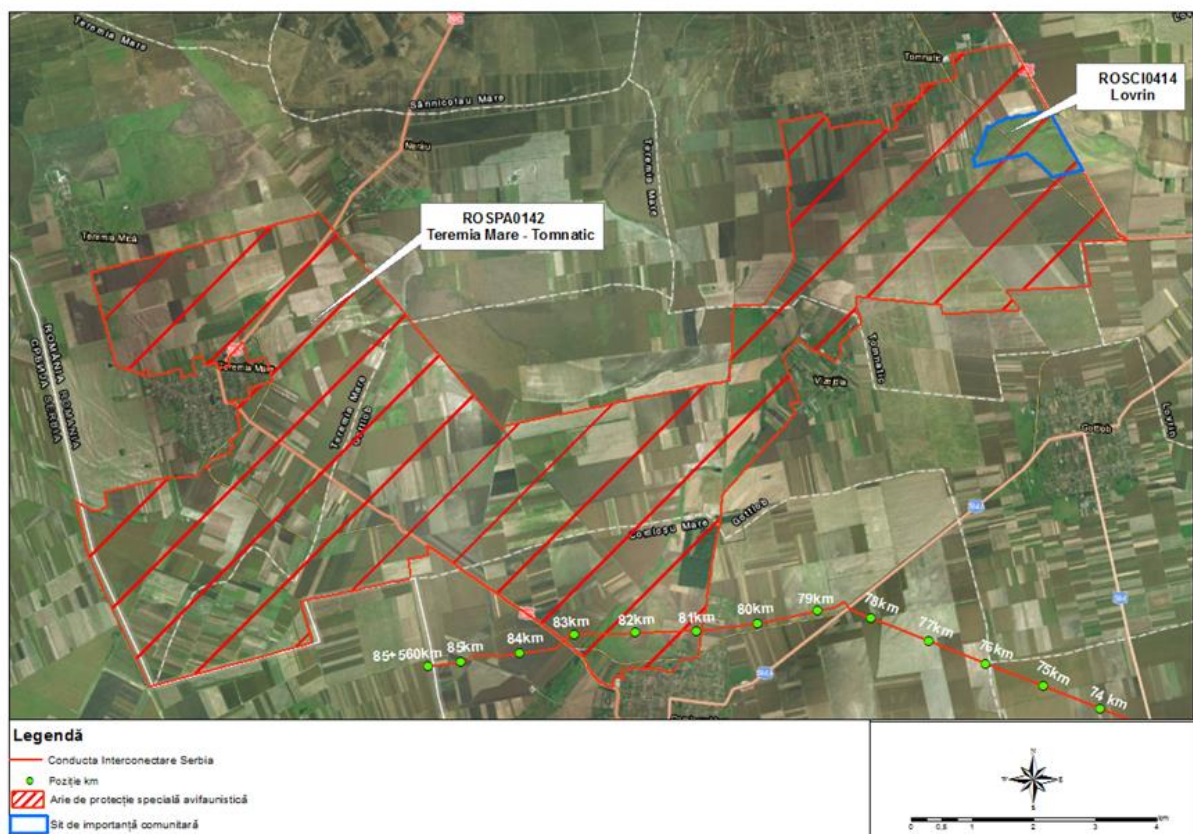


Figure 6 – Detailed map concerning the overlapping of the project between kilometres 81 – 83 with the site ROSPA0142 Teremia Mare – Tomnatic

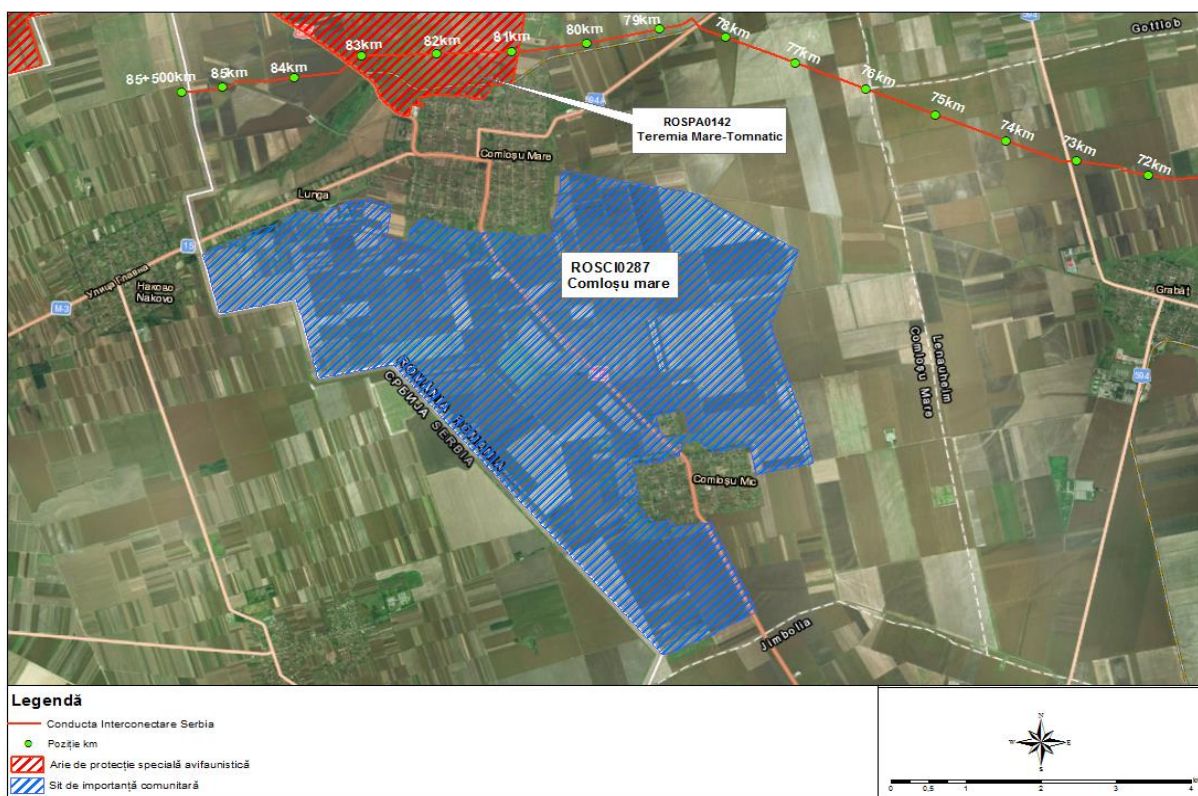


Figure 7 – Detailed map concerning the localisation of the project in relation to the site ROSCI0287 Comloşu Mare

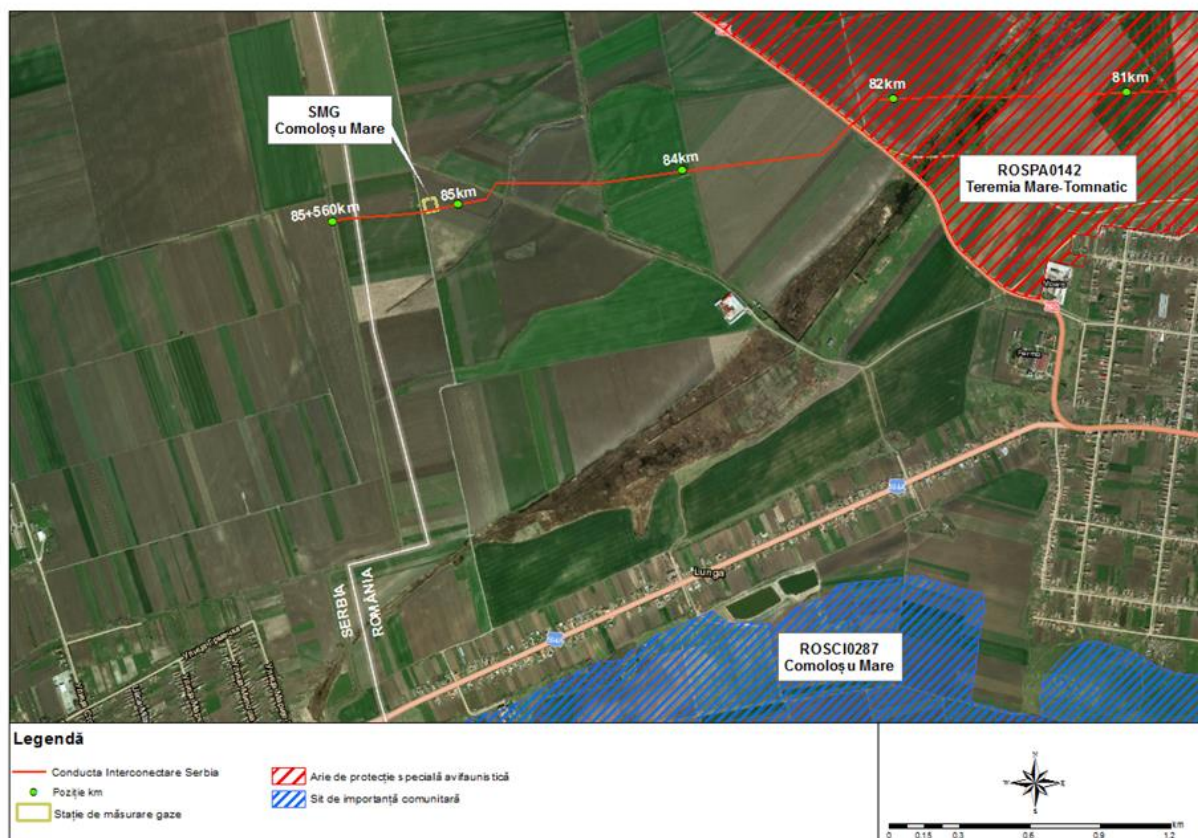


Figure 8 – Detailed map concerning the location of GMS Comloşu Mare in relation to the protected natural areas

13.2. Name and code of the protected natural area of Community Importance

- ROSPA0142 Teremia Mare – Tomnatic
- ROSCI0402 Valea din Sânnandrei
- ROSCI0115 Mlaștina Satchinez and 2.740 Rezervația Mlaștina Satchinez
- ROSCI0287 Comloșu Mare

13.3.1. Presence and specimens/areas covered by species and habitats of Community interest in the special protection of important birds area ROSPA0142 Teremia Mare – Tomnatic

- Special Protection Area ROSPA0142 Teremia Mare – Tomnatic

The surface of the site is 6613 ha and the length of the overlapped pipe section with this protected area is 2306 m. The site is located in the Panonian biogeographic region (100%).

The area temporarily occupied by the project (in the construction phase) in this protected natural area is 4,612 ha, which means 0.06974% of the total area of the protected natural area.

The area definitively occupied in the ROSPA0142 protected area is represented by the location of the VS13 valve station and the consolidated access road, namely 0.0334 ha, which means 0.0005051% of the total area of the protected natural area.

According to the standard data form within the site the following species provided for in the article 4 from the Directive 2009/147/EC are presented, species listed in the annex II of Directive 92/43/ECC:

Species			Population							Site				
Group	Code	Scientific name	S	NP	Type	Size		Unity Of measur ement	Categ.	Data Qual ity	AIBICID	AIBIC		
						Min.	Max.		CIRIVIP		Pop.	Conserv.	Isolation	Global
B	A255	<i>Anthus campestris</i>			R	3	6	p	C		C	C	C	C
B	A031	<i>Ciconia</i>			R	5	7	p	C		C	B	C	C
B	A081	<i>Circus aeruginosus</i>			R	1	3	p			C	C	C	C
B	A081	<i>Circus aeruginosus</i>			C	200	400	i			C	C	C	C
B	A082	<i>Circus cyaneus</i>			W	3	10	i			C	C	C	C
B	A084	<i>Circus pygargus</i>			R	0	1	p			C	C	C	C
B	A084	<i>Circus pygargus</i>			C	30	70	i			C	C	C	C
B	A231	<i>Coracias garrulus</i>			R	1	2	p	C		D			
B	A348	<i>Corvus frugilegus</i> (Cioara de semănătură)			R	240	270	p	R		C	C	C	C
B	A429	<i>Dendrocopos</i>			P	2	5	p			D			

Species				Population							Site			
Group	Code	Scientific name	S	NP	Type	Size		Unity Of measurement	Categ. CIRIVIP	Data Quality	AIBICID Pop.	AIBIC		
						Min.	Max.					Conserv.	Isolation	Global
		<i>syriacus</i>												
B	A027	<i>Egretta alba</i>			C	5	10	i			D			
B	A026	<i>Egretta garzetta</i>			C	20	50	i	C		D			
B	A097	<i>Falco vespertinus</i>			R	25	40	p			B	C	C	B
B	A131	<i>Himantopus</i>			R	0	4	p			D			
B	A338	<i>Lanius collurio</i>			R	2	17	p			C	C	C	C
B	A339	<i>Lanius minor</i>			R	6	10	p			C	C	C	C
B	A023	<i>Nycticorax</i>			C	70	150	i	C		C	C	C	C
B	A166	<i>Tringa glareola</i>			C	70	100	i			C	C	C	C

Legend:

Type of population: P – permanent; R – reproducing; C – density/passage; W – wintering.

Unit: i – individuals; p – pairs.

Category of population: C – common species; R – rare species; V – very rare; P – the species is present.

Evaluation (population): A – $100 \geq p > 15\%$, B – $15 \geq p > 2$, C – $2 \geq p > 0\%$, D – insignificant Evaluation (conservation): A – excellent, B – good, C – medium or reduced.

Evaluation (isolation): A – (almost) isolated, B – non-isolated population, but at the limit of the area of distribution, C – non-isolated population with an extended area of distribution

Evaluation (global): A – excellent, B – good, C – considerable.

Habitat classes according to Corine Land Cover present at the level of the site:

Code	Habitat classes	Cover (%)
N07	Swamps, Peatbogs	1.28
N12	Crops (arable land)	91.38
N14	Pasture lands	3.40
N15	Other arable lands	0.75
N16	Hardwood forests	0.82
N23	Other artificial lands (municipalities, mines)	2.37
Total Habitat Cover		100.00

13.3.2. Presence and herds/areas covered by species and habitats of Community interest in the protected natural area ROSCI0287 Valea din Sănandrei

- Site of Community importance - ROSCI0402 Valea din Sănandrei**

The surface of the site is 47.80 ha, and the designed pipeline is about 100 meters away. The site is located in the pannonian biogeographic region (100%). The site was designated by O.M. no. 1.964/2007 regarding the

establishment of the protected natural habitat regime of sites of Community importance, as an integral part of the European ecological network Natura 2000 in Romania, as subsequently amended and supplemented.

The route of the project is at a distance of approx. 100 m (in the area of 34-35 km position) from the ROSCI0402 Valea din Sânnandrei.

Type of habitats present onsite and the evaluation of the site, according to the standard data form:

Types of habitats						Evaluation			
Code	PF	NP	Cover (Ha)	Caves (no.)	Data Quality	AIBICID	AIBIC		
						Rep.	Real. surface	Conserv status	Global eval.
6240			9		Good	B	C	B	B

Legend:

Rep. = representativeness – the degree of representativeness of the type of habitat within the site: A – excellent representativeness, B – good representativeness, C – significant representativeness, D: representativeness.

Rel surface = Relative surface – the area of the site covered by the natural habitat related to the total area covered by that type of natura habitat within the national territory: A: 100 >= p > 15% B: 15 >= p > 2% C: 2 >= p > 0%.

Conserv. Status = Conservation status – the degree of conservation of the structures and functions of the type of habitat, as well as the possibilities of restoration/reconstruction: A: excellent conservation; B – good conservation; C – medium or reduced conservation.

Global eval. = Global evaluation of the value of the site in terms of conservation of the type of concerned natural habitat: A: excellent value, B: good value, C: considerable value.

Other important flora and fauna species:

Species					Population			Reason						
Group	Code	Scientific name	S	NP	Size		Unit Of Measur ement	Categ.	Annex		Other categ.			
					Min.	Max.		CIRIVIP	IV	V	A	B	C	D
P		<i>Chamaecytisus</i> sp.						P						X
P		<i>Sonchus palustris</i>						P						X

Legend:

Reason: A: National Red List Data, B: Endemic, C: International Convention (including those from Berne, Bonn and the one regarding biodiversity), D: other reasons.

Habitat classes according to Corine Land Cover present at the level of the site:

Code	Habitat classes	Cover (%)
N12	Crops (arable land)	18,47
N15	Other arable lands	81,53
Total habitat cover		100.00

13.3.3. Presence and specimens/areas covered by species and habitats of Community interest in the natural protected area ROSCI0287 Comloșu Mare

- Site of Community Importance – ROSCI0287 Comloșu Mare**

The surface of the site is 2.622,30 ha and is located in the pannonian biogeographic region (100%). The site was designated by O.M. no. 1.964 / 2007 regarding the establishment of the protected natural habitat regime of sites of Community importance, as an integral part of the European ecological network Natura 2000 in

Romania, as subsequently amended and supplemented. The site does not have a management plan, which is being developed under a project developed by the Association for the Promotion of Natural and Cultural Values of Banat and Crişana Excelsior. ("Preparation of the management plans for ROSCI0287 Comloşu Mare, ROSCI0338 Pădurea Paniova and ROSCI0345 Pășistea Cenad", implementation period 2017-2020). The route of the pipeline and GMS Comloşu Mare are located at a distance of approx. 2,200 m from ROSCI0287 Comloşu Mare.

According to the standard data form within the site, are present the following species provided in to article 4 from Directive 2009/147/EC, species listed in annex II of Directive 92/43/EEC:

Species					Population						Site			
Group	Code	Scientific name	S	NP	Type	Size		Unit Of Measure ment	Categ.	Data Quality	AIBICID	AIBIC		
						Min.	Max.		CIRIVIP		Pop.	Cons.	Iso.	Global
M	2633	<i>Mustela eversmanii</i>			P				P		C	B	C	B
M	1335	<i>Spermophilus citellus</i> (Popândău)			P				P		C	B	B	B

Legend:

Type of population: P – permanent, R – reproducing, C – density/passage, W – wintering

Unit: i – individuals, p – pairs.

Category of population: C – common species, R – rare species, V – very rare, P – species is present

Evaluation (population): A - $100 \geq p > 15\%$, B - $15 \geq p > 2\%$, C - $2 \geq p > 0\%$, D – non-significant evaluation (conservation): A – excellent, B – good, C – medium or reduced

Evaluation (isolation): A – (almost) isolated, B – non-isolated population, but at the limit of area of distribution, C – non-isolated population with an extended area of distribution

Evaluation (global): A – excellent, B – good, C –considerable

Habitat types present onsite and the evaluation of the site from this perspective, according to the standard data form:

Code	Habitat classes	Cover (%)
N06	Rivers, lakes	0.87
N07	Swamps, Peatbogs	0.16
N12	Crops (arable land)	92.93
N14	Pasture lands	3.70
N15	Other arable lands	1.61
N23	Other artificail lands (municipalities, mines)	0.72
Total habitat cover		100

13.3.4. Presence of specimens/areas covered by species and habitats of Community interest in the natural protected area ROSCI0115 Mlaştina Satchinez

- Site of Community Importance – ROSCI0115 Mlaştina Satchinez

The surface of the site is 2,517.50 ha, located in the Pannonian biogeographic region (100%). The site was designated by O.M. no. 1.964 /2007 regarding the establishment of the protected natural habitat regime of sites of Community importance as an integral part of the Natura 2000 European ecological network in Romania. The site does not have a management plan, which is being developed under a project developed by the Association for the Promotion of Natural and Cultural Values of Banat and Crişana Excelsior. ("Elaboration of the management plan for ROSPA0078 Mlaştina Satchinez, ROSCI0115 Mlaştina Satchinez and 2.740 Rezervaţia Mlaştina Satchinez", implementation period 2017-2020).

Sit of Community Importance ROSCI00115 Mlaştina Satchinez overlaps with 19.26% with the Nature Reserve 2.740 Rezervaţia Mlaştina Satchinez.

The project route is located at a distance of more than 1100 m from the ROSCI0115 Mlaştina Satchinez and the 2,740 Rezervaţia Mlaştina Satchinez.

Habitat types present in the site and site evaluation for them according to the standard data form:

Habitat types						Evaluation			
Code	PF	NP	Cover (Ha)	Caves (no.)	Data Quality	AIBICID	AIBIC		
						Rep.	Rel. area	Conserv. status	Global evaluation
1530			125		Good	B	C	B	B

According to the standard data form within the site the following species are present provided for in article 4 of Directive 2009/147/EC, species listed in Annex II of Directive 92/43/EEC:

Species						Population					Site			
Group	Code	Scientific name	S	NP	Type	Size		Unit of measurement	Categ.	Data quality	AIBICI	AIBIC		
						Min.	Max.		CIRIVIP		Pop.	Conserv.	Iso.	Global
M	1355	<i>Lutra lutra</i>			P	1	2	p	P		D			
M	1335	<i>Spermophilus citellus</i> (Popândău)			P	25	30	p	P		C	B	C	B
A	1188	<i>Bombina bombina</i>			P				C		C	B	C	B
A	1993	<i>Triturus dobrogicus</i>			P				P		C	B	B	B
F	1149	<i>Cobitis taenia</i> (Zvârlugă)			P				P		C	B	C	B
F	1145	<i>Misgurnus fossilis</i> (Chiscar, Tipar)			P				P		C	B	C	B
I	4027	<i>Arytrura musculus</i>			P				R		C	B	C	B
I	4035	<i>Gortyna borelii lunata</i>			P				P		B	B	C	B
I	1060	<i>Lycaena dispar</i>			P				P		C	A	C	A
R	1220	<i>Emys orbicularis</i>			P	50	80	p	P		C	A	C	B

Legend:

Type of population: P – permanent, R – reproducing, C – density/passage, W – wintering.

Unit: i – individuals, p – pairs.

Category of population: C – common species, R – rare species, V – very rare, P – species is present.

Evaluation (population): A - 100 ≥ p > 15%, B - 15 ≥ p > 2%, C - 2 ≥ p > 0%, D – non-significant evaluation (conservation): A – excellent, B – good, C – medium or reduced

Evaluation (isolation): A – (almost) isolated, B – non-isolated population, but at the limit of the area of distribution, C – non-isolated population with an extended area of distribution, Evaluation (global): A – excellent, B – good, C – considerable

13.3.5. Presence of habitats and specimens on the area of the project site

In order to identify the biodiversity issues in the project site area, a team of biodiversity specialists from Transgaz S.A (biologist, geographer) along with a team of designers involved in the project carried out inspections on site during September 2018.

The main field investigation method consisted of a linear transection on the 2306 m of pipeline overlapped with the protected natural area (ROSPA0142 Teremia Mare - Tomnatic) as well as in the area adjacent to the protected area ROSCI0402 Valea din Sânnandrei, and secondarily the fixed observation point method was used, on mileage intervals.

Areas have been analyzed to identify bird species and other species of fauna and flora of protection /conservative interest present on the surface of the project site. The pictures below illustrate the data found in the field divided by two km intervals which together cover the entire length of 2306 m from the intersection area with ROSPA0142 Teremia Mare - Tomnatic.

ROSPA0142 Teremia Mare – Tomnatic

- Analysed interval 80+927 km – 82 + 000 km



Figure 9 – Overlapping area with ROSPA0142 interval 80+927 km – 82+000 km

Characteristics of the area intersected by the project:

The area intersected by the project, starting from kilometer 80 + 927 to kilometer 82, is in the form of stretches of cultivated agricultural land crossed by agricultural exploitation roads. The eastern limit of the site in the intersection area with the proposed pipeline is presented as a degraded concrete road DE 388, linking Comloșu Mare to a farm at a distance of about 450 m from the pipeline route. The area is subject to the anthropogenic impact of agriculture practice.

Habitat/ vegetation/ flora types

There are predominantly artificial habitats represented by agricultural lands cultivated with wheat (*Triticum aestivum*), sunflower (*Helianthus annuus*), corn (*Zea mays*) at the edge of which, as well as of the roads between them, there is a ruderal vegetation that has Flora species such as: *Setaria viridis*, *Cirsium arvense*, *Convolvulus arvensis*, *Cichorium inthybus*, *Brassica rapa*, *Onopordum acanthium*, *Xanthium spinosum*, *Xanthium strumarium*, *Centaurea cyanus*, *Ranunculus arvensis*, *Ononis spinosa*, *Trifolium pratense*, *Lotus corniculatus*, *Plantago major*, *Equisetum arvense*, *Urtica dioica*, *Galium verum*, *Hibiscus trionum*.

Fauna species identified in the area:

Especially bird species typical of agricultural land and open areas have been observed transiting the area, such as: *Corvus frugilegus*, *Passer montanus*, *Falco vespertinus*.

Figures 10 – 15 illustrate pictures from the area intersected by the project.



Figure 10 – The service road DE 388 that links Comloșu Mare to the farm, intersects the project in the area ok km 81, which is the limit of the site ROSPA0142.



Figure 11 – Aspect of the agricultural land crossed by the pipeline



Figure 12 – Agricultural service road between agricultural lands



Fig. 13 – Aspect of agricultural lands crossed by the project



Figure 14 – Agricultural service road between agricultural lands



Figure 15 – Aspect of the agricultural land cultivated with subflower in the area of km 82, crossed by the project

- Analysed section 82+000 km – 83+233 km



Figure 16 – Overlapping area with ROSPA0142 the section 82+000 km – 83+233 km

Characteristics of the area crossed by the project:

The area between kilometers 82 + 000 - 83 + 233 of the pipeline is characterized by the presence of agricultural land, separated by agricultural exploitation soil roads, pasture land on which the route of the pipeline intersects them.

In the vicinity of the DE 235 service road, a valve station VS 13 will be located on the land cultivated with corn provided for in the CF 217 railway undercrossing. The access to the working strip and the VS 13 valve station located upstream of the undercrossing of the railway CF 217 from the area of Comloșu Mare is made by reinforcement by crushed stone 80 m of the existing road of service land, connected to the national road DN 59 C, then by a 14 m long designed road.

The site limit is represented by the national road DN 59C. On the other side of DN 59 C the VS 14 valve station will be located outside the Natura 2000 site.

Habitat/vegetation/flora types

Artificial habitats represented by cultivated agricultural land, especially wheat prevail (*Triticum aestivum*) and corn (*Zea mays*) at the edge of which, as well as the road and non-cadastral project, a ruderal vegetation is present that contains flora species such as: *Setaria viridis*, *Cirsium arvense*, *Convolvulus arvensis*, *Cichorium inthybus*, *Brassica rapa*, *Onopordum acanthium*, *Xanthium spinosum*, *Xanthium strumarium*, *Centaurea cyanus*, *Ranunculus arvensis*, *Ononis spinosa*, *Trifolium pratense*, *Lotus corniculatus*, *Plantago major*, *Equisetum arvense*, *Urtica dioica*, *Galium verum*, *Hibiscus trionum*.

At kilometer 82+667, the pipeline route will under-cross non-cadastral pr. (TA12), a riparian type habitat where the reed bed (*Phragmites australis*) prevails. (Fig 23)

Fauna species identified in the area:

In general, birds species characteristic of agricultural land and open areas have been observed transiting the area such as: *Corvus frugilegus*, *Falco vespertinus*, *Sturnus vulgaris*, *Hirundo rustica*.

Figures 17 – 24 illustrate pictures from the area of the site:



Figure 17 – Aspect of the agricultural land with sunflower



Figure 18 – Agricultural lands cultivated with sunflower and corn



Figure 19 – Aspect of pasture lands situated between the agricultural lands



Figure 20 – Aspect of the crossing area of non-cadastral pr. TA12



Figure 21 – Agricultural land cultivated with corn and service road DE 235



Figure 22 – Service road DE 235 and aspect of the valve station location



Figure 23 – Aspect of the area of the Railway CF 217 crossing



Figure 24 – Aspect of the area of the DN59C crossing and localisation of the valve station VS 14 (outside the Natura 2000 site)

As stated in the data presented above, the pipeline route is located on areas that mainly correspond to the habitat class of the crop type (arable land), which at the level of the entire natural protected area ROSPA0142 Teremia Mare - Tomnatic occupies a percentage of approx. 91.38% of its total area.

Species of birds observed on the project route:

Following the observations made on the project route from the ROSPA0142 protected natural area, especially bird species typical to agricultural lands have been reported, the general inventory and conservation status of which are rendered in the list below:

Tag No.	Species name	Conservation status		
		Annexes of the Council Directive (birds) 2009/147/CE	Annexes OUG 57/2007 concerning the protected natural areas procedure	Natura 2000 Standard Data Form of the ROSPA0142 site
1.	<i>Corvus frugilegus</i>	Anexa II	Anexa 5c	-
2.	<i>Falco vespertinus</i>	Anexa I	Anexa 3	DA
3.	<i>Sturnus vulgaris</i>	Anexa II	Anexa 5c	-
4.	<i>Hirundo rustica</i>	-	-	-
5.	<i>Passer montanus</i>	-	-	-

A small number of bird species has been identified along the route, with bird species being very reduced in the area, and these were seen in transit, searching for food or resting places.

As indicated in the above list, a species of birds identified on the route of the project is found in Annex I of the Birds Directive, ie Annex 3 of GEO 57/2007 (birds of Community interest subject to special conservation measures for habitats to ensure their survival and breeding in the spreading area, respectively: *Falco vespertinus*).

In general, species of community interest that have been observed on the project route use these land areas for feeding, rest or transit. The area does not offer nesting or breeding conditions because it is subject to anthropogenic activities generally represented by intensive agriculture.

Other flora and fauna species identified on the project route:

Even though the overlapped protected natural area of the project route is designated for the protection of bird species (SPA = Special Protection Area), the observations made also referred to other fauna and flora species of protective interest that could be present in the project area.

Habitats and flora species:

The area of the project site is occupied by anthropogenic habitats represented by agricultural land, mainly cultivated with wheat (*Triticum aestivum*), sunflower (*Helianthus annuus*) and corn (*Zea mays*), and others are uncultivated in the proximity of which and among which flora of segetal type is predominant. Some areas of these habitat types are invaded by invasive alohtown species such as: *Xanthium strumarium*.

The general list of the vascular plant species present on the project route and close proximity of it are listed in the list below:

Tag No.	Species name	Conservation status
1.	<i>Setaria viridis</i>	c
2.	<i>Cirsium arvense</i>	c
3.	<i>Convolvulus arvensis</i>	c
4.	<i>Cichorium inthybus</i>	c
5.	<i>Brassica rapa</i>	c
6.	<i>Onopordum acanthium</i>	c
7.	<i>Xanthium spinosum</i>	i
8.	<i>Xanthium strumarium</i>	i
9.	<i>Centaurea cyanus</i>	c
10.	<i>Ranunculus arvensis</i>	c
11.	<i>Ononis spinosa</i>	c
12.	<i>Trifolium pratense</i>	c
13.	<i>Lotus corniculatus</i>	c
14.	<i>Plantago major</i>	c
15.	<i>Equisetum arvense</i>	c
16.	<i>Phragmites australis</i>	c
17.	<i>Urtica dioica</i>	c
18.	<i>Galium verum</i>	c
19.	<i>Hibiscus trionum</i>	c

Legend:

i – invasive – according to NBL – National Black List (Anastasiu P., Negrean G., 2009);

R – Rare (according to NRL – National Red List (Oltean et al. 1994);

c – common species

Picture from the project site in ROSPA0142 Teremia Mare – Tomnatic



Figure 25 - *Convolvulus arvensis* (original picture, September 2018)



Figure 26 - *Cichorium intybus* (original picture, September 2018)



Figure 27 - *Setaria viridis* (original picture, September 2018)



Figure 28 - *Xanthium strumarium* (original picture, September 2018)



Figure 29 - *Xanthium spinosum* (original picture, September 2018)



Figure 30 - *Cirsium arvense* (original picture, September 2018)



Figure 31 - *Onosis spinosa* (original picture, September 2018)



Figure 32 - *Ranunculus arvensis* (original picture, September 2018)



Figure 33 - *Hibiscus trionum* (original picture, September 2018)



Figure 34 - *Lotus corniculatus* (original picture, September 2018)

Mainly, the segetal and spontaneous species have been inventoried, without a conservative value, often present in agricultural ecosystem and marginal/abandoned lands.

ROSCI0402 Valea din Sânaandrei

The route of the project is at a distance of approx. 100 m (in the area of 34-35 km position) compared to the ROSCI0402 Valea din Sânaandrei.

The features of the area:

The area between 34 km and 35 km of the pipeline is characterized by the presence of agricultural land, which the pipeline route crosses.

The pipeline route does not intersect the protected natural area, but it is about 100 m north of it.

The access to the area will be made from DN69 on an agricultural service road located to the north of the pipeline, placed outside the protected natural area.

Habitat/ vegetation/ flora types

Artificial habitats represented by agricultural land cultivated mainly with wheat (*Triticum aestivum*) with a poorly represented vegetation, of the segetal type prevail.

The habitat characteristic of the ROSCI0402 site in the vicinity of the pipeline route is a subpanonic steppe pasture land with a moderate conservative, island-like aspect between farmland. The area has a strong antropic influence due to intensive agriculture.

Fauna species identified in the area:

Galleries of common vole (*Microtus arvalis*) have been observed, typical to the agricultural lands.

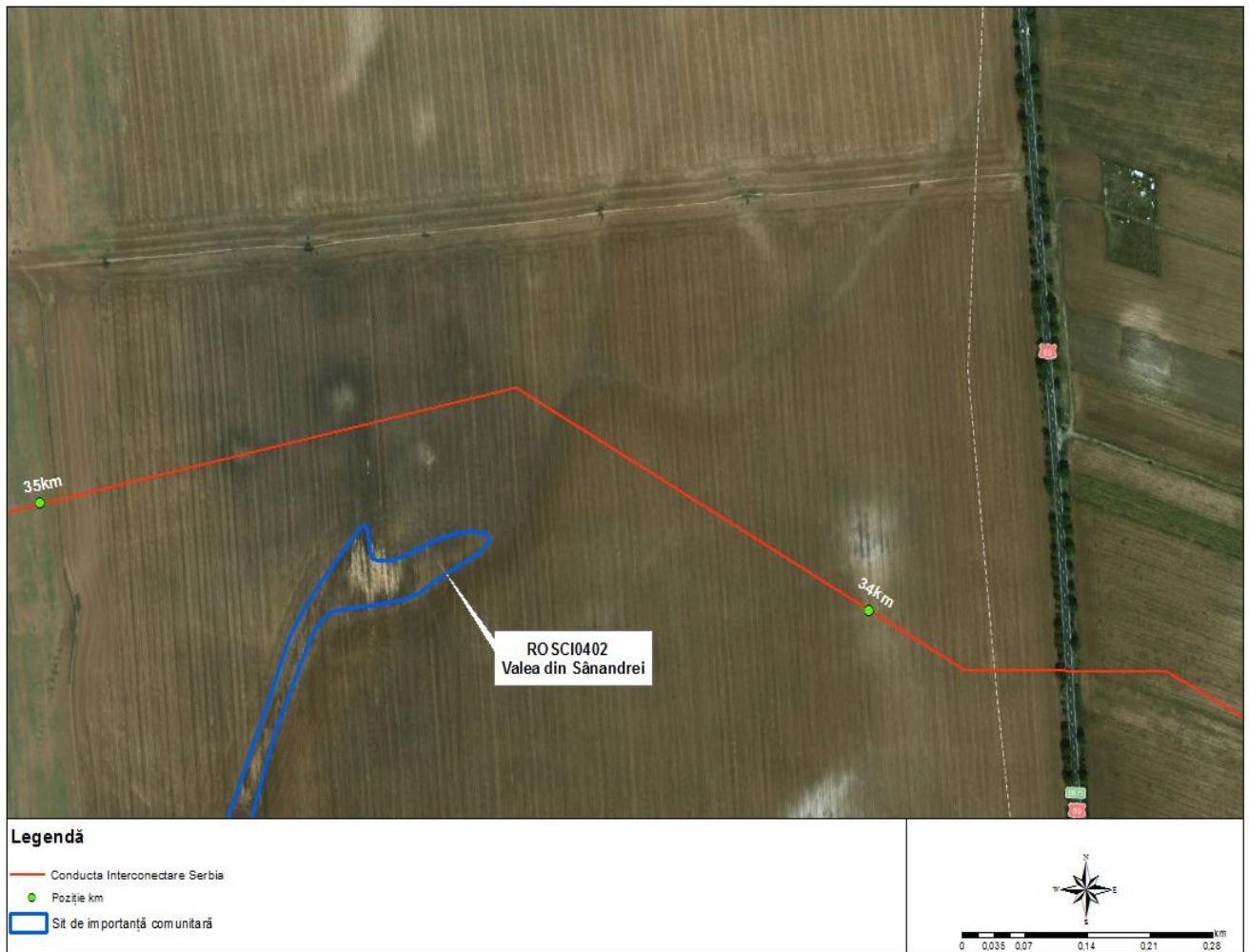


Figure 35 – Detailed map concerning the localisation of the project in relation to ROSCI0402 Valea din Sânnandrei.



Figure 36 – Aspect of agricultural land crossed by the project, southern exposure.



Figure 37 – Aspect of agricultural land crossed by the project, northern exposure.



Figure 38 – Aspect of agricultural land at the limit of the Natura 2000 site



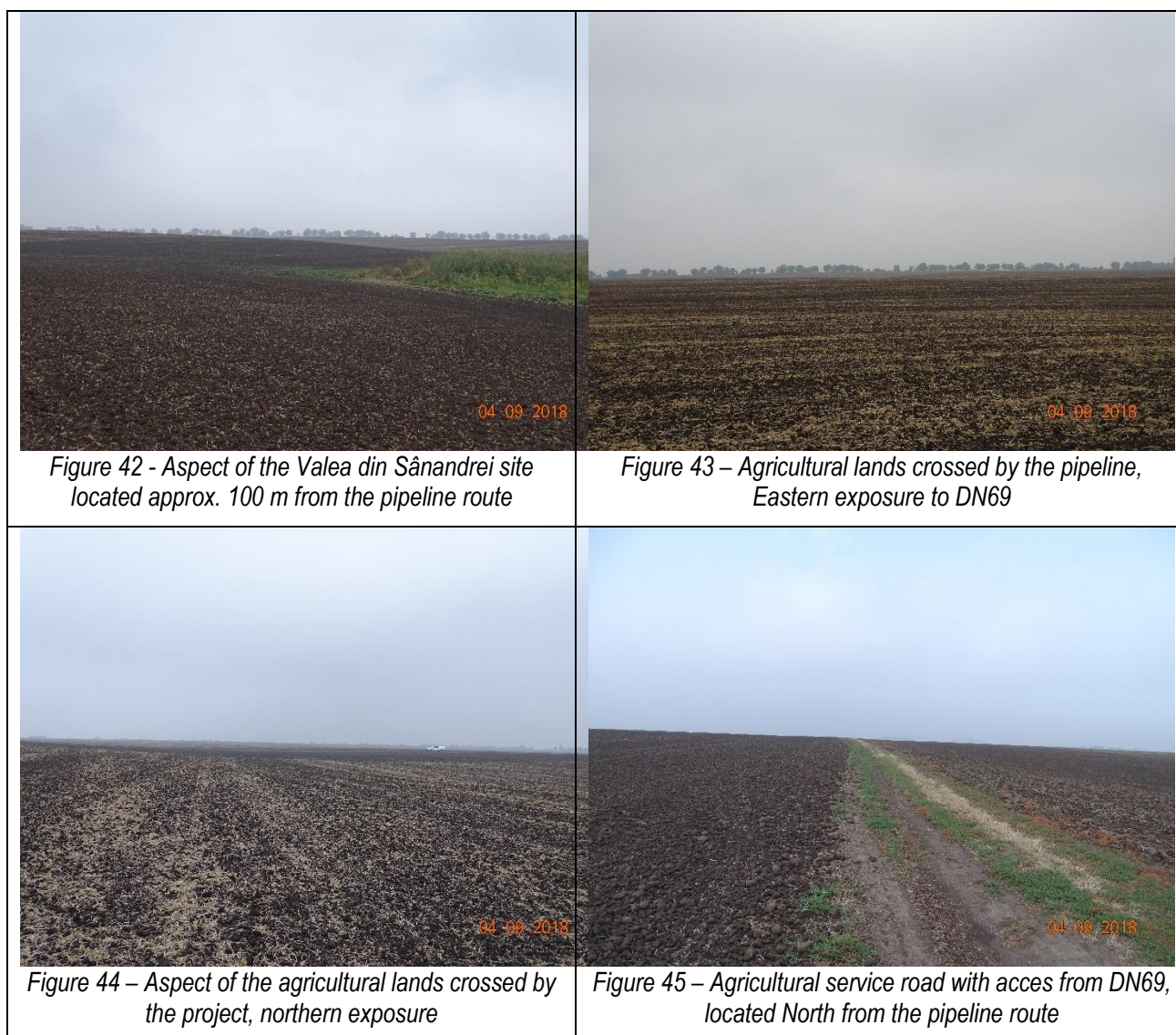
Figure 39 – Aspect of agricultural land in the vicinity of the pipeline route and towards South Natura 2000 site



Figure 40 – Aspect of the Valea din Sâandrei site located approx. 100 m from the pipeline route



Figure 41 – Aspect of the Valea din Sâandrei site located approx. 100 m from the pipeline route



Bird species observed on the project route

Following field observations no bird species were identified and there are no nesting conditions, breeding in the project area and vicinities.

Other flora and fauna species:

The area where the project is located is made up of habitats that belong to agricultural lands, mainly of wheat, with segetal vegetation at the edge of the service road.

Furthermore, in the ROSCI0402 protected natural area agricultural crops, ruderal vegetation have been identified, being strongly influenced by the agricultural practices. Some areas of the meadow habitat were invaded by invasive allochthonous species such as: *Xanthium strumarium*.

The list below comprises the species identified in the field on the sections inspected in the protected area ROSCI0402 Valea din Sânnandrei, as well as in the immediate vicinity of it.

The list of plant species observed in the protected natural area:

Tag No.	Species name	Conservation status
1.	<i>Daucus carota</i>	c
2.	<i>Triticum aestivum</i>	c

3.	<i>Onopordum acanthium</i>	c
4.	<i>Mentha arvensis</i>	c
5.	<i>Xanthium strumarium</i>	i
6.	<i>Arctium lappa</i>	c
7.	<i>Anthemis arvensis</i>	c
8.	<i>Cirsium arvense</i>	c
9.	<i>Conium maculatum</i>	c
10.	<i>Setaria glauca</i>	c
11.	<i>Trifolium repens</i>	c

Legend:

i – invasive – according to NBL – National Black List (Anastasiu P., Negrean G., 2009);

R – rare (according to NRL – National Red List (Oltean et al. 1994);

c – common species

ROSCI0287 Comloșu Mare

Considering that the pipeline route and GMS Comloșu Mare are located at a distance of more than 2200 m from ROSCI0287 Comloșu Mare, there will be no impact on habitats and species of community interest in the protected natural area.

ROSCI00115 Mlaștina Satchinez

Site of Community Importance ROSCI00115 Mlaștina Satchinez overlaps with 19.26% with the Nature Reserve 2.740 Rezervația Mlaștinile Satchinez. Considering that the project route is located at a distance of over 1100 m from ROSCI0115 Mlaștina Satchinez and 2.740 Rezervația Mlaștinile Satchinez, we appreciate that the project will not have an impact on habitats and species of community interest in the protected natural area.

13.4. It will be clarified whether the proposed project is not directly related to or necessary for the conservation management of the protected natural Sites of Community Interest

The proposed project has no direct link and is not necessary for conservation management of protected natural areas of community interest. In order to ensure the management of the natural protected Special Protection Area ROSPA0142 Teremia Mare – Tomnatic, a site management plan approved by Order no. 1.639 of August 12, 2016 is prepared, which regulates the conduct of all activities within this protected natural area. Actions are proposed to promote the principles of sustainable management of renewable resources, in line with the need to protect species and habitats.

The major objectives of the ROSPA0142 management plan are:

- Maintaining/restoring favorable conservation status for species of community interest by improving current land management measures and their application in collaboration with landowners/land and natural resource users;
- Raising the public acceptance level of the Teremia Mare – Tomnatic site, as well as obtaining stakeholder support for the achievement of conservation objectives through information and awareness activities;
- Implementing a monitoring system for the Management Plan by analyzing and periodically evaluating key actions and indicators to adapt the Action Plan.

The project route area (and its proximities) consists mainly of agroecosystems - which are not important areas for the conservation of biodiversity, in which there are generally common fauna species with few actual

specimens, therefore the management objectives of this protected natural area will not be affected by the implementation of the proposed project.

13.5. Estimation of the potential impact of the project on the species and habitats in the protected natural Site of Community Interest

The area temporarily occupied by the project (in the construction phase) on the overlapping area with the protected natural area is 4,612 ha. Reported to the surface of the entire ROSPA0142 Teremia Mare – Tomnatic, the project will temporarily occupy during the construction period 0.06974% of the site area.

The area permanently occupied in the protected natural area is 0.0334 ha, representing 0.0005051% of the total area of the site.

Upon completion of the works, temporarily occupied land will be restored to its original state.

13.5.1 Estimation of the impact on bird species

As a result of the observations made on the project route, no species of birds of Community interest strictly located on this site were identified; were observed only in flight through the project area.

The possible effects of the project, especially in the construction stage on bird species, may consist of:

- The loss of some areas of the feeding and passage habitat (agricultural land) due to the construction works, but considering the large areas of agricultural land specific to the area, it is estimated that during the execution of the works the birds will find in the vicinity sources of food and passage conditions;
- Stress due to the movement of cars, machinery, workers, but considering intensive farming in the area, it can be appreciated that birds are accustomed to such forms of impact;
- Noise pollution during the execution of the works. The bird's sensitivity limit for noise is around 90 dB. Birds react to intermittent and short-lived noise sources, withdrawing from the danger. It is appreciated that the noise level produced by the execution works will comply with the noise limits imposed by the legislation, therefore we appreciate that the impact on the birds in ROSPA0142 Teremia Mare - Tomnatic will be insignificant;
- Strikes – Injury of birds flying near the ground by the vehicles and equipment involved in carrying out the works. Vehicle speeds on the access roads will be reduced (below 30 km/h) so birds will have time to escape from the dangers and therefore we do not estimate a significant impact.

Persistence of bird species disturbance is limited to the construction phase and will be short-term until the works are completed (estimated duration of works at ROSPA0142 Teremia Mare – Tomnatic is maximum 2 months).

13.5.2. Estimation of the impact on habitats and flora species

The project is proposed to be located on anthropogenic habitats represented by agricultural land so that no areas of natural habitats will be reduced.

The flora identified on the project route will not be conservatively affected by the project, the target land being largely covered with ruderal vegetation including invasive allochthonous species.

13.5.3. Estimation of the impact on mammals of Community interest

The species of identified mammals such as *Microtus arvalis* (common vole) do not have a special protection status at European or national level. These species can be affected mainly by the noise and vibrations produced during the construction of the project. The sources of noise and vibration during the

construction period are mainly due to the operation of the machinery. During the pipeline operation, since it will be buried there will be no sources of impact.

It is estimated that the potential impact on mammalian species will be insignificant given that they present ease of movement and will retreat to adjacent landscapes with similar ecological functions.

13.5.4. Estimation of the impact on amphibian and reptiles species

For amphibian and reptile species from the study area the impact can be represented by:

- accidents that may occur during construction (killing by the workers, involuntary capture in ditches, pits, etc.);
- reducing/removal of small ponds and waterholes;
- accidental pollution that may be due to poor management of hydrocarbons and wastes.

Considering the specificity of the habitats (agricultural land) on the project route, it is estimated that these species have low numerical effects and they will not be significantly affected by the implementation of the project.

Given that amphibians and reptiles can move and retreat easily from the dangers, we see an insignificant impact on them.

Also, it will be taken into consideration that before the execution of the groundwork, the specimens of amphibians and reptiles encountered in the work sites are translocated into nearby habitats away from the sources of impact in the construction phase.

13.6. Other information provided by the applicable law

13.6.1. Measures to reduce the impact

Possible negative effects will occur during the execution of the works for the installation of the pipeline. It will be taken into consideration that these works are carefully monitored and executed with a minimum of interventions so that the effects on biodiversity are insignificant. Thus, the personnel who will carry out the works for the installation of the pipeline will be forbidden in areas other than those in which they need to work, they shall be trained in this respect.

The work will be carried out in accordance with the favorable conservation status of the protected natural area intersected by the project (ROSPA0142 Teremia Mare - Tomnatic) as well as of the natural protected areas in the vicinity of the project and taking all measures to reduce the impact on the species of community interest and natural habitats.

- All measures will be taken in order to avoid abiotic pollution (water, air, soil and subsoil) and biotic (flora and fauna) as well as to reduce the impact of the project on biodiversity;
- In case of accidental occurrence of any damages, the Timiș APM and the custodians of the protected natural area will be announced as soon as possible in order to determine the remedial measures to be implemented by the injured party;
- The construction corridor will use the minimum area required for the pipeline emplacement and will avoid as far as possible the surrounding areas of the pasture land;
- Bringing the affected areas during the construction period to the initial state or to a state as close as possible to it;
- The vegetation in the vicinity of the work area will not be interfered with;
- Waste will be permanently removed so that bird species are not attracted to possible sources of food (for example: household waste);

- In the event that during the performance of the works, the presence of specimens of birds, amphibians or reptiles, bird nests in the working front are found, in order to reduce the impact on them, it is advisable to collect the individuals/nests on the site and relocate to suitable habitats, away from the impact sources produced during the execution of the works;
- Limiting access of work staff to work areas, limiting work at strict working hours, limiting the use of equipment only at scheduled times to avoid disturbing local fauna (especially birds) and allowing it to retreat to the nearby lands where quiet habitats are found;
- Limiting the movement of motor vehicles and construction equipment at an appropriate speed so that the birds that fly near the ground has time to stay seif from dangers;
- Location of work equipment in strictly defined areas;
- Marking the work area;
- Access to sites will be made as direct as possible to reduce the length of internal roads and work areas;
- Using of machinery and equipment to perform works that produce minimal noise and vibration, performing, low-polluting and silent, so that bird species are not affected;
- Limiting the dust emissions by wetting the work site;
- Development of the site management and tubular material deposit will not be made into the Natura 2000 sites;
- The uncovered and excavated soil will be stored in the immediate vicinity of the pipe laying ditches and reused for filling. Digging and filling operations will take place shortly after so that the productive capacity of the excavated soil is not significantly reduced and the risk of colonization with invasive ruderal and/or allochthonous species is reduced;
- Training will be provided for all staff involved in the work on general environmental issues, protected habitats and species, and mitigation measures of the impact. Increased attention will be given to issues concerning the prohibition of the collection of plants and animals or the deliberate injury and killing of fauna species;
- Avoiding the introduction and accidental release of pets within the protected natural area;
- Avoiding damage of any kind to fauna species and their habitats; in the extent that such elements are identified, advice from a situation management specialist will be required to avoid a negative impact;
- Prohibit the injury, poaching, collection and use of any natural resources in the natural area: plants, eggs and poultry, etc.;
- At the end of the works, the affected lands will be restored to the original state. It will not proceed at the planting of areas with alien species in the area. Soil will need to be used as soon as possible after scraping/excavation, in order not to lose its qualities and to favor the installation of vegetation as quickly as possible. The use of soil brought from areas other than those where the construction work was carried out should be avoided in order not to favor the installation of negative plant species;
- The implementation of mitigation measures as well as their effectiveness will be monitored and, if the impact on species persists, additional measures will be taken.

13.6.2. Monitoring plan of Biodiversity

Monitoring elements	Analysis	Responsible for monitoring	Periodicity
EXECUTION PHASE			
Monitoring the noise, emissions from the operation of the machinery	Verification of the machinery, technical inspection up-to-date	General entrepreneur	Daily and/or according to the graph of technical inspection
Monitoring site compliance and mitigation measures	Verification of the observance of the working corridor and of the implementation periods established for the implementation of the project	General entrepreneur	Permanently, during the execution
Monitoring the degree of bird disturbance in ROSPA0142	Recording of herds of bird species that are present in the area, their behavior during working and rest periods	Biologist/ecologist specialist	Monthly – during the period of construction works
Monitoring the degree of disturbance of mammals in ROSPA0142	Recording of herds of mammal species that are present in the area, their behavior during working and rest periods	Biologist/ecologist specialist	Monthly – during the period of construction works
Monitoring the degree of disturbance of amphibian and reptiles in ROSPA0142	Recording of herds of amphibian and reptiles species that visit the area, their behavior during working and rest periods	Biologist/ecologist specialist	Monthly – during the period of construction works
Monitoring the vegetation/flora in ROSPA0142	Recording the method to store the vegetation removed. Measures to control and avoid uncontrolled scattering of invasive species, if necessary.	Biologist/ecologist specialist	Monthly – during the period of construction works
POST CONSTRUCTION PHASE			
Monitoring the fauna in ROSPA0142 (birds, mammals, amphibians and reptiles)	Recording various species of fauna present in the area, how to adapt them to new habitat conditions in recovery	Biologist/ecologist specialist	12 months
Monitoring the flora/vegetation in ROSPA0142	Degree of vegetation coverage in the first year after the restoration of the land to its original use. Recording of invasive plant species installed on restored areas and monitoring of possible spreading in vicinity areas, the causes of the spread	Biologist/ecologist specialist	12 months

13.7. Methods used to collect information on species and habitats of Community interest in the project area.

13.7.1. Methods for collecting information on fauna

In a first stage, the available bibliographic materials containing information on the presence of species of fauna of Community interest in the protected natural areas, including management plans, have been consulted.

In order to identify the biodiversity issues in the project site area, a team of biodiversity specialists from Transgaz S.A (biologist, geographer) along with a team of designers involved in the project was carried out on site during September 2018. The main method of field investigation consisted in running some linear tranches combined with the fixed observation point method, both for the pipeline route overlapped with the protected natural area, as well as in the areas adjacent to the protected natural areas. Along the route, the presence of other species of fauna of community interest potentially present along the pipeline, such as mammals, amphibians and reptiles, was also observed. Photos were taken to confirm the presence of flora and fauna species in the locations where their presence was reported.

13.7.2. Methods for collecting information on habitats and flora

The route of the project was investigated to identify habitats of conservative interest, as well as to identify potential rare flora species mentioned in the National Red List (Oltean et al., 1994) or some invasive allochthonous plant species in the Black List of Plants in Romania (Anastasiu P., Negrean G. 2007). The nomenclature of the inventory plant species is consistent with the Vascular Plants in Romania (Sârbu et al., 2013). The inventory of flora species was achieved by passing itinerant sections on the surface of the project route. Photographs of the encountered plants were taken so as to verify their taxonomic identity.

13.8. Conclusions

Considering that stable populations of bird species of Community and national interest were not identified in the studied area and the surrounding area, as well as the fact that no nesting areas were identified on the project site, preferring to avoid the anthropic area, it is considered that construction activities will not generate a significant potential impact on the avifauna diversity in the project area. The influence of the project will be temporary, only during the construction phase of the project during the operational phase no impact is estimated due to the fact that the pipeline will be laid underground. Upon completion of the works, the land will be restored to its original state in the shortest possible time.

The compliance with the recommended measures will result in the avoidance, as far as possible, of the negative effects on the bird species designating the site ROSPA0142 Teremia Mare - Tomnatic, as well as the species and habitats from the ROSCI0402, ROSCI0287, ROSCI0115 sites.

Regarding the protected natural area overlapped with the project or those in the vicinity of the project, we appreciate that the implementation of the project:

- will not affect the integrity of the protected natural areas and species of Community interest that they host;
- will not reduce the natural habitat areas;
- will not reduce the populations of Community interest species from the protected natural areas;
- will not produce a significant impact on agroecosystems and common fauna species, taking into consideration the lack of their conservative importance, as well as the fact that they are not focus areas (feeding, breeding, wintering, passage) for the Community interest species.

XIV. FOR PROJECTS TO BE CONSTRUCTED ON WATER COURSES OR WHICH ARE CONNECTED TO WATER THE REPORT WILL BE SUPPLEMENTED WITH THE FOLLOWING INFORMATION TAKEN FROM THE BASIN MANAGEMENT PLANS, UPDATED.

14.1. Location of the project:

The gas transmission pipeline and the related technological elements will be located in Timis county, on the administrative territory of Recaș and Remetea Mare, Giarmata, Pișchia, Sânandrei, Orțișoara, Satchinez, Biled, Șandra, Lenauheim, Gottlob and Comloșu Mare.

Along the route, the natural gas transmission pipeline crosses communication routes (A1 motorway, national roads, county roads, communal roads, railway lines), cadastral waters, valleys and Channels, existing underground gas and sewerage pipes, etc.

For the works proposed under the project, the Banat Water Basin Administration issued a Water Management Notice no. 321 / 28.11.2018.

14.1.1. River basin

From the starting point (coupling to BRUA pipeline in the area of Petrovaselo) to the exit of Comloșu Mare, the natural gas pipeline will cross the river basins: B.H. Bega (V-1) and B.H.Aranca (IV-2).

14.1.2. Name of water course and cadastral code

The implementation of the project foresees undercrossing works of the following watercourses:

A. River basin Bega: cadastral code V-I, on the watercourses:

1. Curasita River – cadastral code V-I. 18.1
2. Valea Țiganului River – cadastral code V-I. 18
3. Gherteamos River – cadastral code V-I. 19
4. Behela River – cadastral code V-I. 20
5. Unu River – cadastral code V-I. 20.1
6. Bega Veche River – cadastral code V-I. 21
7. Magherus River – cadastral code V-I. 21.2
8. Pârâul Lacului – cadastral code V-I. 21.3
9. Iercici River – cadastral code V-I. 21.4.5
10. Apa Mare River – cadastral code V- 1.21.4
11. Pământ Alb River – cadastral code V-I. 21.4.4.

B. River basin Aranca: cadastral code IV-2, on the water courses: non-cadastral creek.

For the proposed work A.N.A.R. - I.N.H.G.A. prepared the Hydrological study on "Maximum flows with a probability of 1% exceedance on the watercourses in the Banat River Basin".

The maximum flows with the 1% insurance were sent by the National Administration of Romanian Waters, I.N.H.G.A. Bucharest by means of letter no. 4635/18.09.2018 and are presented in the table below:

Table no. 19 – Crossings of watercourses

No. crt.	River	Section	Surface b.h. F(km ²)	H _{med} (m)	Maximum flows with different probability of exceeding (m ³ /s)
					1%
1	p. Curasita	Loc. Recas	5.11	157	12
2	p. Valea (Țiganului)	Loc. Izvin	4.82	155	11.6
3	p. Gherteamos	Loc. Ianova	76.7	175	38.3
4	Behela	Loc. Ianova	13.6	166	17.7
5	p. Unu	Loc. Giarmata	2.24	164	8.06
6	Bega Veche	Loc. Cerneteaz	298	175	53.6
7	Magherus	Loc. Pischia	140	162	39.2
8	p. Lacului	Loc. Cornesti	20	143	19.2
9	Iercici	Loc. Hodoni	96.7	119	33.8
10	Apa Mare	Loc. Biled	383	125	57.4
11	Pământ Alb	Loc. Sandra	119	98	35.7
12	Vale fără nume	Loc. Comloșu Mare	6.87	81	13.0

The type of works and the technical solutions are in line with the standards and laws in force for the execution of works to natural gas transmission pipelines.

14.2. Indication of the ecological status/ecological potential and the chemical status of the surface water body

The water courses that will be intersected by the gas transmission pipeline crossings are characterized within the Banat Hydrographic Management Plan, approved by G.D. no. 859/2016 -M.O. 1004 bis / 14.12.2016 as well as heavily modified water courses and the works do not constitute a potentially significant hydromorphological pressure in accordance with the environmental objectives of the Water Framework Directive (WFD), transposed into national law by the Water Law no. 107/1996 as subsequently amended and supplemented, it is envisaged not to deteriorate the status of the surface and underground waters in order to ensure the long-term protection, the use and the management of the waters.

14.3. Indication of the environmental objective(s) for each identified watercourse, specifying the exceptions applied and the related deadlines, as appropriate

For surface water courses undercrossed by the natural gas transmission pipeline and mentioned above, environmental objectives are provided to achieve a good environmental potential.

For this purpose, in the conception of the solutions proposed and the achievement of the objectives of the projects, principles in the MMDD Order no. 1163/2007 are taken into consideration regarding the approval of some measures for the improvement of the technical solutions, for the design and the realization of the hydrotechnical works, for the arrangement and refurbishment of the water courses, for the achievement of the environmental objectives in the water field.

The realization of this investment does not affect the river basin management framework scheme and does not adversely affect the existing objectives in the area.

XV. CRITERIA PROVIDED FOR IN ANNEX NO. 3 OF LAW NO. 292 ON THE IMPACT ASSESSMENT OF CERTAIN PUBLIC AND PRIVATE PROJECTS ON THE ENVIRONMENT IS CONSIDERED, IF APPROPRIATE, AT THE COMPILATION OF THE INFORMATION IN ACCORDANCE WITH POINTS III – XIV.

15.1. Project characteristics

a) Size and design of the entire project:

The project envisages the construction on the territory of Romania of a new DN 600 gas transmission pipeline with a total length of approximately 85.560 m.

The designed investment objective will be located in Timis county, on the administrative territory of Receaş and Remetea Mare, Giarmata, Pişchia, Sânnandrei, Orţişoara, Satchinez, Biled, Şandra, Lenauheim, Gottlob and Comloşu Mare.

The pipeline route will start on the territory of Receaş village, Petrovaselo village, where the DN 800 BRUA pipeline and DN 500 West 1 and West 2 pipeline will be connected and the other end will be on the territory of Comloşu Mare commune at the border between Romania and the Republic Serbia.

A series of technological elements serving the transmission network will be located along the pipeline: 14 valve station (VS) 3 cathodic protection stations (CPS) and a proposed Commercial Gas Metering Station (GMS) to be located on the territory of Comloşu Mare commune, at approx. 400 m from the border with the Republic of Serbia.

Along the route, the gas transmission pipeline crosses communication routes (A1 motorway, national roads, county roads, communal roads, railway lines), cadastral waters, valleys and Channels, existing underground gas and sewerage pipes, etc.

Designed works:

The technical documentation refers to the following works:

- High pressure natural gas transmission pipeline, DN 600;
- Interconnection of the designed pipeline with the National Gas Transmission System;
- Commercial Gas Metering Station of the bidirectional transited gas between Romania and Serbia;
- 14 block valve stations;
- 3 cathodic protection stations;
- Control, surveillance and data acquisition system, telecommunications system;
- New access roads;
- Undercrossing of roads, railways, watercourses, channels, etc.

Description of the main facilities of the project:

Gas transmission pipeline

The main technical characteristics of the gas transmission pipeline are the following:

- design pressure : 63 bar
- nominal diameter of the pipeline : 600mm
- outer diameter of the pipeline : 610 mm (Ø 24")
- length of the pipeline : 85.56 km;
- maximum transmitted flow rate : 1.6 bScm/year – 2.5 bScm/year
- the pipeline will be inspected by pig on its entire length.

The interconnection of the designed pipeline with the NTS is to be carried out on the territory of TAU Receaș, Petrovaselo village, with the following components:

- special bore T-pipe under pressure DN 800/DN 600, in the coupling point in the designed BRUA pipeline;
- 2 special bore T-pipes under pressure DN 500/DN 300, in coupling points in the existing West I and II pipelines;
- DN 600 (ANSI 600) block ball valve with flanges, mounted underground, electrically actuated when coupling in the BRUA pipeline;
- 2 DN 300 (ANSI 600) block ball valve with flanges, mounted underground, electrically actuated, at the coupling in the West I and II pipelines;
- 2 DN 600 (ANSI 400) block ball valve with welding edges, mounted underground, electrically actuated, (1 pc. at the entrance in the PIG Launching/Receiving Stations and 1 pc on the interconnection pipeline with BRUA). Each is set out with a bypass DN 400;
- 1 DN300 mm (ANSI 400) block ball valve with welding edges, mounted underground, electrically powered on the connection pipeline to West II pipeline. This is set out with a bypass DN200, on which is mounted between 2 ball valves DN 200 (ANSI 400) a regulating valve DN 200 (ANSI 400). The valves from the bypass are electrically actuated;
- 1 DN 300 mm (ANSI 400) block ball valve with welding edges, mounted underground, electrically actuated, mounted on the connecting pipeline between the interconnection pipeline DN 600 and the liquids accumulator;
- PIG Launching/Receiving Stations DN 600 in the coupling point from Petrovaselo;

- connection pipelines;
- gateway to the coupling point from Petrovaselo;
- Fencing the coupling point in the BRUA and West 2 pipeline (including the separate fencing constructed for the coupling in the West I pipeline) with concrete pannels, equipped with gateways and secured to the upper part with barbed wire made from steel type NATO, circularly arranged.

Gas Metering Station Comloșu Mare to be constructed on the territory of te TAU of Comloșu Mare, will comprise mainly the following:

- PIG Launching/Receiving Stations at GMS Comloșu Mare to/from Petrovaselo
- PIG Launching/Receiving Stations at GMS Comloșu Mare to/from Mokrin (Serbia)
- Separation equipment – filtration that contains 3 identical filtering lines
- Metering equipment that contains 3 identical metering lines on which is an ultrasonic meter is mounted
- Pressure and temperature transducer, indication manometer, etc.
- Equipment RTU SCADA with the assurance of long-range transmission of the pressure, temperature, state and position parameters of the electrically actuated valves
- Circuit and automation panels, power and signal electrical cables
- Electrical installations of exterior lighting, of grounded and lighting rod
- Foundations and supports for the designed technological installations;
- Connection to the utilities to be carried out in the area: power supply (main and backup from the generator group) to the electrically actuated valves;
- Gas and flame detection and warning systems, fire detection and extinguishing system. Eg: video surveillance system;
- Administrative building with the following rooms: dispatch room, control room, panels instrumentation and electrical equipment room, automation room, office space + training room, archive, dressing room and toilets, PSI room, air conditioning room, kitchen, first aid room, lobby, door keeper cabin,
- rainwater gutter system, parking, green perimeter space
- fencing with prefabricated concrete panels, provided at the upper part with barbed wire made from circularly arranged steel type NATO.

Block valve stations

Upon the crossing of railways, on the pipeline route, there are 14 block valve sections with the associated installation elements, which will be placed according to the table – valve stations.

Table no. 20 – Distribution of the valve stations

No. valve station	Railway name	The location of the crossing
VS 1	CF 213	Between the municipalities Giarmata and Pișchia
VS 2		
VS 3	CF 310	Between the municipalities Carani and Sănandrei
VS 4		
VS 5	CF 217	Between the municipalities Hodoni and Sănandrei
VS 6		
VS 7	CF 218	Between the municipalities Șandra and Biled
VS 8		
VS 9	CF 928	Between the municipalities Bulgăruș and Lenauheim
VS 10		
VS 11	CF 217	Between the municipalities Gottlob and Comloșu Mare
VS 12		
VS 13	CF 217	Between the municipalities Comloșu Mare and Teremia Mare
VS 14		

The block valves will be mounted underground, on concrete foundations at the depth of the pipeline and 1.1 m from the crown. The valves shall be ball valves, with total crossing, equipped with quick-closing devices for damage situations of the pipeline.

At each railway undercrossing, a pressure relief valve will be mounted on one side and a pressure monitoring valve station on the other.

Digital data teletransmission system (optical fiber)

The communication support will consist in a group of optical fiber tubes. The optical fiber route will be parallel and of the same length as the pipeline route, and the optical fiber mounting works will fit into the working corridor.

Upon the crossing of national roads, county roads and railways, the optical fiber will be mounted in the undercrossing protection tube. Upon undercrossing water and irrigation channels with the ballasted pipeline, the mounting of the optical fiber will be made in a protective tube mounted outside the ballast.

Cathodic protection system of the pipeline

The protection of the pipeline is achieved by passive protection and active protection. The passive protection of the pipeline consists in the outer insulation of the polyethylene pipeline in three layers. The active protection of the pipeline will be carried out by means of three cathodic protection stations located according to the table:

Table no. 21 – Distribution of the cathodic protection stations

CPS	Location
CPS 1	Coupling Petrovaselo
CPS 2	Valve station Hodoni, comm. Satchinez
CPS 3	Gas Metering Station Comloșu Mare

Underground power supply installations needed to power cathodic protection stations, valve station and GMS Comloșu Mare. The power supply of the valve stations and the GMS will be achieved from the existing 20KV and 0,4KV existing networks in the area of the municipalities crossed by the project.

PIG Launching/ Receiving Stations

For the cleaning and investigation of the pipeline during the operation period, three PIG launching/receiving Stations were provided for.

A PIG launching/receiving stations will be located at km 0, at the coupling in BRUA Petrovaselo pipeline and the West 1 and West 2 pipelines (Petrovaselo), and the other two at GMS Comloșu Mare for the direction of Romania and the Republic of Serbia.

Crossing obstacles

The natural gas pipeline will intersect a number of existing infrastructure elements, watercourses, drainage channels.

In the table below the obstacles crossed are presented:

Table no. 22 – Crossing obstacles

Obstacles	Quantity (pc)	Name
Cadastral watercourses crossing	12	p. Curașita(TA 1), v. Țiganului(TA 2). v Ghertamoș(TA 3), r. Behela(TA 4). r. Unu(TA 5), r. Bega Veche(TA 6). p. Măgheruș(TA 7). p. Lacului(TA 8) r. Iercici(TA 9). r. Apa Mare (TA 10). r. Pamant Alb (TA 11). p. not cadastral (TA 12)
Drainage channels	48	U.A.T. Recaș: Channel 2940 (THC 1), Channel CES 34 (THC 2), Channel CES 29 (THC 3), Channel Valea Bisericii (THC 4), Channel (THC 5), Channel 3579 (THC 6). U.A.T. Remetea Mare: Channel (THC 7), Channel (THC 8), Channel (THC 9), Channel (THC 10), Channel 552/3 (THC 11), Channel 442 (THC 12), Channel 558 (THC 13), Channel 540 (THC 14). U.A.T. Giarmata: Channel 952 (THC 15), Channel 1026 (THC 16), Channel 653 (THC 17), Channel 522 și 519 (THC 18), Channel 514 (THC 19), Channel 512 (THC 20), Channel 507 (THC 21), Channel 502 (THC 22), Channel 111/3/66 (THC 23). U.A.T. Pișchia: Channel 336 (THC 24). U.A.T. Orțișoara: Channel (THC 25), Channel (THC 26). U.A.T. Șandra: Channel 74/1 (THC 27). U.A.T. Lenauheim: Channel 450/3 (THC 28), Channel 514/2 (THC 29), Channel 552/3 (THC 30), Channel 257 (THC 31), Channel 300/1 (THC 32), Channel 30 (THC 33), Channel 9 (THC 34), Channel 22 (THC 35). U.A.T. Comloșu Mare: Channel 518 (THC 36), Channel 529 (THC 37), Channel (THC 38), Channel 487 (THC 39), Channel 484/6 (THC 40), Channel 423/2 (THC 41), Channel 412/2 (THC 42), Channel 423/4 (THC 43), Channel 134 (THC 44), Channel 35 betonat (THC 45), Channel 26 (THC 46), Channel 30 (THC 47), Channel 23 (THC 48).
Crossing A1 Highway	1	A1 Highway (between municipalities Giarmata and Murani 506+295 km)
Crossing over the highway	1	A1 Passage (DJ 609E)
National roads Crossing	3	DN 69, DN 6, DN 59 C
Crossing county roads	6	DJ 691, DJ 692, DJ 693, DJ 594, DJ 594, DJ 594 A
Communal roads Crossing	6	DC 62, DC 61, DC 42, DC 37, DC 24, DC 15
Service roads Crossing	11	DE 2951, DE 3115, DE 299/2, DE 368/1, DE 1139/1/2 concreted, DE 1133/1 concreted, DE 399/1, DE 380/1, DE 529 asphalt coverage, DE 388 betonat, DE 19 asphalt coverage.
Railways Crossing	7	CF 213, CF 310, CF 217, CF 218, CF 928, CF 217, CF 217.
Transgaz pipelines Crossing	4	Recaș-Tișoara Pipeline, Section 3, DN 500, Recaș-Tișoara Pipeline, Wire 2, DN 300, Recaș-Tișoara Pipeline, Section 1, DN 350, Sănandrei Connection DN 150
Conpet pipelines Crossing	2	Conpet Pipeline Ø6.5/8", Conpet Pipeline Ø89
Delgaz pipelines Crossing	1	Delgaz Sud Pipeline Ø150
Premiere Energy Pipelines Crossing	2	Premiere Pipeline g.n., Premiere Pipeline g.n DN 150

Site Management and pipe material warehouses

During the execution of the construction and assembly works, two pipe material warehouses (PMW) and two site management (SM) will be temporarily arranged as follows:

- The Recaş pipe material warehouse, proposed to be located on the area of the TAU Recaş, will occupy an area of approximately 2,800 sqm. The access to the warehouse will be made from the existing excavation road in the area.
- The Lenauheim pipe material warehouse, proposed to be located on the UAT Lenauheim radius, will occupy an area of approx. 2,800 sqm. Acces to the deposit will be done from DJ 594 B.
- Carani management site, on the UAT Sănandrei radius, will occupy an area of 15,000 sqm. The access to the management site will be done from the communal road DC 42, connected to the county road DJ 692
- MGS Comloșu mare management site, on the UAT Comloșu Mare radius, will occupy an area of approx. 1032 sqm from the total of area of 6828 sqm related to the MGS Comloșu Mare objective.

The land temporarily occupied by the pipe material warehouse and the site organization is mainly located outside tha built up area of the localities, and the utilization category is agricultural land (A) and pasture land (PS). Upon completion of the works, the land will be brought to its initial state.

b) Accumulation with other existing and/or approved projects

The works required to make the changes to the project do not overlap with other existing or planned projects in the area.

c) Use of natural resources, in particular soil, land, water and biodiversity

The natural resources used during the achievement of the project will consist in natural aggregates (crushed stone, ballast, sand, gravel) for the purpose of making ballasts, anchorages, foundations, reinforcements and other related structures. No natural resources for technological purposes are used during the period of operation of the investment.

The project work does not lead to the risk of deterioration of the ecological status/ecological potential of the water courses in the areas of the proposed works.

The implementation of the project does not imply the use of the resources that depend on the biological diversity (surface and ground water exploitation, soil extraction activities, clay, sand, gravel, grubbing, flooding, fishing, hunting, plant collecting) from the protected natural areas of Community interest.

d) Quantity and types of generated/managed waste

During the execution period

In the period of execution of the works, the following main categories of waste are generated:

- household and equivalent waste (paper, plastic, glass, food waste)
- packaging waste
- technological waste (metallic, waste oils, oil filters, electrode debris, contaminated textiles, etc.)
- inert waste (earth, sand, gravel, concrete) from excavation, road development and rehabilitation.

The list of the main categories of waste and the quantities of waste estimated to be generated in the construction phase are presented in the table below:

Waste code	Waste name	Estimated quantity to be generated	Physical condition
17 04 07	Metallical waste	1 t	S
17 02 01	Wood waste (carpentry debris, formwork)	0.1 t	S
17 09 04	Mixtures of construction wastes other than those specified in 17 09 01, 17 09 02 and 17 09 03	10 t	S

Waste code	Waste name	Estimated quantity to be generated	Physical condition
20 01 01 20 01 02 20 01 08 20 03 01	Municipal and assimilated waste, including fractions collected separately	0.5 t/month	S
15 01 01 15 01 02 15 01 04 15 01 07	Packaging waste (paper and cardboard, plastics, metal, glass)	0.1 t	S
15 01 10*	Packagings containing residues or contaminated with dangerous substances	0.01 t	S
15 02 02*	Absorbents, filter materials (including oil filters with no other specification), polishing materials, protective clothing contaminated with dangerous substances	0.1 t	S

Note:

- wastes marked with an asterisk (*) are considered as hazardous waste.
- Solid – S, Liquid – L, Semi-solid – SS

During the operation period, the main categories of waste generated are the following:

- technological waste (metallic, wood, waste oils, oil filters, electrode debris, contaminated textiles, etc.) resulting from maintenance operations;
- liquid impurities from the pipeline cleaning operation (pigging operations) and from the gas filtration plant in GMS Comloşu Mare;
- household waste - from the work of the personnel working at GMS Comloşu Mare.

Waste management method

Both throughout the project management and during the operational phase the following measures regarding waste management will be applied:

- the management of all categories of waste will be carried out in accordance with the provisions of Law no. 211/2011 on the waste regime (republished), as subsequently amended and supplemented, with particular regard to the application of the waste hierarchy, namely: prevention, preparation for reuse, recycling, other recovery operations (eg energy recovery), elimination
- waste management must be carried out without endangering human health and without harming the environment, in particular:
 - o without risk to air, water, soil, fauna or flora;
 - o without creating discomfort due to noise or odors;
 - o without adversely affecting the landscape or areas of special interest.
- all types of waste will be collected selectively, in categories, in suitable containers. Containers for temporary storage of waste will be labeled with the code corresponding to the waste stored,
- ensuring that adequate waterproofing is provided for temporary storage of waste at the site,
- household waste will be stored in europallets will be handed over to the sanitation company in the area,
- the mixing of the different categories of hazardous wastes, as well as of the hazardous waste with non-hazardous waste will be prohibited,

- the waste management and recording will be done in compliance with the provisions of the Government Decision 856/2002 regarding the waste management and for the approval of the list of wastes including hazardous waste,
- all waste generated will be recovered/disposed of by authorized operators,
- the shipment of waste will be carried out in compliance with GD no. 1061/2008 on the transmission of hazardous and non-hazardous waste on the territory of Romania,
- for all waste generated on site, the constructor shall conclude contracts with authorized economic operators, fully respecting the provisions of Law no. 211/2011 on the waste regime (republished), as subsequently amended and supplemented.

-

e) Pollution and other negative effects

Sources of water pollutants, evacuation place or emissary

During the implementation of the project, the main potential sources of water pollution are the following:

- pollution sources at the level of work fronts represented by machines that during operation can generate effluents with potential pollution of the water, due to accidental leaks of hydrocarbons, lubricants, hydraulic oils, etc. Also, in the work stages, as a result of land stripping, excavation or temporary landfill (dumps) excavated, wash-out waters can acquire a certain load of particles in suspension;
- sources of pollution during the execution of undercrossing water courses in open ditch that may cause the risk of damage to the banks and the local pollution of waters with hydrocarbons, lubricants due to inappropriate maintenance of the equipment;
- the sources of pollution at the level of the site organization resulting mainly from the poor management of the wastewater generated at the site and the improper disposal of the waste;
- the sources of pollution at the level of the pipe warehouses represented by the inappropriate storage of the materials used in the execution of the project, the rainwater collection method.

Measures to mitigate the impact on the quality and quantity of water

Taking into account the potential impact on the water environment factor, the following measures are proposed:

- Compliance with the Water Management Opinion no. 321 / 28.11.2018 issued by the Banat Water Basin Administration.
- During the execution of the investment works, it is forbidden to extract sand and gravel from the riverbed without the permission and authorization of the territorial water management authority;
- Appropriate maintenance of the equipment that performs crossing water courses;
- Appropriate collection and management of wastewater so as to eliminate the possibility of discharges into the watercourses;
- The storage of materials, waste and equipment stationing in the riverbeds or river banks is prohibited;
- During the execution of works for crossing the watercourses, the constructor has the obligation to ensure the normal flow of water;
- Works designed on the watercourse will not be carried out during high water periods;
- In order to secure the crossings, measures will be taken to ensure the stability of the river bed and river banks in their area;
- Correct sizing of the pipeline elements protection solutions in order to preserve the morphology and water flow dynamics at the level of the water courses; immediate correction of possible erosion of banks by appropriate solutions;

- Water reuse for pressure tests by transferring volumes from one segment to another, as they are completed;
- Vehicle routes will be limited and reduced to the necessary strict minimum, requiring the use of existing access networks to avoid additional loads of water courses with suspended particles that can be washed from sites affected by erosion and compaction; the repeated crossing of riverbeds will be strictly avoided.

During the operation period, the administrative building of GMS Comloșu Mare will be equipped with sewage system and sewerage collection. Discharges from the site will be performed by authorized operators at the nearest treatment plant, complying with the limits for the relevant pollutants in the NTPA 002 normative on concentrations of quality indicators contained in wastewater discharged into municipal sewerage networks, approved by GD no. 188/2002, modified by GD no. 352/2005.

Emission sources in the air

During the execution works of the natural gas transmission pipeline, activities generating atmospheric pollutants are:

- Activities carried out in the working corridor: excavation/digging operations, filling of the ditch of the pipeline, restoration of the land to the previous conditions;
- Electrical welding of pipe sections and protection of fittings by painting.
- Transportation of materials and personnel with means of transport and operation of the machinery;
- Activities related to the organization of the construction site and the pipe warehouses.

Emissions of pollutants generated during the execution period are fugitive, intermittent emissions and the main atmospheric pollutants in work areas (working strip, access roads, site organization, pipework) are particulate matter and sedimentable dust. Pollutants from the combustion processes of the machinery / transmission machinery will also be present in smaller quantities and from the welding and painting processes of the pipeline.

Measures to mitigate the impact on air and climate quality

During the construction and assembly works the following measures are proposed for diminishing the impact:

- Use of equipment and machinery according to the best technologies;
- Periodical technical inspections of the vehicles and equipment used to carry out the works;
- Excavation works will not be performed in extreme weather (strong wind, rain);
- Reducing the speed of public transmission of heavy goods vehicles for the transmission of materials;
- The transportation of the pulverulent materials shall be carried out in means of transmission covered with tarpaulin;
- Periodic wetting/spraying of access roads and surfaces with dust generation potential during periods of drought.

During the operating period under normal operating conditions, there are no sources of atmospheric pollutants. In order to prevent and reduce the emissions that may occur under the pipeline failure, the following measures are envisaged:

- SCADA control system that allows monitoring and control of operations in the real-time gas transmission system, as well as emergency stop, fire detection to technological installations;
- Valve system for separating the damaged pipeline section;
- Establishing an adequate pipeline protection system in order to avoid corrosion and wear processes;
- A schedule of current revisions will be made and complied with.

Sources of noise and vibration

The noise and vibration sources during the execution of the works are represented by the equipment necessary for digging and filling the trench and carrying out other construction-assembly works, the transmission and handling of pipeline sections, the transmission of the personnel. Since they have to be approved, the noise and vibrations generated are within acceptable limits, and the impact is within acceptable limits.

During the exploitation period, the project related facilities are not sources of noise and vibration.

Measures to reduce the impact of noise and vibration

During the construction and assembly works the following measures are proposed for mitigating the impact:

- the use of machinery and equipment whose noise and vibration levels are within the permissible limits;
- night work (20.00-07.00 o'clock) close to residential areas will be avoided;
- compliance with the permissible limits set by the current noise regulations;
- the location of temporary sound absorbing panels on sectors with sensitive receivers during the works.

During the operating period no special noise reduction measures and equipment as the transmission pipeline, the valve station and the cathodic protection stations are not noise-generating sources. The noise level associated with the operation of GMS Comloşu Mare facilities and equipment will not exceed the allowable limit at the functional limit of the site, according to SR 10009-2017 Acoustics. Permissible limits of the ambient noise level.

f) The major accident and/or disaster risks relevant to the project, including those caused by climate change, according to scientific information

Natural hazards

- Earthquakes

Based on the preliminary available information, the project objectives are considered to be subject to a low risk of seismic activity. The project meets national requirements for seismic risk management that includes specific pipe thickness, insulation with a protective layer and backfill/filling material.

- Landslides

Geological studies conducted on the land and adjacent lands have revealed that there are no physical and geological processes and negative phenomena that endanger the stability of the project's objectives. The location of the commercial gas Metering Station Comloşu Mare overlaps with the area without potential for landslides.

- Floods

The project related facilities were located in flood-free areas, according to data from hydrological studies, at a rate that provides protection for flood risks of 1%. The project site does not overlap with potentially significant flood risk areas on rivers.

Climate change

The development of the gas transmission infrastructure and the necessary measures for extreme meteorological phenomena (storms, floods, droughts, very cold temperatures, etc.) are being implemented from the design phase on the basis of geotechnical and hydrological studies and the specific design rules.

The setting of the design solutions took into consideration the location of the project, the characteristics of exposure to landslides, climate phenomena with potential risk to the natural gas transmission infrastructure, identification of the risk of damage or loss due to extreme events.

By means of the project, technical solutions and measures have been adopted to prevent and mitigate the effects of the extreme changes of the climate variables and their associated risks on the works, namely:

- solutions for the foundation and laying of the adapted natural gas pipeline the geotechnical category of the land where it is located;
- the pipeline is designed underground below the freezing depth and the equipment is designed to operate within the temperature range of $+500 \div 300\text{C}$ so that the operation and performance of the transmission system are not affected by extreme negative or extreme temperatures.
- no physical and geological processes and negative phenomena have been identified on the project site and the neighboring lands that endanger the stability of project objectives. According to the "National Venture Planning Plan 5th Venture - Natural Risk Areas", the GMS site area overlaps with the area without the potential for landslide production;
- the project is not affected by changes in the mean precipitation values, the pipeline site is not located in areas with high flood risk,
- for the safe operation the sizing of the works in the sections of crossing the water courses at the maximum flows with probability of exceedance 1% natural flow on the watercourses, leakage of the pipeline into areas prone to flooding and affliction;
- the pipeline route avoids shallow underground water areas as well as any designated sanitary protection areas.

No high vulnerability to the climatic risks of components and operations in the operational phase has been identified.

g) Human health risks - for example, due to water contamination or air pollution.

The potential impact on human population and human health during the implementation period can be generated by the following factors:

- loss of income resulting from final land occupation (direct, long-term, permanent, negative impact);
- loss of income due to temporary occupation of land (direct, medium, temporary, negative impact);
- possible damage to local roads due to site traffic (direct, short, temporary, negative impact);
- noise and vibrations generated by site traffic (direct, short, temporary, negative impact);
- air pollution as a result of the work and transmission of pulverulent materials (direct, short, temporary, negative impact);
- use of local labor force (direct, during construction, temporary, positive impact).

The impact on human population and human health can be assessed as insignificant, with work going generally outside the inhabited areas and the activities associated with the execution period will be temporary sources of discomfort.

Measures to reduce the impact on the population and human health

Taking into consideration the impact associated with construction works, the following measures are proposed:

- Compensation of the affected landowners according to the laws in force;
- Infrastructure maintenance and its restoration if it is affected by heavy traffic;
- Signaling of working areas with safety margin markings in the works perimeter;

- Reduction of machine speed on access roads to reduce dust emissions during periods of drought, noise, incidents, etc.;
- The use of vehicles, machinery and equipment, technically compliant with the best available technologies, whose noise and vibration levels are within the permissible limits;
- The achievement of the works during the night will be avoided (20.00-07.00) close to residential areas will be avoided;
- In the periods of intense traffic (material transport, etc.) the access ways will be splashed;
- Bringing to the initial state of temporarily affected land;
- The location of temporary sound absorbing panels on sectors with sensitive receivers during the works.

Subject to the compliance with the measures provided for the safe operation of the pipeline, there will be no direct influence on the population and human health. The investment will contribute to the economic development of the area.

15.2. Location of the project

a) current and approved land use

Actual use of land according to the Town planning Certificate no. 06 from 26.03.2018 issued by the Timis County Council for the project: agricultural (arable, pasture, meadow, vineyards, orchards), non-agricultural (water, Channels), areas related to roads (motorway, national roads, exploitation) and rail.

b) the richness, availability, quality and relative regeneration capacity of natural resources, including soil, land, water and biodiversity, in the area and its underground

The nature of the lands on which the specified works will be carried out are specified in the Town planning Certificate issued for the project. The natural resources used during the project will consist of natural aggregates (crushed stone, ballast, sand, gravel) for the purpose of making ballasts, anchorages, foundations, reinforcements and other related structures. No natural resources for technological purposes are used during the period of operation of the investment.

c) ability to absorb the natural environment, with particular attention to the following areas:

1. Wetlands, river areas, the mouth of the rivers

The implementation of the project involves underwater crossing works of the following rivers:

A. River Basin Bega cadastral code V-I, on watercourses:

1. Curasita River – cadastral code V-I. 18.1
2. Valea Țiganului River – cadastral code V-I. 18
3. Gherteamos River – cadastral code V-I. 19
4. Behela River – cadastral code V-I. 20
5. Unu River – cadastral code V-I. 20.1
6. Bega Veche River – cadastral code V-I. 21
7. Magherus River – cadastral code V-I. 21.2
8. Pârâul Lacului – cadastral code V-I. 21.3
9. Iercici River – cadastral code V-I. 21.4.5
10. Apa Mare River – cadastral code V- 1.21.4
11. Pâmânt Alb River – cadastral code V-I. 21.4.4.

B.River basin Arane a. cadastral code IV-2, on the water courses: non-cadastral creek.

The impacts on surface water courses are temporary, during the execution of the project, and at the completion of the works, the affected areas will be restored.

The Water Management Opinion no. 321/28.11.2018 was issued for the project by the Banat Water Basin Administration.

2. Coastal areas and the marine environment

Not applicable, the project is not located in the coastal area or marine environment.

3. Mountain and forest areas

Not applicable, the project site is not located in a mountain area or forest fund.

4. Natural protected areas of national, community, international interest

Not applicable.

5. Areas classified or protected under the laws in force: Natura 2000 sites designated in accordance with the legislation on the regime of protected natural areas, conservation of natural habitats, wild flora and fauna

The route of the pipeline intersects (between km 80 + 927 and km 83 + 233) the natural protected area of Community interest ROSPA0142 Teremia Mare –Tomnatic, the length of the overlapped pipeline section with this Natura 2000 site being of 2306 m.

Inside ROSPA0142 Teremia Mare –Tomnatic it is necessary to construct the valve station SR 13 before crossing the railway line CF 217 and DN 59C (Jimbolia - Sânnicolau Mare). GMS Comloșu Mare is located at a distance of approx. 1300 m from the Natura 2000 site.

Location of the project in relation to other protected natural areas in the region:

- the project route is located at a distance of approx. 100 m from ROSCI0402 Sânanndrei Valley;
- the project route is located at a distance of over 1100 m from ROSCI0115 Mlaștina Satchinez and 2.740 Rezervația Mlaștinile Satchinez
- the route of the pipeline and GMS Comloșu Mare are located at a distance of over 2,200 m from ROSCI0287 Comloșu Mare;

All other components of the project, including site organization, are located outside protected natural areas.

6.Areas where there have already been cases of non-compliance with environmental quality standards provided for by national and EU legislation and relevant to the project or where such cases are believed to exist.

Not applicable

7.Areas with a high population density

The natural gas pipeline route and the related technological elements are located in outside urban areas with high density of the population.

8. Historically, culturally or archaeologically important landscapes and sites

On the basis of the National Archaeological Repository provided by Emergency Ordinance no. 43/2000 and the updated Historical Monuments List approved by the Order of the Minister of Culture and Religious Affairs no. 2314/2004, the following archaeological sites were identified from the pipeline's working corridor and its vicinity:

A. The route of the natural gas transmission pipeline crosses the archaeological site Valul Roman II (RAN code 157692.02), located at about 3.4 km N from Cerneteaz, Giarmata commune.

B. The following archaeological sites have been identified in the vicinity of the pipeline:

- Archaeological site from Ianova-Ianova East (code RAN 158430.02) - Ianova locality, Remetea Mare commune;
- Archaeological site Giarmata-Valea Bencecului NV-2 (RAN code 157255.07) - Giarmata town, Giarmata commune;
- Cornești Archaeological Site - Accead South Valley (RAN code 158047.13) - Cornești town, Orțișoara commune;
- Cornești-Cornet archaeological site (RAN code 158047.14) - Cornești town, Orțișoara commune.

In order to obtain the opinion of the Timis County Cultural Directorate, on the basis of the methodology developed within the project, field research was carried out by certified specialists. The archaeological discharge will be carried out in areas for which archaeological heritage will be identified

15.3. Types and characteristics of the potential impact

a) the importance and spatial expansion of the impact - for example, the geographical area and the size of the population that can be affected

The impact on environmental components will be local, both during the achievement of the project and during the operation period. During the operation period it is estimated that the impact will be insignificant in the conditions of proper exploitation and maintenance of the natural gas transmission pipeline and the facilities related to it.

b) the nature of the impact

In order to achieve the project, a possible small, local, temporary, variable and reversible impact may occur only during the project execution period.

c) the cross-border nature of the impact

The project does not foresee complex works and activities leading to a significant negative impact on environmental factors, so no negative impact is expected in a cross border context.

d) the intensity and complexity of the impact

The project under consideration is part of the natural gas transmission sector and involves the construction of a pipeline with a total length of approx. 85.56 km, including facilities and related equipment. From the analysis of the impact on each environmental component it can be appreciated that the realization of the project has a negative negative impact which is manifested locally and temporarily on the environmental factors including the protected natural areas affected during the execution period and the permanently reduced impact due to the final removal from the initial function of some land surfaces.

e) probability of impact

By respecting the implementation plan and the measures envisaged to mitigate the impact on environmental factors, the likelihood of occurrence of events that increase the pressure on environmental factors will be reduced. The natural gas transmission system will be equipped with the devices, equipment and personnel necessary to prevent and eliminate possible fires caused by natural causes (earthquakes, landslides) or human actions. In relation to the measures adopted by the project for the reduction of the technical risk, during the exploitation phase, the measures for preventing, combating and mitigating the impact in case of damages must be observed.

f) expected onset, duration, frequency and expected reversibility of the impact

The impact on the environment is generally reduced over the lifetime of the project, of low intensity and reversible. In certain situations, such as final land take-up, final set-aside, installation of surface installations, duration of impact extends over the pipeline and the impact is irreversible.

g) aggregating the impact with the impact of other existing and / or approved projects

The works proposed to be executed by the project do not overlap with the work of another existing and/or approved project.

possibility of effective impact reduction Compliance with the measures proposed to prevent and mitigate the potential impact identified and the conditions imposed in the opinions issued by the authorities, reduce the impact on the environmental factors.

XVI. SELECTIVE BIBLIOGRAPHY

- BOTNARIUC N., TATOLE V. (eds.) 2005 Cartea Roșie a vertebratelor din România. București; Tipografie Curtea Veche;
- DIHORU G., NEGREAN G 2009. Cartea Roșie a Plantelor Vasculare din România. București: Edit. Academiei Române;
- DONIȚĂ N. et. al. 2005. Habitatele din România. București: Edit. Tehnică Silvică;
- GAFTA D., MOUNTFORD O. 2008. Manual de interpretare a habitatelor Natura 2000 din România. Cluj-Napoca: Edit. Risoprint;
- HOTĂRÂRE nr. 971 din 5 octombrie 2011 pentru modificarea și completarea Hotărârii Guvernului nr. 1.284/2007 privind declararea ariilor de protecție specială avifaunistică ca parte integrantă a rețelei ecologice europene Natura 2000 în România;
- ORDIN nr. 1.964/2007 privind instituirea regimului de arie naturală protejată a siturilor de importanță comunitară ca parte integrantă a rețelei ecologice europene Natura 2000;
- ORDIN nr. 19 din 13 ianuarie 2010 pentru aprobarea Ghidului metodologic privind evaluarea adecvată a efectelor potențiale ale planurilor sau proiectelor asupra ariilor naturale protejate de interes comunitar;
- ORDIN nr. 1.639/2016 privind aprobarea Planului de management și a Regulamentului sitului Natura 2000 ROSPA0142 Teremia Mare – Tomnatic;
- OLTEAN M. et al. 1994. List Roșie a Plantelor Superioare din România. Edit. Academiei Române.
- ORDONANTA DE URGENTA nr. 57 din 20 iunie 2007 privind regimul ariilor naturale protejate, conservarea habitatelor naturale, a florei și faunei sălbatice, aprobate cu modificări și completări prin Legea nr. 49/2011;
- SÂRBU I, ȘTEFAN N., Oprea A., 2013, Plante vasculare din România – Determinator ilustrat de teren: Edit. Victor B. Victor.

The Presentation Report to obtain the environmental permit for the project: Interconnection of the Romanian National Gas Transmission System with the similar Natural Gas Transmission System in the Republic of Serbia; including power supply, cathodic protection and optical fiber” have been elaborated by SNTGN TRANSGAZ S.A. MEDIAȘ