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PRESENTATION MEMORY

1 Name of the project

"REHABILITATION AND MODERNIZATION OF PORT INFRASTRUCTURE
IN BECKET PORT "

2 Holder

CN Administratia Porturilor Dunării Fluviale SA

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3 Description of the project

3.1 Summary of the project

Considering the current situation of the Bechet port infrastructure, presented previously, the beneficiary, CN APDF SA Giurgiu, aims to carry out the necessary infrastructure works for the relaunch of the naval transport activity in the Bechet port, in correlation with the short, medium and long term development plans of the Ministry of Transport and Infrastructure and with the requirements of the European Union in the field of naval transport.

By rehabilitating the infrastructure of Bechet port and bringing the port to the technical-functional parameters of other ports located in the member states of the European Union, port and commercial activities in the area will be relaunched, contributing to regional development.

The main proposed works are:

➤ *Modernization of the mooring front at the Danube, including:*

- the execution of a vertical quay, for which two variants were analyzed, namely: a quay made of weight blocks (recommended variant 1) or of sheet pile (alternative variant 2), with the quota of the crest at + 7.80 m compared to the local low water, with the cumulative length $L = 650$ ml, the resulting surface $S = 10,918$ sqm.

Compared to the current situation, where the existing mooring front, with a length of 650 m, is divided into 6 operating berths, in the feasibility study is proposed to divide the mooring front into 5 berths, each having the recommended length for a river berth, of 130 m, resulting in the same length of the mooring front, of 650 m (5 berths x 130 m/berth). The 5 berths will be numbered, from upstream to downstream, with the numbers 2, 3, 4, 5 and 6. Berth 1 will be a new easement berth, which will be executed in the floating berth solution, upstream of the operating front, for the relocation of the existing pontoons, having $L = 75$ ml;

- concrete platforms behind the new quay (new berths 2 – 6), in width approx. 20 m, with the possibility of placing the portico cranes Bocsa type of 16 tf x 32 m, for which beams and running rails have been provided, or of other machines established by common agreement with the economic operators that operate in the port and with the designer's approval, $S = 17,222$ sqm;

- the execution of a floating easement berth, with the length of 75 m, according to the previous specifications.
 - Rehabilitation of RO-RO ramp and access roads, including:
- rehabilitation of the ferry crossing ramp, S = 4,086 sqm;
- rehabilitation and expansion directing mole crossing point with the ferry, S = 588 sqm;
- rehabilitation of precinct roads and platforms in the area of the border crossing point, S = 12,410 sqm.
 - Related works, including:
- dredging/excavations for the execution of the vertical quay, the easement berth and rehabilitation of the RO-RO ramp;
- rehabilitation of the navigation signalling system for the entire work.
 - Provision of utilities in the port, including:
- the water supply of the port through its connection to the drinking water network of the city of Bechet, in order to ensure the water necessary for port activity and resupplying ships. Execution of the connection from the main network to the internal supply network, L = 25 00 ml;
- domestic wastewater collection network from the port, including its treatment;
- rainwater collection network, including its treatment;
- fire extinguishing installation;
- the electricity supply of the port, by connecting to the LEA existing in the area, at the entrance to the port, in order to ensure the electricity consumption of the port operators, the charging of electric cars, as well as the resupply of electricity to the ships stationed in the berths. A new PT and a connection network in length of approx. 1,500 ml;
- perimeter lighting system and port premises;
- video surveillance and access control system;
- demand analysis and the possibility of equipping the port with a fueling point for alternative fuels.

3.2 Justification of the need for the project

The development of goods traffic in the port of Bechet is mainly conditioned by the operating conditions of the goods, the conditions for the ships to stay, the facilities that the port infrastructure can offer in any season and the connection of the port with the local and national road network. The rehabilitation of the existing berths and the transition from reinforced quays to vertical quays will lead to the development of cargo traffic in the port.

Along with the rehabilitation and modernization of the port infrastructure, optimal working conditions, and the running of specific activities under normal conditions will be ensured.

The perimeter in which the alluvial material to be dredged will be discharged into the Danube will be specified by the waterway administrator, respectively the Lower Danube River Administration SA Galati, outside the areas with critical depths for navigation.

Currently, due to the changes in the configuration of the bed and due to an intensive exploitation, correlated with the change of climatic conditions in recent years, there have been phenomena of instability and damage to the existing hydrotechnical constructions.

Considering the current unfavourable conditions at the site and the objectives contained in the Romanian Government program according to the General Transport Master Plan, it is necessary to modernize the operating infrastructure in Bechet port, so that technical solutions for rehabilitation and redevelopment have been proposed, works that are the subject of this memorandum.

The objectives expected by making the investment are:

- rehabilitation and modernization of the entire mooring front;
- building the platforms behind the berths, with their connection to the existing road;
- utility networks, upgrades for the centralized drinking water supply system and ring fire network, including the installation of external hydrants by connecting this system to the water network of the city of Bechet;
- rainwater collection network in the port area, including their treatment;
- domestic wastewater collection network, including its treatment;
- the supply of electricity to the port in order to ensure the consumption of economic operators, the supply of electricity to ships in the operating berths and charging stations for electric cars;
- port premises fencing, video surveillance, perimeter lighting;
- navigation signalling system;
- analysing the possibility of placing a supply point for alternative fuels in the port.

3.3 Investment value

The value of the investment for variant 1 – recommended, is:

169,548,519.5 lei, exclusive VAT,

respectively: 201,191,597.5 lei, including VAT;

of which, construction - installation: 144,920,755 lei, exclusive VAT,

respectively: 172,455,698 lei, including VAT.

When evaluating the works, the current market costs for materials, labour and equipment were taken into account.

3.4 Proposed implementation period

The implementation period is 24 months. The schedule of the works is presented below.

Crt no.	STAGES OF REALIZING THE INVESTMENT	YEAR I				YEAR II							
		1st TERM	2nd TERM	3rd TERM	4th TERM	5th TERM	6th TERM	7th TERM	8th TERM				
1	Preparation of studies, technical design and execution details, technical quality control of the project, documentation for approvals and agreements												
2	Handover of the site and layout of the works, arrangements for environmental protection and bringing to the original state, relocation works / protection of utilities												
3	Execution of construction-assembly works for basic investment												
4	Works for the provision of utilities necessary for the objective, namely the water-sewer and electrical networks												
5	Consulting, technical assistance												
6	Site organization, miscellaneous and unforeseen												
7	Preparation of the Building Logbook, final acceptance upon completion												

Note:

1. The organization of the procurement procedures and the design auction (PT+DE phase) plus execution precede the first year of the investment and are estimated to last approx. 4 months.

2. The schedule for the execution of the works is indicative, it may undergo changes depending on the date on which the works will start, the period of the year in which the water works will be performed and the level of the Danube waters in that period.

3.5 Plans representing the project site limits, including any land area requested to be used temporarily (situation plans and sites)

Bechet Port is located in Dolj County, UAT Bechet, located on the left bank of the Danube River, in the area of km 678 - 681. The area of the port territory managed by CN APDF SA is 76,287 square meters. The length of the reinforced/vertical/natural quays under the administration of the beneficiary is 650 m. The port is of the fluvial type, allowing the berthing of barges of up to 2000 t.

The Bechet - Oreahovo Bulgaria Border Crossing Point also operates in Bechet Port. The border crossing infrastructure belongs to APDF and consists of RO-RO platform and ramp roads.

The port is connected to the local and national road network through DN54A, DN55 and DN55A.

The land is located in the suburbs of the city of Bechet and belongs to the public domain of the Romanian State concessioned to CN APDF SA Giurgiu according to Concession Agreement no. 3898 /15.10.2008 issued by the Ministry of Transport and CN APDF SA Giurgiu according to CF no. 30104/18.01.2022.

The current use and destination according to the PUG is *the naval communication channel area with an area of 76,537 square meters.*

The built area is 76,537 square meters of which:

- surface of hydrotechnical constructions and precinct roads 49,024 sqm.
- surface of existing buildings that are not part of the project 3,150 sqm.

According to PUG approved with HCL no. 11/2021 the location is located in the area of naval communication routes with height regime P+1+2E+M, POT max = 80%, CUTmax = 3.20.

The dominant function is the *area of naval communication routes.*

Attached to this memorandum are the situation plan and the project's zoning plan.

3.6 The main characteristics of the construction

3.6.1 Profile and production capacity

Considering the current situation of the Bechet port infrastructure, presented previously, the beneficiary, CN APDF SA Giurgiu, aims to carry out the necessary infrastructure works for the relaunch of the naval transport activity in the Bechet port, in correlation with the short, medium and long term development plans of the Ministry of Transport and Infrastructure and with the requirements of the European Union in the field of naval transport.

By rehabilitating the infrastructure of Bechet port and bringing the port to the technical-functional parameters of other ports located in the member states of the European Union, port and commercial activities in the area will be relaunched, contributing to regional development.

The works proposed for the rehabilitation of the Bechet port infrastructure and bringing it up to technical-functional parameters are:

✚ Modernization of the mooring front at the Danube, including:

- o the execution of a vertical quay, for which two variants were analyzed, namely: a quay made of weight blocks (recommended variant 1) or of sheet pile (alternative variant 2), with the quota of the crest at + 7.80 m compared to the local low water, with the cumulative length $L = 650$ ml, the resulting surface $S = 10,918$ sqm.
- o Compared to the current situation, where the existing mooring front, with a length of 650 m, is divided into 6 operating berths, in the feasibility study is proposed to divide the mooring front into 5 berths, each having the recommended length for a river berth, of 130 m, resulting in the same length of the mooring front, of 650 m (5 berths x 130 m/berth). The 5

berths will be numbered, from upstream to downstream, with the numbers 2, 3, 4, 5 and 6. Berth 1 will be a new easement berth, which will be executed in the floating berth solution, upstream of the operating front, for the relocation of the existing pontoons, having $L = 75$ ml;

- concrete platforms behind the new quay (new berths 2 – 6), in width approx. 20 m, with the possibility of placing the portico cranes Bocsa type of 16 tf x 32 m, for which beams and running rails have been provided, or of other machines established by common agreement with the economic operators that operate in the port and with the designer's approval, $S = 17,222$ sqm;
- the execution of a floating easement berth, with the length of 75 m, according to the previous specifications.

↓ **Rehabilitation of RO-RO ramp and access roads**, including:

- rehabilitation of the ferry crossing ramp, $S = 4,086$ sqm;
- rehabilitation and expansion directing mole crossing point with the ferry, $S = 588$ sqm;
- rehabilitation of precinct roads and platforms in the area of the border crossing point, $S = 12,410$ sqm.

↓ **Related works**, including:

- dredging/excavations for the execution of the vertical quay, the easement berth and rehabilitation of the RO-RO ramp;
- rehabilitation of the navigation signalling system for the entire work.

↓ **Providing utilities in the port**, including:

- water supply of the port through its connection to the drinking water network of the city of Bechet, in order to ensure the water necessary for port activity and resupplying ships. Execution of the connection from the main network to the internal supply network, $L = 2500$ ml;
- domestic wastewater collection network from the port, including its treatment;
- rainwater collection network, including its treatment;
- fire extinguishing installation;
- the electricity supply of the port, by connecting to the LEA existing in the area, at the entrance to the port, in order to ensure the electricity consumption of the port operators, the charging of electric cars, as well as the resupply of electricity to the ships stationed in the berths. A new PT and a connection network in length of approx. 1,500 ml;
- perimeter lighting system and port premises;
- video surveillance and access control system;
- demand analysis and the possibility of equipping the port with a fuelling point for alternative fuels.

They will be described in the following chapters of this presentation memorandum.

3.6.2 Description of the installation and technological flows on the site

Bechet Port is in Dolj County, UAT Bechet, being located on the left bank of the Danube River, in the area of km 678 - 681. The area of the port territory managed by CN APDF SA is 76,287 square meters. The length of the reinforced/vertical/natural shore under the administration of the beneficiary is 650 m. The port is of the fluvial type, allowing the berthing of barges of up to 2000 t.

The Bechet - Oreahovo Bulgaria Border Crossing Point also operates in Bechet Port. The border crossing infrastructure belongs to APDF and consists of RO-RO platform and ramp roads.

The port is connected to the local and national road network through DN54A, DN55 and DN55A. The port does not have drinking water facilities and electricity at the berths, nor is it properly lit at night.

Due to the great age of the existing mooring constructions, with the standard service life expired, as well as due to intensive exploitation, correlated with the change in climatic conditions in recent years, significant damage is observed, with negative consequences for all those who carry out port activities, namely: joint degradation, pitching subsidence, disassembling and deviations of the theoretically designed profile, important alluvial deposits in the area of berths, damaged quay accessories.

Regarding the infrastructure of the Bechet port, it offers a mooring front directly at the Danube, with a cumulative length of approx. 650 m, and a ramp for RO-RO ships that ensures the connection with the Bulgarian port of Oreahovo, located in the mirror, on the right bank.

Access to the quays is made directly from the navigable channel of the Danube, the depth required for mooring being at least 2.5 m compared to the local low water (+12.35 mMN75 - according to the data published by the Danube Commission), respectively the elevation +9.85 mMN75.

At present, this depth is not ensured at any of the berths of the port, as it results from the transversal profiles made. The usual barges operating at the quay are 1,500 t or 2,000 t.

There is a very large variation in the crest quota of the existing quay, along it, of almost 2 m (from 29.30 – 29.50) mMN75 on the upstream sector to 27.0 – 27.2 mMN75 downstream.

The mooring front in the port of Bechet was executed as a pitching of raw roared stone, which can be moored by means of a floating pontoon. The pitching is executed on heights of approx. 5 - 6 m. At the base, the pitching is founded on a simple concrete beam, founded, in turn, on oak piles. Below the foundation beam of the pitching, the embankment is protected with stone blocks on fascines mattresses.

At the crest, the pitching is turned towards the platform, in certain areas presenting a crest beam made of stone blocks or concrete.

For mooring ships at the quay, reinforced concrete bitts were provided locally, places for props, frames for supporting the access walkways on the pontoons. On the reinforced quays, were profiled from place to place concrete or stone block stairs.

The width of the platforms behind the quay, up to the road along the port, varies between 10 m next to berth 2 and 25-30 m downstream (berths 3 – 6).

The operating infrastructure of the port is deficient. Mooring to berths is done by means of floating pontoons. The port does not have roadways for quay cranes. Thus, due to the long distance of the ships from the shore and the impossibility of operating with dedicated quay cranes, operating in the port with mobile cranes is very difficult and conditioned by the water levels in the Danube. Under these conditions, two of the port operators, which operate at berths 1 - 4, (Cerealcon Dolj SRL and DMB Recycling SRL Craiova) built platforms on which bunkers and conveyor belts were mounted to allow the loading of ships (especially with grain). Practically, at present, on the upstream and central sectors of the port, only loading operations are carried out on ships, unloading operations being difficult to carry out. The port operates, for the most part, on the flow of shipping goods.

The third operator, which operates in the downstream sector of the port, at berths 5 and 6, (Transport Trade Services SA), installed a fixed crane on the quay - at berth 5 and a conveyor belt at berth 6.

In the area of berth 2, where the width of the platform behind the quay is very small (max. 10 m) and does not allow the use of the berth for operation, are positioned the pontoons of AFDJ Galati, Captaincy and Border Police.

From the point of view of the technical condition, for the upstream sector, the raw stone pitching quay is turned 90° and closed on the shore. It is in good condition but is covered by vegetation.

In the alignment of the mooring front, at the first berth, the operator built a platform on which 3 grain storage silos were built, which communicates with the quay with a bunker and a conveyor belt, used

for loading ships with grain. With the construction of the concrete platform, the geometry of the slope was changed, the crest of the quay being elevated and advanced towards the water. At this berth, only grain loading activities are carried out on ships, through conveyor belts, the vicinity of the silos built on the platform behind the quay not allowing the installation of a quay crane.

Downstream, next to berth 2, cannot be carried out loading/unloading operations, due to the lack of space for the placement of machinery and the storage of material, as the road along the mooring front is very close to the crest of the quay, as a result of the proximity to the buildings of the border crossing point.

In the area of berths 2 - 6, the pitching is destroyed in some places, subsidence, collapses, local caverns are observed, and it is invaded by vegetation. The profile of the pitching is variable, with different slopes.

The base beam of the pitching is fractured or destroyed over extensive sectors.

The crest beam is missing, the quay crest does not show a rigorous alignment. In the pitching concrete or stone block stairs are profiled in places, some of them in good condition. Locally, in the area of the connections with the stairs on the slope, were found local underwashes of the pitching. There are also improvised metal stairs rudimentarily placed on the embankment.

The frames and props places have been repaired over time, in empirical, inappropriate solutions, some fulfil their functions, others are unusable.

In the area of berths 3 - 4, a car scale was executed, a facility for loading grain into barges mounted on a trestle built over the reinforced quay, to be closer to the barges, and a fixed hall made of reinforced concrete is being executed which prevents the operation of the berth sector behind which it was executed.

Downstream of the hall built on the port platform, another reinforced concrete trestle, founded on columns, was built, which serves as a barge loading point.

The undeveloped land behind the quay related to berth 5, but also the height of the crest, which is approx. 2.0 m below the level of the rear road platform, has not allowed the use of the berth for operation until now. On this sector, the reinforced quay is generally in good condition, with some fissures/cracks above the foundation beam. The protection with embankmentes under the foundation beam of the pitching is also in good condition.

In the area of berth 6, the quay crest quota and the rear land was raised by the construction of a gabion pitching filled with raw stone, reinforced with concrete buttress, and continued towards the territory with broken stone fillings. The pitching of raw stone is damaged, cracked, the foundation beam is destroyed, pushed out of the site, towards the water, on extensive sectors. The props places are damaged. The only operating equipment in the port, namely a fixed crane, was mounted on this berth.

On the downstream sector of the mooring front at the Danube, an alveolus made of vertical fixed elements was executed towards the water, for the connection with the upstream pitching of the ramp where the RO-RO ships dock. On the upper part, the infrastructure of vertically fixed elements continues with a gabion pitching, partially covered with concrete. At this alveolus, the berthing of ships is done directly, but it offers a length of the mooring front of only 30 m. A mobile conveyor belt is mounted on this alveolus for loading grain into barges.

At the downstream end of the port is the ramp for the access of RO-RO ships that ensures the connection between the ports of Bechet and Oreahovo. The upstream mole is made of raw stone, with a crest made of prefabricated reinforced concrete boxes. Some of these boxes are partially rotated/displaced, but the continuity of the crest is ensured. At the waterward end of the upstream mole, a luminous LED is mounted to signal at night/unfavorable visibility conditions.

The RO-RO ramp was made of simple monolithic concrete on the medium and high water variation area. The ramp is extended towards the water with prefabs made of reinforced concrete, on the low tide variation area. The concrete plots were executed with casting joints between them. The platform of the ramp is functional, but it is affected by local destruction, cracks, concrete fractures.

The road along the port is in good condition, it was recently rehabilitated, it has a concrete superstructure. This road is separated by a metal fence from the access roads to the RO-RO ramp, which are damaged. Both the exit road from the country and the entrance road were made, for the most part, of concrete sleepers, which are not monolithic between them. The two roads are separated by a strip of grassy land.

Regarding the provision of utilities in the port, Bechet port is not equipped with centralized drinking water supply and fire networks, respectively household sewage networks. The buildings in the port are supplied with local water, through wells, and the wastewater is discharged through drains. The water for the fire is taken from the Danube with the fire brigade's mobile pumps.

The drainage of rainwater has some deficiencies, the water pooling especially on the north side of the premises.

Also, at the moment, the Bechet port area does not have any video surveillance and access control components or systems installed.

3.6.3 Profile and production capacity

Considering the current situation of the Bechet port infrastructure, presented previously, the beneficiary, CN APDF SA Giurgiu, aims to carry out the necessary infrastructure works for the relaunch of the naval transport activity in the Bechet port, in correlation with the short-, medium- and long-term development plans of the Ministry of Transport and Infrastructure and with the requirements of the European Union in the field of naval transport.

By rehabilitating the infrastructure of Bechet port and bringing the port to the technical-functional parameters of other ports located in the member states of the European Union, port and commercial activities in the area will be relaunched, contributing to regional development.

The works that are the subject of this memorandum are presented below.

3.6.3.1 Modernization of the Danube mooring front

In order to modernize the existing mooring front at the Danube, 650 m in length, (for berths numbered from 2 to 6, with lengths of 130 m each), it was proposed to build a vertical quay, a variant in which ships will dock directly at the quay, at a distance of approximately 20 m towards the water from the alignment of the existing mooring front.

Moving the mooring front towards the water will ensure the creation of a port platform that allows operation at the quay with the Bocşa type port cranes of 16 tf x 32 m. At the same time, moving the front towards the water will ensure the depths necessary for direct mooring at the quay, with minimal expenses for maintenance operations, respectively dredging.

A. Execution of vertical quay and concrete platforms behind the quay

In this variant, the quay will be made of prefabricated weight blocks of plain concrete C35/45, placed on a 30 cm thick broken stone foundation bed, for levelling, and a raw stone quay support bed of 10-50 kg/pc. The foundation quota of the quay bed will be at quota -7.00 m local low water (+14.86 MN75), and the foundation elevation of the prefabricated blocks will be -4.50 m local low water (+17.36 MN75). After putting the weight blocks into operation, the gaps provided in them will be filled with broken stone.

Behind the weight quay, an unloading prism will be made of raw stone sort 10-150 kg/pc. A geotextile filter of 400 gr/m² is placed between the discharge prism and the filling of granular material from the body of the platform, and also under the bed of the quay.

At the upper part of the weight quay, the last block, also considered a crest beam, will be cast monolithically from reinforced concrete C35/45. The beam will be executed in sections, between

which are provided, at approx. 40 m, vertical joints of 2 cm extruded polystyrene support layer, with elastic putty. The crest of the beam will be carried out at +7.80 local elevation (+29.66 MN75).

The crest beam is provided with a niche for the technological channel along the mooring front and will also act as a beam for the water side of the roadway of the Bocşa type quay crane of 16 tf x 32 m, gauge 10.875 m. The dry file of the roadway will be executed on running beams, indirectly founded on Ø 900 mm columns, disposed at interaxial distances of approx. 3.6 m and founded in the limestone horizon in grey sand binder at quota -11.00 local low water (+10.86 MN75). Considering the presence of water in the immediate vicinity, the solution of drilling columns with bentonite mud is not accepted.

On the rehabilitated quay, it will be possible to mount one crane for each operating berth, provided that a minimum distance between cranes of 50 m interaxle is observed. Mooring bollards of 25 tf will be mounted on the crest of the quay made of piles, at distances of approx. 20 m from each other. The water edge of the crest beam will be protected with a metal plate fixed through cleats, along the entire length of the mooring front. The quay is equipped with quay shock absorbers made of rubber rolls positioned on three levels, the fastening of which will be executed withdrawn from the vertical facing of the quay.

The port platform will be made of:

- ballast base layer, 36 cm thick;
- broken stone foundation, 30 cm thick;
- platform clothing from BcR 4.5, 24 cm thickness.

The road concrete platform is poured in longitudinal strips, between which constructive joints are made. Transverse expansion joints will be provided every 40 m, in correlation with the joints between the sections of the running beams of the quay crane.

The length of the vertical quay from weight blocks will be 650 ml. At the ends, the connections with the bank will be ensured.

B. Execution of easement berth for the replacement of the existing pontoons

Upstream of the vertical quay, a floating berth (berth 1 – easement berth) was planned to serve the vessels of the authorities operating in the port of Bechet, namely the Border Police, the Bechet Captaincy, the Lower Danube River Administration and the Maritime Danube Ports Administration. Currently, these vessels berth at the pontoon in the area of the existing berth 2. With the execution of the vertical mooring front, these pontoons will be relocated to the new upstream floating berth.

The floating easement berth will be made of 2 floating access pontoons with concrete floats (L=35m/pc), they will be fixed in position with the help of hammered metal columns Ø1.00m (t=16mm, anti-corrosion protected) and the length of 26.50m. The connection between the floating access pontoons and the columns will be through metal collars that will allow free vertical movement of the pontoons depending on the water level. For the access to the floating pontoons, a 25.00m long pedestrian walkway has been provided, the walkway will be simply supported on an independent floating pontoon towards the water, and at the level of the crest, a C35/45 reinforced concrete frame will be executed.

The connection to the shore on the upstream area will be made of rockfill blocks 200-600 kg/pc, with a slope of 1:1.5. The crest quota will be +7.80 local low water (+29.66 MN75), the intermediate berm at quota +2.50 local low water and the minimum quota of -3.50 local low water at the base of the embankment. The frames will be placed on a 400 gr/m² geotextile filter at the top of the pitching (dry) and the double geotextile mattress filled with 5500 gr/m² sand from the level of the intermediate berm up to quota -3.50 local low water. A C35/45 concrete beam will be constructed at the level of the berm at quota +2.50 local low water.

3.6.3.2 Rehabilitation of the ferry crossing ramp and access roads

A. RO-RO ramp rehabilitation works

The RO-RO ramp serves the border crossing point. The solution for its rehabilitation involves the laying, over the existing and partially damaged concrete layer, of a new road concrete covering, with a thickness of 20 cm, between the level +7.80 and +4.40 local low water. This clothing will be reinforced with welded mesh and fixed to the existing road clothing by means of metal connectors. The concrete will be poured with transverse and longitudinal joints, respecting the position of the existing joints. At quota +4.40 local low water, the construction of a C35/45 reinforced concrete beam is planned. The surface of the ramp located between quota +4.40 and -2.00 local low water will be rehabilitated by installing prefabricated slabs of reinforced concrete C35/45 with dimensions of approx. 2.00 x 2.00 x 0.2 m. The prefabricated tiles will be placed over the existing tiles, after cleaning them of any material deposits.

At the base of the ramp, a prism of 200-600 kg/piece of rockfill will be built, levelled at the top with a 30 cm thick layer of broken stone, in order to strengthen the foot of the ramp. The downstream slope will be reprofiled and completed with embankments of 200-600 kg/pc. On the side of the ramp, there are 4 bits of 25 tf.

B. Rehabilitation and expansion works of the directing mole

The upstream directing mole of the RO-RO ramp will be extended by 15 m towards the water, with a prism of 200-600 kg/piece rockfills, in the extension of the existing alignment. The concrete boxes on the crest of the mole will be repositioned after the broken stone foundation is restored. The slopes will be reprofiled with rockfills 200-600 kg/pc.

At the upper part of the mole, after the concrete boxes have been reset on the broken stone layer, it is planned to frame the boxes with blocks from the rockfills to ensure better stability and resistance to the pushing force of the water current and ice fields.

The top of the directing mole will be signalled with the help of a mobile beacon, which will be located on the crest of the mole, depending on the water level.

C. Rehabilitation and modernization of precinct roads and platforms in the PTF area

In order to ensure the safe exploitation of the surrounding roads and adjacent platforms, they will be raised to quota +7.80 local low water (+29.66 MN75). The elevation of the adjacent roads and platforms is necessary considering that they are currently below quota +7.33 low water level (10% insurance level), being floodable and inoperable.

The existing road system will be dismantled and, where appropriate, used as a foundation for the new road system. The structure of the new road system is similar to that of the operating platform from the new berths 2 - 6, respectively:

- filling from well-compacted local material;
- ballast base layer, 36 cm thick;
- broken stone foundation, 30 cm thick;
- platform clothing from BcR 4.5, 24 cm thick.

For the islands separating the traffic directions, a layer of vegetable soil with a thickness of 20 cm was provided on the upper part.

Each traffic direction will be served by two traffic lanes with a width of 3.50 m each. For each direction, road gutters will be constructed that will collect rainwater. The horizontal markings and the vertical signalling corresponding to the border crossing point will be executed.

A metal fence has been provided between the platforms behind the port's operating berths and the border crossing point.

3.6.3.3 Related works: dredging, rehabilitation of the signalling system

In order to carry out the previously specified works, it will be necessary to excavate/dredging the surplus material, according to the dimensions and quotas of the attached drawings.

The works that will be executed from the water will require signalling for the entire duration of execution. Both the coastal signalling and the passive and luminous signalling of the work equipment will be ensured.

At the completion of the work, the definitive navigation signage will be installed, with the necessary static warning, prohibition, and recommendation signals. The hydrometric gauge and the display in the port for the Danube water level will be rebuilt.

3.6.3.4 Provision of utilities in the port

3.6.3.4.1 Water-channel networks and installations

Port Bechet is not equipped with centralized drinking water supply and fire networks, respectively household sewage networks. The buildings in the port are supplied with local water, through wells, and the wastewater is discharged through drains. The water for the fire is taken from the Danube with the fire brigade's mobile pumps. The drainage of rainwater has some deficiencies, the water pooling especially on the north side of the premises.

The adopted solutions are the following:

A. Drinking water supply

The water supply for the existing sanitary groups of the port, for loading the drinking water tanks of the ships and for fighting the fire will be made from the public pipe of the city of Bechet located about 2500 m away from the port premises (the length of the water connection). The connection will be made to the public water network. In the port premises, a water management consisting of an above-ground storage tank $V = 200$ mc and a pump station and water pump mounted in a container will be built, according to the description below.

The supply pipe will be made of PEHD 125 mm, P100, PN10, pictured buried, parallel to the access road to the port. On the supply will be executed a valve chamber of line from 500m to 500m. When crossing the existing valley, next to the existing footbridge, the pipeline will be photographed from the air, protected and thermally insulated. At the entrance to the premises, on the supply pipe, will be installed a valve chamber and water meter.

In order to ensure the flow and pressure in the network, a water management consisting of a water tank $V = 200$ mc ($D = 7.64$ m; $H = 4.88$ m) and a pump station and hydrophore mounted in a container were provided.

The tank, of metal, above ground, is purchased as equipment, it is mounted on a concrete foundation and ensures the intangible fire reserve and the daily flow of water for household consumption and the supply of ships. The tank is provided with spigots for the supply from the source, for the suction pipes of the pumping groups for household consumption and fire, for overflow and emptying, as well as for the supply of mobile fire pumps. For frost protection, the tank will be supplied with a 3 kW electric heater.

The pump station and water pump are an above-ground container-type construction, with dimensions of 9.0m x 4.8m x 2.7m, consisting of two modules of 9.0m x 2.4m x 2.7m.

The station will be equipped with the following equipment:

- Drinking water pumping group 2K55/200T having:
 - Q = 20 m³/h;
 - H = 45 m CA;
 - P = 2 x 5.5 kW.
- Fire water pumping group 2K40/400T having:

$Q = 40 \text{ m}^3/\text{h};$

$H = 45 \text{ m CA};$

$P = 2 \times 7.5 \text{ kW}.$

- Hydrophore container with membrane $V = 500 \text{ l}.$
- The station will be provided with 2 electric heaters with $P = 2000 \text{ W}$ each.

The water network in the premises, made of PEHD 125mm, P100, PN10, will ensure the water supply of the existing buildings, the hydrants supplying the ships and the fire hydrants. When under-crossing the crane tracks, the water pipes will be protected in steel pipes, between two valves. Hydrants for supplying ships will be provided with shut-off valves and flow meters.

The water network will be placed between protective layers of sand according to the manufacturer's instructions.

As an additional measure to ensure firefighting on the port platforms, with water from the Danube, a fire hydrant made of sorb Dn 100mm, the vertical pipe made of galvanized steel pipe Dn 4", and a type A connection for the hydrant was provided at each berth. The necessary flow rate and pressure will be ensured by a mobile motor pump, kept in working order together with the PSI materials.

The motor pump will have the following characteristics:

- ✓ maximum flow 1000l/min;
- ✓ maximum pressure 10 bar;
- ✓ maximum suction depth 9m.

B. Household sewage

The evacuation of domestic wastewater from the sanitary groups of the port buildings will be done through a network of PVC pipes Dn 250 mm and slope $i = 0.008$, to a pumping station for domestic wastewater located in the port access area.

The pumping station is an underground construction of prefabricated concrete elements, having $D_i = 1.80\text{m}$ and $H = 6.0\text{m}$. The station is purchased fully equipped with hydraulic, electrical and automation installations. The station is equipped with 1+1 electric pumps with $Q = 5\text{l/s}; H = 16 \text{ mCA}; P = 2 \times 2.5 \text{ kW}.$

The evacuation of wastewater from the premises will be done through a discharge pipe made of PEHD, P100, with a diameter of 125 mm and PN 6.

On the discharge pipe, chimneys will be built with a cleaning piece from 500m to 500m. When crossing the existing valley, next to the existing footbridge, the pipeline will be aerially photographed, protected and thermally insulated. The discharge pipe and the sewer network will be laid between protective layers of sand according to the manufacturer's instructions.

Household wastewater is collected in a wastewater pumping station and discharged through a 125 mm HDPE pipe, PN 6, into the city's domestic sewage network, 2500 m away.

C. Rainwater drainage

To collect the rainwater from the premises, along the roads and platforms, gutters made of prefabricated concrete elements with a drain slope $i = 0.005$ were provided.

The gutter sections 2x20m each will be connected to the storm sewer network through spillways purchased together with the gutters.

The gutter elements have the following characteristics:

Length	$L = 1.0\text{m};$
Nominal width	$I = 300 \text{ mm};$
Load class	E 600, heavy traffic

Cover with cast iron grates for heavy traffic, fastened with screws, L = 0.5m, l = 300 mm.

The discharge chimneys have the following characteristics:

Length L = 0.5 m;

Nominal width l = 300 mm;

Load class E 600, heavy traffic

Cover with cast iron grates for heavy traffic, fastened with screws, L = 0.5m, l = 300 mm.

The channel sections will be reinforced in concrete according to the manufacturer's instructions.

The collection of rainwater from the sections of gutteres will be done by means of a rainwater drainage network made of PVC pipes Dn 300 mm, Dn 400 mm, Dn 500 mm. The sewer network will be placed between protective layers of sand, according to the manufacturer's instructions.

The storm sewer pipes will be made of PVC, SN8, and the sewer chimneys will be made of access chimneys made of prefabricated concrete elements, Dn 800 mm, on plain concrete foundations and will be covered with cast iron frame covers for class D 400 roads.

Visiting chambers with bench depths greater than 2.0m will be executed with a working chamber made of concrete tubes Dn 1000 mm L = 2m, according to art. 2.2.1 of STAS 2448-82.

For the mechanical purification of rainwater discharged into the Danube, two sludge and hydrocarbon separators were provided, with coalescing filter and built-in by-pass, each with Q = 200/40 l/s characteristics.

Before the discharge into the Danube, a non-return valve will be installed on the final section of the sewer, in order not to allow water from the Danube to enter the sewer, in the event that its level rises above the level of the discharge opening.

The evacuation of water into the Danube will be done by redevelopment the existing outlet.

Calculation summary

1. Determination of the flow of drinking water for the sanitary groups from the existing buildings

The necessary water flow for 20 people (administrative staff), 10 people (port operation staff) and 100 people (drivers in traffic) will be ensured.

The water requirement for sanitary needs was determined according to STAS SR 1343/1/1995 with the relation:

$$Q_{\text{day med}} = \sum q_{\text{sp}} \times N_i / 1000 \quad (\text{mc/day})$$

$$N_1 = 10 \text{ people (workers)}$$

$$N_2 = 20 \text{ people (TESA)}$$

$$N_3 = 100 \text{ people (drivers in traffic)}$$

$$q_{\text{sp1}} = 50 \text{ l/person*day (STAS 1478-90, table 4/19)}$$

$$q_{\text{sp2}} = 20 \text{ l/person*day (STAS 1478-90, table 4/2)}$$

$$q_{\text{sp3}} = 5 \text{ l/person*day (STAS 1478-90, table 4/16)}$$

$$Q_{\text{day average}} = (10 \times 50 + 20 \times 20 + 100 \times 5) / 1000 = 1.4 \text{ mc/day}$$

The maximum daily flow will be:

$$Q_{\text{day max}} = 1.20 \times 1.4 = 1.68 \text{ mc/day}$$

$$Q_{\text{timetable max}} = 5 \times 1.68 / 16 = 0.88 \text{ mc/h} = 0.53 \text{ l/s}$$

2. Determination of the necessary fire water flow rate

On the platform, general goods can be stored in bulk, in stacks or in containers with maximum dimensions L x W x H = 12.0m x 2.5m x 2.5m.

The volume of a container will be 12 x 2.5 x 2.5 = 75 cubic meters

Assimilating the container with a storage building with fire stability level IV - V, and medium fire risk, from Annex no. 8 of Regulation P118/2-2013, it results that for volumes below 2000 m³ the water flow for extinguishing a fire from the outside is $q_{\text{ie}} = 5 \text{ l/s}$. The volume of 2000 mc also covers the storage solution of a group of stacked containers, respectively a group of 2000: 75 = 26.7 containers.

For open log warehouses with a volume between 101 cubic meters and 500 cubic meters (Annex no. 11 of Regulation P118/2-2013) or open timber warehouses with a volume of between 51 cubic

meters and 200 cubic meters (Annex no. 10 of Regulation P118/2-2013), the water flow for extinguishing the fire from outside is $Q_{ie} = 10$ l/s, respectively two jets in simultaneous operation. Also, ensuring the fire flow rate of 10l/s allows extinguishing the beginnings of fire on ships moored at the quay, the total required fire flow rate being ensured with the fire installation on board, or, in the last instance, with the fire engines or the fire boat. In order to be included in the insured flows, the beneficiary will limit the group of containers or the volume of the stacks to those calculated.

3. Determining the flow of potable water for supplying ships

The supply of potable water to the tanks of ships moored at the quay will be done through quay hydrants equipped with metering devices.

In the most unfavourable situation, it is considered that 3 ships from those anchored at the quay are simultaneously supplied with water, each with a tank of about 10 cubic meters.

During a day with intense activity, 6 ships can be fed.

$$Q_{\text{day med}} = 2 \times 3 \times 10 \text{mc} = 60 \text{ mc/day}$$

The water network is assimilated with the street network with distribution through the splits.

$$K_{\text{day}} = 1.40 \text{ (table 1 from SR 1343-1/2006)}$$

$$Q_{\text{day max}} = 1.4 \times 60 = 84 \text{ mc/day}$$

$$K_{\text{timetable}} = 2.8 \text{ (table 3 of SR 1343-1/2006)}$$

$$Q_{\text{timetable max}} = 2.8 \times 84/24 = 9.8 \text{ mc/h} = 2.7 \text{ l/s}$$

4. Determination of the simultaneous flow of potable water for the supply of ships for the sizing of the pipes and the calculation of the pressure required at the connection

Through the PEHD 125 mm network, the flow for filling three tanks, half of the total flow and the flow for fighting the fire, will flow simultaneously.

$$Q_c = 1.35 \text{ l/s} + 10 \text{ l/s} = 11.3 \text{ l/s}$$

At flow rate $Q = 11.35$ l/s, the linear load loss through the 125 mm PEHD pipe (PE 100, PN10 at) will be: $i = 14 \text{mCA/km}$

The total load loss on the route will be:

$$h_{p \text{ lin} + \text{loc}} = 1.2 \times 0.65 \text{ km} \times 14 \text{mCA/km} = 10.92 \text{m CA} = 11 \text{ mCA}$$

$$H_g = 10 \text{ m CA (height of stacks of materials on the platform)}$$

$$H_u = 13.40 \text{ m CA (Use pressure for fire hydrants)}$$

$$H_{pf} = 5 \text{ mCA (pressure losses in the hose)}$$

The calculation is made for the most unfavorable situation, namely fire extinguishing.

$$H_{nec} = H_g + H_u + H_{pf} + h_{p \text{ lin} + \text{loc}} = 10 \text{mCA} + 13.4 \text{m CA} + 5.6 \text{ mCA} + 11.0 \text{m CA} = 40 \text{ mCA}$$

5. Dimensioning of the storage tank

$$V_{rez} = V_{comp} + V_{inc} \text{ (STAS 4165/88, point 2.1.1)}$$

$$V_{comp} = aV$$

$$a = 1 \text{ (high pressure, SR 1343/1/2006)}$$

$$V = Q_{z \text{ day max}} = 1.68 \text{ mc/day} + 84 \text{ mc/day} = 85.68 \text{ mc/day}$$

$$V_{comp} = 1 \times 85.68 = 85.68 \text{ mc}$$

$$V_{inc} = T_{ie} (a Q_{\text{timetable max}} + 3.6 n Q_{ie}) + 3.6 Q_{ii} T_{ii}$$

$$T_{ie} = 3 \text{ hours (STAS SR 1343/1/2006, note 5 in table 4)}$$

$$a = 1$$

$$Q_{ie} = 10 \text{ l/s}$$

$$Q_{ii} = 0 \text{ l/s}$$

$$V_{inc} = 3 (1 \times 2.7 + 3.6 \times 1 \times 10) = 116.1 \text{ mc}$$

$$V_{rez} = 85.68 + 116.1 = 201.78 \text{ m}^3$$

It will be built a water tank $V = 200$ mc

6. Determination of the water flow at the source

QIC – Water flow from the source to the reservoir (SR 1343/1/2006, art.7.1)

$$Q_I = K_p \times K_s \times Q_{zi \text{ max}} + K_p \times K_s \times 24 Q_{ri}$$

$$Q_{ri} = F_{ri}/T_{ri}$$

$$T_{ri} = 36 \text{ hours (SR 1343/1/2006, table 6)}$$

$$K_p = 1.10$$

$$K_s = 1.02$$

$$Q_{ri} = 116.1 / 36 = 3.22 \text{ mc/h}$$

$$QIC = 1.10 \times 1.02 \times 85.68 + 1.1 \times 1.02 \times 24 \times 3.22 = 182.73 \text{ mc/day} = 2.11 \text{ l/s}$$

7. Determining the flow of returned domestic wastewater

The flow of returned domestic wastewater was determined according to SR 1846-1/2006, point 4.2.1 with the relation:

$Q_u = Q_s$, where:

Q_s is the characteristic supply flow of the water demand.

$$Q_{u \text{ day med}} = 1.4 \text{ mc/day}$$

$$Q_{u \text{ day max}} = 1.68 \text{ mc/day}$$

$$Q_{u \text{ timetable max}} = 0.88 \text{ mc/h} = 0.53 \text{ l/s}$$

8. Calculation of rainwater flows

Calculation of the maximum flow produced by the calculation rain with the possibility of exceeding p % was made according to STAS 1846/2 -2007 with the relation:

$$Q_{\text{max p \%}} = m \times S \times \emptyset \times i_{\text{p\%}} \quad (\text{l/s}):$$

$m = 0.8$ flow rate reduction coefficient

S = area of the sewage basin, (ha)

\emptyset = leakage coefficient related to surface S_i , dimensionless (table 2)

$i_{\text{p\%}}$ = average rain intensity (l/s.ha)

The calculation was performed at the level of the entrance to the sludge and hydrocarbons separator, located near the ferry mooring ramp.

S_1 = Technological Road surfaces and concrete parking platforms

S_2 = Grassed surfaces

$S_1 = 3.6$ ha

$S_2 = 0.8$ ha

$\emptyset_1 = 0.85$ (concrete surfaces)

$\emptyset_2 = 0.10$ (grassy surfaces)

t_{cs} = superficial concentration time = 10 min (ses zone)

$l = 600$ m (the longest route of the water in the channel)

$t = t_{cs} + l/v = 10 + 600/50 = 22$ min.

According to STAS 9470-73: $i_{\text{p\%}} = 140$ l/s.ha (zone 9, Bechet, $t = 22$ min., $f = \frac{1}{2}$) $m = 0.8$

$$Q_{\text{max p \%}} = 0.8 \times (3.6 \times 0.85 + 0.8 \times 0.1) \times 140 = 352 \text{ l/s}$$

For the flow rate of 352 l/s, two sludge and hydrocarbon separators with built-in by-pass and coalescence filter are chosen, each having a flow rate of $Q = 200/40$ l/s

The sewer pipe from PAFSIN Dn 600 mm can take the flow rate of 352 l/s at a slope $i = 0.004$.

The PVC tube Dn 500 mm can take over at the slope $i = 0.003$ a maximum flow rate $Q = 200$ l/s.

3.6.3.4.2 Electrical networks

A. **Energy data**

- Installed electrical power: $P_i = 3008.5$ kW;
- Electric power absorbed: $P_a = 2106.0$ kW;
- Apparent power transformer station: 2 x 2000 kVA;
- Supply voltage: 400 / 230 Vc.a.;
- Working frequency: 50 Hz;
- Power factor: 0.9.

B. **Description of electrical installations**

The electricity supply is designed from a new transformer station, fully equipped for 2 transformers of 2000 kVA/pc., 20 / 0.4 kV, from which all the consumers provided in this documentation will be supplied from within the port of Bechet.

The consumers provided in this documentation for electricity supply are:

- and illuminated the premises, made with 12 lighting pillars of 20m height, equipped with 8 400W LED lighting devices each;
- supply 5 quay cranes, each of which has an installed power of 325kW and a total maximum absorbed power of 220kW;
- supply 5 quay sockets of 50kW each, located in the immediate access area to the bridge connecting with the ship;
- supply 3 double desks for charging electric cars of 22kW each;
- buildings in the premises .

The electric cables are provided to be of the CYAbY type, with the section calculated at the rated current of the protection upstream of the consumer's electricity supply circuit, as well as checked for the voltage drop depending on the length of the electric circuit route.

The dimensioning of each cable was done considering that the upstream protection (switch), at its nominal current and not at the regulation current, must also protect the power cable, not only the powered consumer. The dimensions of the electrical cables related to the existing buildings were calculated as estimates because the Beneficiary did not provide any information related to them. If the electrical powers are different from the existing ones, the dimensions of the cables will be redone in the next design phase.

The check of the conductor section of the power cable was done at the voltage drop, depending on the length of the power cable. The value of the voltage drop must not exceed 3% for the supply of general electrical panels and 5% for the supply of final consumers (secondary circuits).

The electric cables are expected to be protected along the entire route with corrugated tubes with a diameter of 160 mm.

Electric cables that pass through impassable areas (without the possibility of car traffic) are placed directly in the ground, in a layer of sand of at least 40 cm high.

In the underpass areas of the roads for cars and trucks as well as the concrete platforms, the cables will be placed in a 40cm high concrete bed.

Railway underpasses are made by horizontal directional drilling, with specially designed equipment. When changing the direction of the electric cable route, pulling cameras were provided, but also intermediate at the distances between two pulling cameras that exceed the length of 100m (according to the rules and regulations in force, a reinforced electric cable cannot be placed over a length greater than 100m).

The lighting is provided to be achieved with 12 lighting pylons with mobile nacelle, each 20m high, each equipped with 8 lighting devices of 400W each, mounted symmetrically on the mobile nacelle of the lighting pylons.

The lighting pylons are additionally provided with an element to capture lightning strikes.

Each lighting pole is provided with an electric protection and control panel (supplies included in the lighting pole), located at the base of the pole, above the fire chamber specially made to feed the electrical panel related to the pole.

The electrical switchboards for powering quay cranes are equipped with one 630A three-pole automatic switch each, set at a current of 500A.

For the proposed traffic road, 29 street lighting poles of 10m height, equipped with 2 lighting devices of 250W, fully equipped, have been provided.

The electrical switchboards for powering ships anchored at the quay are equipped with one 63A three-phase socket and one 25A single-phase socket, thermo-magnetic protections for each socket and all related materials for a good operation of the electrical switchboard.

All electrical panels are made of metal treated against corrosion due to atmospheric conditions in the area where they are located.

All electrical switchboards will have a 180° opening door, provided with a locking system with a lock, padlock or any other locking system against the access of unauthorized personnel inside the electrical switchboard.

All cable routes will be accompanied by the 40x4mm OI-Zn plate that is part of the grounding installation of the premises. All the metallic masses in the electrical and non-electrical installations that are not currently under voltage, but which can cause a potential change accidentally, are connected to this flatband.

For the completion of the earth socket, grounding electrodes of OI-Zn 2 ½" diameter and 3m long will be installed, in the immediate vicinity of the lighting pylons, the lighting poles, in the immediate vicinity of the crane power supply and ship loading panels, as well as around the transformer station. The dispersion resistance of the earth socket must not exceed the value of 1 ohm. Otherwise, additional measures will be taken, approved by the designer, so as to obtain a value lower than that imposed by the provisions of the rules and regulations in force.

3.6.3.4.3 Video surveillance and access control system

A. *The structure of the integrated video surveillance and public address system*

The role of the system is to ensure the capture of images from areas of interest, their processing and recording on specialized equipment, the visualization of images through the LAN network, allowing the staff dedicated to monitoring the operation of the system to take quick action in case of malfunctions or unwanted events at the monitored points. Access restrictions will be achieved with the help of a car barrier. Access will be by card.

The system is made up of cameras, video cameras, speakers, network switches, NVR and station monitoring. The video surveillance system covers all areas of interest. The entrance to the premises is also supervised by a video camera that offers the possibility of recognizing the number of car registration. The surveillance system includes real-time recording equipment and will be connected to LAN network for image access. The NVR will be provided with HDDs that allow the recording of signals from all cameras for at least 20 days and will be connected to the LAN network (if this exists), being able to be accessed remotely. The system ensures fast real-time searching and allows for further expansion.

By integrating loudspeakers with IP, the system allows the broadcasting of scheduled announcements, background music, warning or emergency messages, either individually, on zones or on all loudspeakers at the same time.

The video cameras will be of 4 types:

- Bullet-type outdoor video camera, protection degree IP66, built-in IR, with IP and PoE, minimum color illumination 0.2 lux, minimum AN illumination 0 lux, resolution 1920x1080p, 25/30 fps, CMOS image sensor 1/2.8, WDR, horizontal angle 115gr, vertical angle 64gr, operating temperature -30 – 50grC;
- Outdoor video camera LPR, anti-vandal IK10, degree of protection IP66, built-in IR, with IP and PoE, minimum color illumination 0.16 lux, minimum illumination AN 0 lux, resolution 1920x1080p, 50/60 fps, security function - does not accept unauthorized access, CMOS image sensor 1/2.8, WDR, horizontal angle 16-2.3gr, vertical angle 9.6-1.3gr, remote zoom, temperature operation -30 – 50grC;
- Dome type video cameras, outdoor, anti-vandal IK10, protection degree IP66, with IP and PoE, built-in optimized IR, minimum color illumination 0.1 lux, minimum AN illumination 0 lux, HDTV 1920x1080p, 50/60 fps, security function - does not accept unauthorized access, CMOS image sensor 1/2.8, WDR, horizontal angle 100-36gr, vertical angle 53-20gr, remote zoom, remote focus, operating temperature -30 – 50grC;
- Panoramic video camera, outdoor, anti-vandal IK10, degree of protection IP66, with IP and PoE, minimum color illumination 0.16 lux, minimum illumination AN 0.05 lux, resolution 5120x2560p, 50/60 fps, security function - does not accept unauthorized access, CMOS image sensor 1/2.8, WDR, horizontal angle 180gr, vertical angle 90gr, operating temperature -30 - 50grC ;

The recording of images will be done on a 1U rack-able NVR, with management software included license for 32 cameras, HDD included 16TB, supported RAID levels 0, 1, 5, 6, 10, recording speed 384 Mbit/s.

The images will be viewed on an operating station with an Intel® Core™ i5 processor, 8GB memory, video card, RJ45 network, interface for 4 monitors, mouse, keyboard, minimum 2 27-inch monitors. The license will be installed on the operating station for viewing the images from all video cameras, as well as for controlling the speakers. Also, a microphone was provided for broadcasting messages.

The loudspeakers will be suitable for outdoor mounting, with IP66 degree of protection, RJ45 connection, PoE, security function, internal memory.

The following were provided for the communication infrastructure:

- Switches with 4 Ethernet ports, PoE, 1 SFP port, degree of protection IP67, for outdoor mounting, power supply 100–240 Vac, 50/60 Hz, HTTPS, 10 Gbps, MAC table 8K, frames 10Kb, with software management;
- Switch with 16 Ethernet ports, PoE, 1 SFP port, power supply 100–240 Vac, 50/60 Hz, DHCP server included, 36 Gbps, MAC table 8K, frames 9216 Bytes, rack-able, with software management;
- Switch FO – 16 100/1000BASE-X mini GBIC/SFP slots, with 19" rack mounting system, with management, equipped with SFP 1000BASE-SX/LX.
- A 6KVA rack-able UPS will be used to power the video surveillance system;
- The above equipment will be mounted in a 19" rack.
- The system wiring will be done as follows:
 - Utp cat6 cable for connecting cameras and speakers in outdoor switches, as well as
 - for connecting the NVR and the operating station in the switch.
 - Fiber cable.

Video surveillance areas

No. crt.	Equipment type	Supervised area
1	LPR outdoor video camera	Car entrance to the area
2	Panoramic video camera Dome video camera	BAC crossing platform
3	Outdoor bullet type video cameras	Customs
4	Outdoor bullet type video cameras	Main access in buildings
5	Dome video camera	Scale
6	Dome video cameras	Danube's shore

The video surveillance system will be powered from its own service power supply panels, via UPS.

B. Access control system

The restriction of car access to the premises will be achieved with the help of two car barriers, mounted on both directions (entrance - exit). Access will be done with an RFID card. A number of cards will be defined for employees and visitors.

The structure of the access control system will be as follows:

- barriers with 3m arm, controller for 2 inductive loops;
- controller for 2 doors (or 2 master-slave controllers), for connecting two readers, 2 control relays;
- RFID readers;

- power source;
- traffic light.

3.6.4 Raw materials, energy and fuels used and their insurance method

To carry out the works, the following will be used: granular material for the construction of the platforms, ballast, raw stone of different sizes and thicknesses.

During the execution of the works provided for in the project, the main sources of energy will be fuels necessary for the operation of the construction machinery for the commissioning of the designed works.

3.6.5 Connection to existing utility networks in the area

During the execution of the works, the utilities are ensured by the care of the contractor, by connecting to the existing networks where possible.

During the operating period, the utility insurance method is described below.

3.6.5.1 Water networks and installations - channel in the area of the commercial port

3.6.5.1.1 Drinking water supply to ships

The water supply for the existing sanitary groups of the port, for loading the drinking water tanks of the ships and for fighting the fire will be made from the public pipeline of the city of Bechet located about 2500 m away from the port premises. In order to ensure the flow and pressure in the network, a water management consisting of a water tank $V = 200$ cm and a pump station and water pump mounted in a container was provided.

3.6.5.1.2 Water supply for fire fighting

As an additional measure to ensure firefighting on the port platforms, with water from the Danube, a fire hydrant made of sorb Dn 100mm, the vertical pipe made of galvanized steel pipe Dn 4", and a type A connection for the hydrant was provided at each berth.

3.6.5.1.3 Evacuation of household water in the port area

The domestic wastewater evacuation from the sanitary groups of the port buildings will be done through a network of PVC pipes Dn 250 mm and slope $i = 0.008$, to a domestic wastewater pumping station located in the port access area.

The pumping station is an underground construction of prefabricated concrete elements, having $D_i = 1.80$ m and $H = 6.0$ m. The station is purchased fully equipped with hydraulic, electrical and automation installations. The station is equipped with 1+1 electric pumps with $Q = 5$ l/s; $H = 16$ mCA; $P = 2 \times 2.5$ kW.

3.6.5.1.4 Evacuation of rainwater in the port area

To collect the rainwater from the premises, along the roads and platforms, gutters made of prefabricated concrete elements with a drain slope $i = 0.005$ were provided.

The gutter sections 2x20m each will be connected to the storm sewer network through spillways purchased together with the gutters.

For the mechanical purification of the rainwater discharged into the Danube, two sludge and hydrocarbon separators with a coalescence filter and a built-in by-pass with $Q = 200/40$ l/s characteristics were provided.

Before the discharge into the Danube, a non-return valve will be installed on the final section of the sewer, in order not to allow water from the Danube to enter the sewer if its level rises above the level of the discharge opening.

3.6.5.2 *Electrical networks and installations*

The electricity supply is designed from a new transformer station, fully equipped for 2 transformers of 2000 kVA/pc., 20 / 0.4 kV, from which all the consumers provided in this documentation will be supplied from within the port of Bechet.

3.6.6 *Description of site restoration works*

After the completion of the works, by the care of the contractor, the land on which the temporary warehouses of products, materials, equipment were will be released and returned to its initial state.

3.6.7 *New access ways or changes to the existing ones*

The project does not provide for the creation of new access roads or modification works of the existing ones.

3.6.8 *Natural resources used in construction and operation*

The main natural resources used are :

- raw stone for filling gabion mattresses of different sizes
- ballast
- raw stone sort of different sizes.

In addition to the materials listed above, the following will also be used:

- fuels and lubricants for the machines and means of transport used
- additives and paints (where applicable)
- water necessary to reach the optimal humidity of the embankments.

The production that will be carried out as well as the resources used to produce the energy necessary to ensure the production are presented in the table below:

Productivity		Resources used to ensure production	
Name	Amount	Name	Provider
- machinery activity - laying a layer of vegetable soil - application of gabion mattresses	- according to the specifications above	- fuel - sand and natural aggregates, iron	- fuel stations - existing ballasts

To carry out the proposed works, the following types of materials will be used:

- ballast aggregates
- fuels and lubricants for machines and means of transport
- water required for additional wetting of embankments, sprinkling of exploitation roads.

The mineral aggregates used to carry out the works will be bought from the quarries/ballasts, regulated by ANRM, existing near the work area. In the case of opening new quarries and sand pits, it will be necessary to obtain environmental protection permits.

The cement will not be prepared on the port site but will be prepared in specialized installations and will be transported with the specific means of transport from these stations to the work point.

Paints and respectively additives will be brought in sealed containers. Empty containers will be returned to the manufacturer or distributor, as appropriate.

3.6.9 Methods used in construction / demolition

The working methods used to carry out the works were mentioned in the previous chapter and are specific to these types of works.

Considering the specifics of the works proposed in this project, no demolition works will be necessary.

3.6.10 Execution plan

The execution of the works involves the completion of the following stages:

- preparing the studies, the technical project and execution details, the technical quality check of the project, documentation for approvals, agreements;
- handover of the site and layout of the works, arrangements for environmental protection and bringing it to the initial state, relocation works / protection of utilities;
- execution of construction works - assembly for the basic investment;
- works for the provision of utilities necessary for the objective, namely the water - canal and electrical networks;
- consulting, technical assistance;
- site organization, various and unforeseen;
- preparation of the Construction Technical Book, reception at the end of the works.

The duration of the investment was staggered over a period of approx. 24 months, of which the actual execution was estimated at approx. 21 calendar months.

3.6.11 The relationship with other existing or planned projects

At the time of drafting this memorandum, no information is known about other existing or planned projects near the site.

3.6.12 Details regarding the studied alternatives

The following scenarios are proposed within the project:

- the scenario without the project: port infrastructure that works in the current conditions, the port infrastructure does not allow the mooring of ships near the shore, so it is not possible to operate cranes at the quay, making it impossible to unload ships at the shore (the activity carried out is loading). The port operates, for the most part, on the flow of shipping goods.
- scenario 1 with a project that provides for the realization of hydrotechnical works in the port area, which involves *the modernization of the vertical quay at the Danube by the execution of a vertical quay made of weight blocks, rehabilitation of the RO-RO ramp and access roads, related works that include dredging/excavations for the execution of the vertical quay, the easement berth and rehabilitation of the RO-RO ramp and, respectively, the rehabilitation of the navigation signalling system for the entire work, works to ensure the utilities in the port area (water supply, collection and evacuation of household wastewater and rainwater, fire extinguishing installations, electricity supply, ensuring video surveillance and access control*
- scenario 2 with a project that provides for the realization of hydrotechnical works in the port area, which involves *the modernization of the mooring front at the Danube through the execution of a vertical quay made of piles, rehabilitation of the RO-RO ramp and access roads, related works that include dredging/excavations for the execution of the vertical quay, the easement berth and rehabilitation of the RO-RO ramp and, respectively, the rehabilitation of the navigation signalling system for the entire work, works to ensure utilities in the port area (water supply, collection and evacuation of domestic wastewater and rainwater, fire extinguishing installations, electricity supply, ensuring video surveillance and access control.*

The works that were proposed to be executed in the first version are detailed in the previous chapters of this presentation memorandum.

In the second version, the proposed works are similar to those proposed in the first version, with the exception of the modernization works of the mooring front in which the variation of making the vertical quay from piles is proposed.

In this variant, the works previously described in variant 1 are kept (subchapters 3.6.3.2. - 3.6.3.4), the differences appearing in the works proposed in chapter 3.6.3.1. These are described below.

➤ **Modernization of the Danube mooring front**

In order to modernize the existing mooring front at the Danube, with a length of 650 m, (for berths numbered from 2 to 6, with lengths of 130 m each), it was proposed to build a vertical quay made of piles, a variant in which the berthing of ships will be done directly at the quay, at a distance of approximately 20 m towards the water from the alignment of the existing mooring front.

Moving the mooring front towards the water will ensure the creation of a port platform that allows operation at the quay with the Bocşa type port cranes, 16 tf x 32 m. At the same time, moving the front towards the water will ensure the depths necessary for direct mooring at the quay, with minimal expenses for maintenance operations, respectively dredging.

➤ **Execution of vertical quay made of sheet pile piles**

In this variant, the quay will be made of Larssen S 430 GP type sheet piles or equivalent, with a width/pile of 60 cm, between quota +7.80 m and -11.00 m local low water (lowered in the limestone layer in a sand binder), along the entire length of the 650 m mooring front. At the ends of the quay, the sheet piles will be embedded in the bank, perpendicular to it, on 2 x 25 m = 50 m. The final foundation level of the sheet piles screen will be established in the next design phase, after the preparation of a detailed geotechnical study, which highlights the stratification of the land along the quay.

The sheet piles will be anchored to a wall with \varnothing 75 mm tie bars, located at distances of 2.4 m from each other and having lengths of at least 20 m. Additionally, in the profile of the bollards, one additional anchor will be made with \varnothing 59 mm tie bars, with lengths of at least 18.5 m, made of S355 steel.

For the uniform distribution, on all the sheet piles, of the efforts from the anchorages (and to keep the sheet piles in the same position relative to each other) will be executed stiffening beams attached to the piles with bolts at 2.40 m from each other. This will result in an alternation between anchors and clamp loads every 1.20 m along the sheet pile walls.

The stiffening beams are formed by two U-profiles, solidarized by welded eclipses. Also, stiffening plates are provided next to the clamp loads and anchors. Stiffening beams are placed on welded gussets of sheet piles.

The sheet piles will be inserted into the ground by vibro-driving. The anti-corrosion protection of the sheet piles will be ensured by the quality of the steel used and, additionally, by painting with polyurethane paint applied before vibro-driving, so that the piles are painted from the upper level to 2.00 m below the ground level. All metal constructions will also be protected with polyurethane paint, after their installation.

After the sheet piles are put into operation, in front of the mooring front, the bottom of the bed will be set up along the entire length of the mooring front (650 m) by dredging the land up to quota -4.5 m local low water, on a width of approx. 7 m. In front of the sheet pile pitching, a blockage with a minimum thickness of 1 m will be made, made of raw stone placed on the reverse filter. The works in front of the mooring front will be carried out from the water before the installation of the shock absorbers and without affecting the sheet pile pitching in any way.

At the upper part of the sheet pile wall, the execution of the crest beam made of reinforced concrete C 35/45 was foreseen. The beam will be executed in sections of approx. 40 m, between which there are vertical joints made of a 2 cm extruded polystyrene support layer, with elastic putty.

The crest beam will be cast towards the platform behind the piles on a layer of levelling concrete, and on the side facing the water on a lost metal formwork made of thick sheet metal, welded to the sheet pile wall, after its commissioning. The water side of the crest of the beam will be protected with a thick sheet metal plate embedded in the beam by means of concrete steel blanks.

On the mooring front, 5 metal ladders are provided, which will fit inside the front line, one for each operating berth, in order to ensure access between the ships and the quay. The stairs will be embedded at the top in the crest beam.

The port platform will be made of:

- ballast base layer, 36 cm thick ;
- broken stone foundation, 30 cm thick;
- platform clothing from BcR 4.5, 24 cm thick.

The road concrete platform is poured in longitudinal strips, between which constructive joints are made. Transverse expansion joints will be provided every 40 m, in correlation with the joints between the sections of the running beams of the quay crane.

In order to create the possibility of subsequent installation, by the port operators, on berths 2 - 6, of some the portico cranes Bocsa type of 16 tf x 32 m, reinforced concrete running beams will be placed in the body of the platform, both on land and in water, indirectly founded on drilled columns Ø 900 mm, arranged at interaxial distances of approx. 3.6 m and founded in the limestone horizon in gray sand binder at quota -11.00 local low water (+10.86 MN75). It will be considered that the position of the drilled piles does not overlap the position of the anchors. Considering the presence of water in the immediate vicinity, the solution of drilling columns with bentonite mud is not accepted.

On the rehabilitated quay, it will be possible to mount one crane for each operating berth, provided that a minimum distance between cranes of 50 m interaxle is observed. Mooring bollards of 25 tf will be mounted on the crest of the quay made of sheet piles, at distances of approx. 20 m from each other.

The waterfront edge of the crest beam will be protected with a metal plate fixed through cleats, along the entire length of the mooring front. The quay is equipped with keel dampers made of rubber rollers positioned on three levels.

➤ **Execution of easement berth for the replacement of the existing pontoons**

Upstream of the vertical quay, a floating berth (berth 1 – easement berth) was planned to serve the vessels of the authorities operating in the port of Bechet, namely the Border Police, the Bechet Captaincy, the Lower Danube River Administration and the Maritime Danube Ports Administration. Currently, these vessels berth at the pontoon in the area of the existing berth 2. With the execution of the vertical mooring front, these pontoons will be relocated to the new upstream floating berth.

The floating easement berth will be made of 2 floating access pontoons with concrete floats (L=35m/pc), they will be fixed in position with the help of hammered metal columns Ø1.00m (t=16mm, anti-corrosion protected) and the length of 26.50m. The connection between the floating access pontoons and the columns will be through metal collars that will allow free vertical movement of the pontoons depending on the water level. For access to the floating pontoons, a pedestrian walkway with a length of 25.00m has been provided, the walkway will be simply supported on an independent floating pontoon towards the water, and at the level of the crowning, an embedment of reinforced concrete C35/45 will be executed.

The connection to the shore on the upstream area will be made of rockfill blocks 200-600 kg/pc, with a slope of 1:1.5. The elevation at the crest will be +7.80 local low water (+29.66 MN75), the intermediate berm at elevation quota +2.50 local low water and the minimum elevation of -3.50 local low water at the base of the embankment. The rockfills will be placed on a 400 gr/m² geotextile

filter at the top of the pitching (dry) and the double geotextile mattress filled with 5500 gr/m² sand from the level of the intermediate berm up to the quota -3.50 local low water. A C35/45 concrete beam will be constructed at the level of the berm at quota +2.50 local low water.

3.6.13 Other activities that may appear as a result of the project

Is not the case.

3.6.14 Other authorizations required by the project

The approvals / authorizations required for this type of project are those specified in the Urban Planning Certificate issued for the project that is the subject of this memorandum.

4 Description of the necessary demolition works

4.1 The execution plan of the demolition works

The existing buildings on the site will be used as part of the investment, no demolition work is required.

4.2 Description of site restoration works

Is not the case.

4.3 New access paths have changes to the existing ones

Is not the case.

4.4 Methods used in construction / demolition

Since no demolition works are necessary, no alternatives can be proposed.

4.5 Details regarding the studied alternatives

Since no demolition works are necessary, no alternatives can be proposed.

4.6 Other activities that may appear as a result of the project

Since no demolition work is required, no other activities will occur.

5 Description of the project location

5.1 Distance from borders

The analysed project falls under the scope of the Convention on environmental impact assessment in a cross-border context, adopted in Espo on February 25, 1991, ratified by Law no. 22/2001, with subsequent additions.

According to the plan for the area (attached), the location of the objective is located on the bank of the Danube - Bechet port area.



Figure no. 1– Fitting in the area of the objective

Written explanation from the picture:

Racord la rețeaua de apă potabilă a orașului Bechet = Connection to the drinking water network of the city of Bechet
Km 6/9 mal stâng Dunăre Nr. C.F. 30104 = Km 6/9 left bank Danube No. C. F. 30104

The distance to the Bulgarian bank of the Danube is approximately 0.500 km. The works proposed to be carried out by this project will not affect the water quality of the water body shared with the Bulgarian area (Danube River) which could create a potential cross-border impact, the distance being 500 m, the works are carried out in stages, they are of short duration and provide only a limited area near the bank for the arrangement of the vertical quay).

Also, dredging works are also carried out during the operation period of the port, they are periodic works that ensure navigation on the Danube so that the impact during the execution period of the works will not be greater than that expected during the normal operating periods of the port (either the Romanian one or the one from the neighboring country - Bulgaria).

Also, the executed works, car traffic will not generate a significant increase in noxious emissions, which will affect the surrounding area. Added to this aspect is the fact that the distance from the works area to the neighboring shore, of 500 m, significantly reduces the concentrations of noxious emissions, so that the impact of the works proposed to be carried out and which concern the rehabilitation and redevelopment of Bechet port will have an insignificant negative impact on the neighboring area - Bulgaria and the population of the residential area of the Bulgarian city of Rahova will not be affected.

5.2 Location of the project in relation to cultural heritage

The location of the objective is located in UAT Bechet in the inner city of the town. As can be seen from the picture below, there are no places of worship or historic monuments in the area of the location that will be affected both during the execution of the works and during the operation period.

Near the town of Bechet there are several places of worship/historical monuments which will not be affected during the execution of the works by observing the measures that are imposed and also during the operation period (due to the location in front of the area of interest).

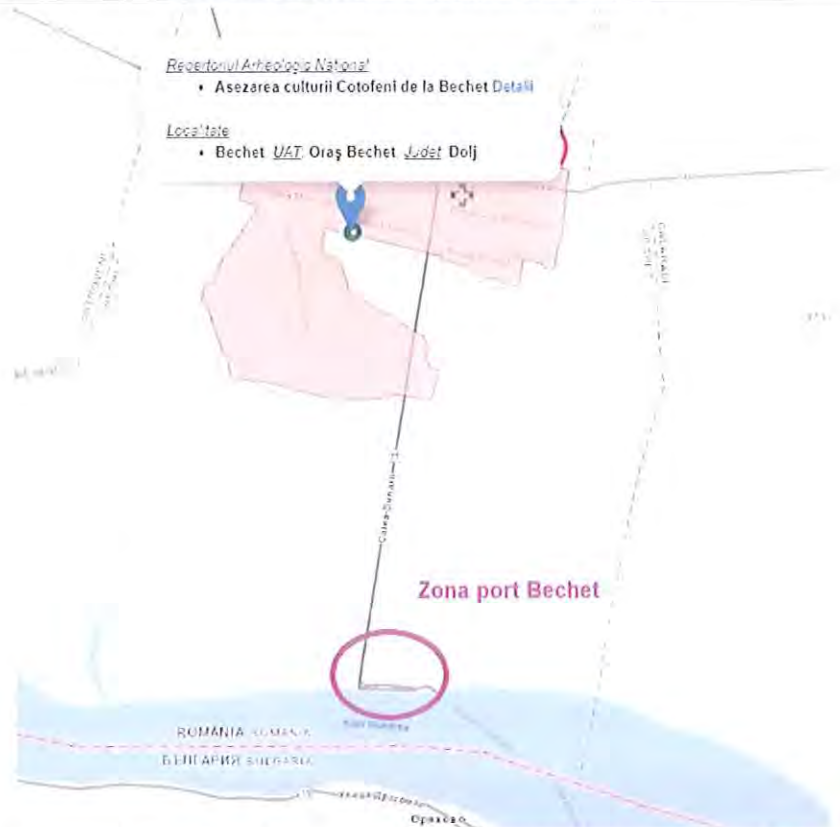


Figure no. 2- Location of places of worship in the bordering area of the port

Written explanation from the picture:

Repertoriul Arheologic Național = National Archaeological Repertory

Așezarea culturii Cotofeni de la Bechet Detalii = Settlement of the Cotofeni culture from Bechet Details

Localitate = Locality

Bechet UAT: Oraș Bechet, Județ Dolj = Bechet UAT: Bechet City, Dolj County

Zona port Bechet = Bechet port area

5.3 Maps, photos of the location that can provide information on the physical characteristics of the environment, both natural and artificial

The area plan and the situation plan are attached to this memorandum.

Bechet Port is located in Dolj County, UAT Bechet, being located on the left bank of the Danube River, in the area of km 678 - 681. The area of the port territory managed by CN APDF SA is 76,287 square meters. The length of the reinforced/vertical/natural quays under the administration of the beneficiary is 650 m. The port is of the fluvial type, allowing the berthing of barges of up to 2000 t.

The Bechet - Oreahovo Bulgaria Border Crossing Point also operates in Bechet Port. The border crossing infrastructure belongs to APDF and consists of RO-RO platform and ramp roads.

The port is connected to the local and national road network through DN54A, DN55 and DN55A.

The land is located in the suburbs of the city of Bechet and belongs to the public domain of the Romanian State concessioned to CN APDF SA Giurgiu according to Concession Agreement no. 3898 /15.10.2008 issued by the Ministry of Transport and CN APDF SA Giurgiu according to CF no. 30104/18.01.2022.

The current use and destination according to the PUG is *the naval communication channel area with an area of 76,537 square meters.*

The built area is 76,537 square meters of which:

- surface of hydrotechnical constructions and roads of account 49,024 sqm.
- surface of existing buildings that are not part of the project 3,150 sqm.

According to PUG approved with HCL no. 11/2021 the location is located in the area of naval communication routes with height regime P+1+2E+M, POT max = 80%, CUTmax = 3.20.

The dominant function is the *area of naval communication routes*.

5.4 The current and planned uses of the land both on the site and adjacent to it

The land has the function of a *naval communication route area*, according to the mentions in the attached urban planning certificate.

5.5 Zoning and land use policies

The site is located in the suburbs of Bechet, Dolj county. For the analyzed project, the Urbanism Certificate no. 13 of 15.03.2022.

5.6 Sensitive areas

Potentially sensitive areas to be identified in the site area are:

- protected areas (Natura 2000 sites, natural monuments);
- residential areas near the site;
- historical, archaeological, cultural areas, health protection areas.

5.6.1 Natura 2000 protected areas

The works that are the subject of this presentation memo are located in the area of the city of Bechet, on the left bank of the Danube, in Bechet port area (as can be seen in the figure below). *The location of the works overlaps with the Natura 2000 areas ROSPA0023 Jiu – Danube and respectively ROSCI0045 Jiului Corridor.*

The description of the Natura 2000 areas, and the potential impact of the works proposed to be carried out are detailed in chapter 13 of this memorandum.



Figure no. 3- Location of the objective and the Natura 2000 areas

5.6.2 Residential areas near the site

Near the site is the town of Bechet, Dolj county.

5.6.3 Historical, archaeological areas located near the site

The location of the objective is located in UAT Bechet in the inner city of the town. As can be seen from the picture above (figure no. 2), in the area of the site there are no places of worship or historical monuments that will be affected both during the execution of the works and during the operation period.

The closest places of worship/historical monuments are in the residential area of the city of Bechet, at a distance of approximately 3.5 km, so they will not be affected during the execution of the works by observing the required measures, nor during the operation period (due to the location in relation to the area of interest).

6 Description of all possible significant environmental effects of the project

6.1 Sources of pollutants and installations for the retention, evacuation, and dispersion of pollutants in the environment

6.1.1 Water quality protection

6.1.1.1 Sources of water pollution

The sources of impact for water quality are:

- the operation of washing/cleaning the machines when leaving the site
- household wastewater resulting from the site.

For the period of execution of the works, it is mentioned that all the materials that will be used for the construction (raw stone, sort, sand, etc.) are non-hazardous, and in contact with water they do not produce chemical reactions.

Some minor water pollution with petroleum products may occur, representing fuel losses from their operation. The pollution will be easily observed on the surface of the water and the necessary intervention measures can be taken urgently.

During the execution of the works, the diffuse sources of pollution are made up of:

- intermediate deposits (bulk) of construction materials (especially powdery), which are washed away by rainwater, the fine particles being carried to the adjacent lands. That is why it is recommended to set up the storage platforms with guard perimeter trenches. Deposits of materials (aggregates, cement, binders, and other types of materials) will be closed or covered, so there is no danger of scattering in the atmosphere and deposition on the ground, their infiltration into the underground water through rainwater being excluded.

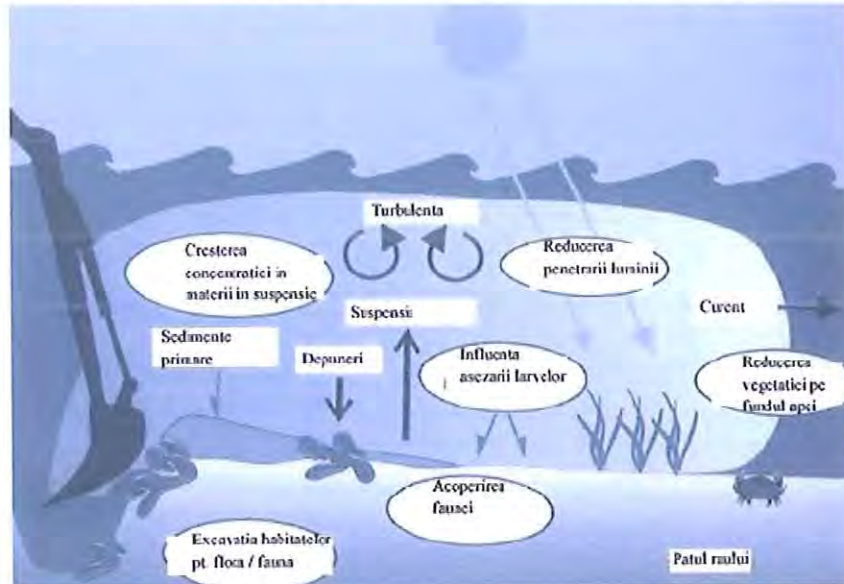
- washing machines (dumpers) in the rain - the water from these washes has an alkaline character (pH >8.5) being potentially contaminated with petroleum products (oils, fuels). The volume of rainwater within the organization of the work point will depend on the concrete surface. It is recommended to systematize the entire surface of the organization of the work point, so that all the rainwater can be pre-purified mechanically. The pollutant loading of these waters will depend on how the bulk materials are stored, the machinery maintained, and the premises kept clean. In order to eliminate the danger of oil contamination of the soil and, by implication, the water of the Danube, it is necessary to properly maintain the machines and perform oil changes from the machines in special stations for such operations because oils and fats are very polluting. **Fuels and chemical products will not be stored on the work site.**

Most of the time, construction site activity is not optimal from the point of view of environmental protection. Therefore, the probability of **more or less accidental leakages of polluting substances** (especially oil) will not be zero. In this case, the impact produced by the execution of the works will appear mainly due to the local pollution of underground waters (in the case of the organization of the work point) or the pollution of surface waters as a result of the entrainment in them, by rainwater, of oil products or other substances.

At the end of the program, the teams of workers are tasked with cleaning the platform, collecting and storing household waste in bins. In this way, the risk of surface water pollution is reduced and even eliminated.

The presence of floating underwater excavation equipment is a potential source of pollutants, especially residues of petroleum products (diesel, oils, etc.), household wastewater or bilge water. This source is activated only in case of imperfect technical condition of the machine or its improper exploitation.

Schematically, the impact of the dredging works is shown in the figure below.



Written explanation from the picture:

Turbulența = Turbulence

Creșterea concentrației în materii în suspensie = The increase in the concentration in materials in suspension

Sedimente primare = Primary sediments

Excavatia habitatelor pentru flora / faună = Excavation of habitats for flora / fauna

Suspensii = Suspensions

Depuneri = Deposits

Reducerea penetrării luminii = The reduction of light penetration

Influența așezării larvelor = The influence of the larval settlement

Curent = Current

Reducerea vegetației pe fundul apei = The reduction of vegetation on the bottom of the water

Patul râului = The bed of the river

When making the filling, the fine parts and the dust existing in the mass of the filling material will enter suspension, contributing to the increase of turbidity in the waters of the port basin. The suspended particles can be resettled on the bottom of the bed either by natural deposition or by choosing another deposition site (they are mobile enough). The organic substances in the suspended material can absorb the available oxygen from the surrounding waters and can temporarily create unsuitable living conditions for many aquatic animals. If the suspended sediments are found in a high concentration and persist through the expansion of operations, then a decrease in the light intensity in the water can occur and thus the photosynthesis processes specific to algae or other aquatic organisms are affected.

The construction works that will be carried out in the underwater perimeter may have a negative influence on the fauna and flora of the site area. The least affected will be larger mobile animals such as fish, amphibians, and reptiles, which may retreat. A more serious impact will be felt by plant organisms, as well as small animals.

During construction works on land, river water can be affected, through rainwater, by polluting substances from the surfaces under construction.

The works that are the subject of this memo will not have a negative impact during the operating period of Bechet port.

The purpose of the works is that of

- modernization of the Danube mooring front by:
 - the construction of a vertical quay made of weight blocks with the height quota of the crest at +7.80 m compared to the local elevation, with the cumulative length $L = 650$ ml, the resulting surface $S = 10,918$ sqm;
 - concrete platforms behind the new quay (new berths 2 – 6), approx. 20 m in width, with the possibility of placing the portico cranes Bocsca type of 16 tf x 32 m, for which beams and running rails have been provided, or of other machines established by common agreement with the economic operators that operate in the port and with the designer's approval, $S = 17,222$ sqm;
 - the execution of a floating easement berth, with a length of 75 m, according to the previous specifications
- RO-RO ramp rehabilitation and access roads, including:
 - rehabilitation of the ferry crossing ramp, $S = 4,086$ sqm;
 - rehabilitation and expansion directing mole crossing point with the ferry, $S = 588$ sqm;
 - rehabilitation of precinct roads and platforms in the area of the border crossing point, $S = 12,410$ sqm
- related works, including:
 - dredging/excavations for the execution of the vertical quay, the easement berth and rehabilitation of the RO-RO ramp ;
 - rehabilitation of the navigation signalling system for the entire work.
- providing utilities in the port including:
 - the water supply of the port through its connection to the drinking water network of the city of Bechet, in order to ensure the water necessary for port activity and resupplying ships. Execution of the connection from the main network to the internal supply network, $L = 2500$ ml;
 - domestic wastewater collection network from the port, including its treatment;
 - rainwater collection network, including its treatment;
 - fire extinguishing installation;
 - the electricity supply of the port, by connecting to the LEA existing in the area, at the entrance to the port, in order to ensure the electricity consumption of the port operators, the charging of electric cars, as well as the resupply of electricity to the ships stationed in the berths. A new PT and a connection network in length of approx. 1,500 ml;
 - perimeter lighting system and port premises;
 - video surveillance and access control system;
 - demand analysis and the possibility of equipping the port with a fuelling point for alternative fuels.

Thus, during the port's operating period, the forecasted increase in activity in the port area will not represent a significant risk of pollution due to bilge water, ballast water or ship waste.

6.1.1.2 Measures to reduce the negative impact on water

The works proposed and which are the subject of this presentation memo contribute to the rehabilitation of the port infrastructure in the Bechet port area so that the surface waters do not require additional protection measures except during the execution of the works in order to reduce dust emissions that could reach the water surface. This is achieved through the care of the Contractor who will execute the works in periods of low wind intensity and will use execution methods that reduce dust emissions.

Among the mentioned potential sources of pollution, those that lead to the increase of turbidity in the river waters are inevitable. The other sources can be eliminated or limited by managerial measures. For example, within the organization of the workplace, the builder has the obligation to ensure the location of ecological WCs.

To reduce or eliminate the effects of these sources, it is recommended that:

- the platforms for the storage of materials (aggregates, cement, binders, and other types of materials) to be closed or covered and provided with guard perimeter trenches so that there is no danger of scattering in the atmosphere and deposition of fine particles on the ground and in water. This eliminates the risk of these particles infiltrating the groundwater through rainwater or draining into the water of the Danube.
- the proper maintenance of machinery and the performance of oil changes from machinery in special stations for such operations because oils and fats are very polluting. Fuels and chemicals must be stored in sealed cells.
- it is recommended to systematize the entire surface of the organization of the work point, so that all the rainwater can be pre-purified mechanically so that the water resulting from washing the equipment in the rain and which may contain traces of petroleum products does not reach the surface water (Danube River)
- the teams of workers, at the end of the program, are responsible for cleaning the platform, collecting and storing household waste in bins. In this way, the risk of surface water pollution is reduced and even eliminated
- the provision of absorbent dams or other equipment designed to retain petroleum products from possible leaks (representing fuel losses from their operation)
- for the works to be carried out on land, organizational measures are the only ones able to minimize the impact of these works on surface waters.

Through the measures proposed above, as well as those proposed below, it is considered that the impact of the construction period on the works will be minimal, without implications in the future.

6.1.2 Air protection

6.1.2.1 Air quality protection during the execution period of the works

The sources of atmospheric pollution, characteristic of the construction period, are:

- suspended and sedimentable powders from the execution activities of the designed construction works and from the construction materials used;
- emissions from the combustion of fuels in the engines of some machines (CO, NO_x, SO₂);
- exhaust gases from the machines/means of transport involved in the designed construction activities.

6.1.2.2 Air pollution forecast

The equipment required for the work will not work simultaneously. In order to limit dust emissions, it is recommended that the machinery be checked from a technical point of view, the roads be moistened during the dry season. The maximum concentrations of polluting substances in the forecasted air will not exceed the CMA values (Maximum Admissible Concentration) and will fall within the range of 0.2-0.5 CMA.

The upper limit of the range is possible to achieve during the construction period, the lower limit during the operation period.

With regard to dust pollution of the air, from the experience of construction sites, it can be appreciated that, in periods without precipitation, on the traffic routes of means of transport and in the areas of machinery activity, the CMA values of 0.5 mg/m² can be exceeded 2-3 times.

By assimilation with traffic on public roads, the concentrations of polluting substances resulting from the activity of machinery and the circulation of means of transport can be included in the following intervals:

- NO_x 0.04 - 0.08 mg/m³;
- COV 0.2 - 0.4 mg/m³;

- CO 0.3 - 0.6 mg/m³.

These values can be achieved for short periods of time, in unfavorable weather conditions (wind perpendicular to the road at a speed of 2 m/sec).

On the side of the traffic routes, pollutant concentrations decrease with distance from the source, at 20 - 30 m distance representing 50% and at 50 m, approx. 30% of the maximum ones. At a distance of about 100 m, the concentrations of pollutants in the air are negligible, meaning below 10% of the concentration.

The most unfavorable situation is the one in which all the machines are in operation, which is excluded, due to the fact that the machines necessary for carrying out the work will not work simultaneously.

To limit dust emissions, it is recommended that the roads be moistened during dry periods. It is also recommended that the machinery and means of transport used be in good technical condition.

It is estimated that in the port premises the maximum concentrations of polluting substances in the air forecast will not exceed the maximum admissible concentration values (CMAs) and will fall within the range of 0.2 - 0.5 CMAs. The upper limit of the interval is possible to achieve during the construction period as well as during the operation period and the minimum limit is reached during the operation period.

With regard to dust pollution of the air, from the experience of construction sites, it can be appreciated that in periods without precipitation, on traffic routes, means of transport and in areas of machinery activity, the values of the maximum admissible concentrations of 0.5 mg/m³ can be exceeded 2-3 times.

Areas of dust/particle pollution are limited in extent. According to US-EPA AP42, particles with a diameter greater than 100 µm are deposited in a short time, the deposition area not exceeding 10 m from the edge of the road. Particles with a diameter between 30 µm and 100 µm are deposited up to 100 m on the side of the road and, respectively, suspended powders are deposited at distances greater than 100 m and can exceed the area of the berth. It is difficult to make an assessment of air pollution with dust, the amounts and distances of their deposition depending on the nature of the roadway (asphalt, concrete, earth), the nature of the transported materials, the meteorological conditions.

Emissions of harmful compounds resulting from internal combustion engines are relatively low, both in concentration and in mass flow rates, which will have a significant harmful effect on the environment. The impact on human settlements will be negligible, because the distance from the objective to the nearest inhabited areas is approximately 1,000 m.

6.1.2.3 Sources of air pollutant sources during operation

During the operation period of the objective, there are no sources of air pollution that would produce a significant impact

6.1.2.4 Measures to reduce air pollution

To reduce the impact of air pollution, the following measures are recommended:

- the use of high-performance, adequate vehicles/means of transport that comply with EURO standards;
- periodic verification of the technical condition of equipment and means of transport;
- periodic sprinkling of access ways, in order to reduce dust pollution (where applicable);
- the use of tipper trucks covered with a tarpaulin for the transport of powdery materials, susceptible to wind entrainment/scattering;
- the use of tarpaulins is also indicated for the temporary protection of some deposits from the action of the wind;
- dust pollution monitoring.

6.1.3 Protection against noise and vibrations

During the execution of the works proposed in the project, the sources of noise are represented by machines and means of transport.

Construction activities are natural producers of noise and vibrations. During the performance of the works, the noise will be caused by the activities of vehicles and equipment necessary for the execution of the works that are the subject of this memorandum, but it will be felt for short periods of time.

Both during the period of execution of the works and during the period of operation, the maximum allowed values of the noise level during the day and in the time interval 22-6 will be respected, values established by *Order 119/2014 for the approval of the norms of hygiene and public health regarding the living environment of the population* with subsequent modifications and additions.

It is estimated that the state of the environment from an acoustic point of view, at the limit of the station premises will not exceed the limit of 65 dB(A) according to STAS 10009/2017.

6.1.4 Protection against radiation

The realization of the project and the operation of the project do not require the use of radioactive materials.

Due to the fact that no radioactive materials are used in the analysed project, no arrangements or facilities for protection against radiation are necessary.

6.1.5 Soil and subsoil protection

The possible sources of soil pollution during the construction period are:

- uncontrolled storage of waste and construction materials;
- the activities carried out for the development of the investment objective;
- accidental spills of petroleum products from vehicles and machinery.

The main soil pollutants from construction activities specific to the site organization are:

- petroleum products that may end up in the ground as a result of accidental losses due to technical failures;
- powders and construction material waste resulting from material transport processes, etc.;
- noxious emissions (NO_x, SO₂, powders) from car traffic.

6.1.5.1 Impact forecasting

The specifics of the works proposed to be carried out do not constitute a source of soil and/or subsoil pollution during the commissioning period, so no additional measures to protect this environmental factor are necessary.

The materials used to carry out the proposed works are non-polluted materials (natural aggregates, sand, ballast, raw stone, etc.) and will not occupy new areas of land, but existing ones will be rehabilitated.

6.1.6 Protection of terrestrial and aquatic ecosystems

The works that are the subject of this presentation memo are located in the area of the city of Bechet, on the left bank of the Danube, in Bechet port area (as can be seen in the figure above). *The location of the works overlaps with the Natura 2000 areas ROSPA0023 Jiu – Danube and respectively ROSCI0045 Jiului Corridor.*

The description of the Natura 2000 areas, the potential impact of the works proposed to be carried out are detailed in chapter 13 of this memorandum.

6.1.7 Protection of human settlements and other objectives of public interest

The location of the works that are the subject of this memorandum is at a distance of approximately 2,500 km from the nearest housing area, so that both during the execution of the works and during the operation period, the population of the housing area adjacent to the objective will not be affected.

Also, as specified in the previous chapters, in the area of the site where the works will be carried out, there are no other objects of interest that would be endangered during the execution of the works or after their implementation.

The minimum distance to the nearest areas of cultural interest is 3500 m, these being located outside the port area so that the works proposed to be carried out will not cause material damage to them.

6.1.7.1 Measures to reduce the impact on the population and the health of the population

The objectives regarding the reduction of the population's exposure to noise and polluting substances are met by the measures considered for the environmental factors noise, water and air. Another way to reduce the impact on the population and public health is to locate the project in an area at a distance greater than 0.500 km from the residential area. Thus, for the studied area, the nearest residential area is approximately 2,500 km from the project site, a sufficient distance for the population not to feel the effects of the noise and vibrations produced during the construction stage. In the period after construction, there will be no sources of pollution of any environmental factor, as the works are proposed to be carried out on the port platform.

In order to prevent and ameliorate the pollution of human settlements in the bordering area of the project, of the access roads to/from the analysed perimeter, during the transport of the materials, for the entire duration of the execution of the designed construction works, it is necessary to cover the tippers with tarpaulins during the transport of the materials that generate dust and/or moisten them; sprinkling of materials in the deposition area and the roadway (access parking lots in the work perimeters and in the outside areas); restricting the speed of dump trucks to 25-30 km/h.

6.1.7.2 Risks for human health

Accidents during the site organization are generally generated by indiscipline and non-compliance by the employed personnel with the rules and norms of occupational health and safety (non-use of protective equipment).

These accidents may occur in connection with the following activities:

- working with machines and means of transport; internal road traffic and access roads;
- fires from different causes; electrocutions, burns, blindness from welding machines;
- inhalation of dust;
- explosions of oxygen cylinders or other containers;
- falls from a height or in excavations;
- crushing of falling elements;
- drowning.

These types of accidents have no effects on the environment, being limited in time and space, but they can cause disability or loss of human life. They can also have negative economic effects through material losses and delays in works. That is why securing the organization of the construction site is necessary throughout the period of execution of the designed works, from the start of the execution works until their completion. In order to minimize the risks, it is necessary to respect the execution period and respect the projects that are the basis of the execution. It is mandatory to create secure warehouses for all construction materials that can generate fires through improper handling, closed to the access of any worker on the construction site or other foreign persons.

6.1.7.3 Disaster risks relevant to the project in question, including those caused by climate change

Potential accidents can occur in different ways during the execution and exploitation periods.

Being located on the Danube, as a working (exploitation) regime, it is linked to navigation restrictions influenced by meteorological phenomena: ice; strong wind; the fog. These phenomena can take place in winter, between December 25 and March 25, when navigation can be totally or partially closed.

In other periods of the year, the following can occur:

- new phenomena: storms, tornadoes, heavy rains, etc.
- floods (high water flows).

6.1.8 Waste prevention and management

During the construction period, the following categories of waste are generated:

- ❖ earth and excavated materials (stone, stone chips, concrete); category 17;
 - code 17 01 01 concrete;
 - code 17 01 04 earth and excavated materials;
- ❖ waste of mixed construction materials; category 17,
 - code 17 01 07 mixtures of concrete, bricks, tiles and ceramic materials without the summary of dangerous substances;
 - code 17 02 01 – 17 02 03: wood, glass, plastic materials;
 - code 1705 00 earth and excavated or dredged materials;
 - code 17 09 00 mixed waste of construction materials;
 - code 17 04 07 metals (including their alloys), metal mixtures;
 - code 17 04 11 waste from making the electrical connection;
 - code 17 04 metals (including their alloys): code 17 04 05 iron and steel; code 17 04 07 metallic mixtures
- ❖ recyclable waste: categories 15 and 20,
 - code 15 01 01 paper-cardboard packaging;
 - code 15 01 02 plastic packaging;
 - code 15 01 03 wooden packaging;
 - code 15 01 07 glass packaging;
 - code 20 01 01 paper and cardboard waste;
 - code 20 01 08 biodegradable waste from kitchens and canteens
 - code 20 01 39 plastic materials;
 - code 20 01 38 wood;
- ❖ used oil waste:
 - code 13 07 01 synthetic motor oils;
- ❖ mixed municipal waste (household waste): category 20, code 20 03 01.

In order to ensure an adequate level of protection for people and the environment, the technical revisions of the machinery/means of transport used during the construction period (oil changes, replacement of oil filters, brake fluid, antifreeze, replacement of used accumulators, used tires) will be carried out in authorized specialized service workshops.

The waste generated during the execution of the designed construction works is waste that can be recovered (wood material waste, metal waste), inert waste (soil and stones from excavation that can be recovered for fillings); mixed municipal waste will be disposed of by authorized economic agents specialized in sanitation.

During the operation period, the waste generated will be taken over by the administrator of CN APDF SA or the operators (from the commercial port area) by authorized operators for the types of waste generated and transported for disposal / recovery depending on the type of waste, both from the commercial port area and especially from the passenger port area. The storage of generated waste will be done on waterproof (concrete) platforms, in the bins intended for each type of waste, labelled with the stored waste code, sized according to the amount of waste that can be generated to prevent their non-compliant storage outside the bins. A monthly record of the quantities/types of waste generated, handed over for disposal/recovery will be maintained and will be reported either at the request of the environmental authorities, or at the deadline established by the regulatory acts or annually (according to the mentions in GEO 92/2021 regarding the waste regime).

6.1.8.1 Impact mitigation measures

- the rhythmic evacuation of waste from the generation area in order to avoid the formation of stocks and the mixing of different types of waste with each other;
- choosing variants for reusing and recycling the resulting waste, as the first management variant and not disposing of it at a waste deposit;
- the transport of all waste will be done with sealed and covered means of transport, so as to avoid leakage or scattering of waste on public roads;

- the provisions of GD no. 1061/2008 regarding the transport of hazardous and non-hazardous waste on the territory of Romania;
- abandoning waste on the route and/or storing it in unauthorized places is prohibited;
- all vehicles transporting potentially pulverulent materials will be covered and have their loading doors secured so as to avoid shattering and/or scattering of the transported materials during movement;
- evidence of waste management in accordance with the provisions of GD no. 856/2002;
- the produced waste will be collected separately, by category, so that it can be picked up and transported for storage according to the criteria provided in the MMGA Order no. 95/2005 or with a view to possible capitalization; intermediate storage facilities will be provided within the organization of the construction site, by type of waste;
- incineration of waste on site is prohibited;
- the temporary storage of waste is prohibited, in places other than those specially arranged for their storage; all employees will be trained in this regard.

1.1.1 Management of dangerous chemical substances and preparations

Considering that the works to be performed involve the rehabilitation of the port infrastructure in the port area, they do not involve the use of chemicals and/or dangerous preparations.

The fuels used for the machines that will perform the works will be provided by the Contractor directly from the nearest fuel stations so that there will be no such materials in the site organization area and/or in the work area.

6.2 Use of natural resources

The main natural resources used are:

- raw stone for filling gabion mattresses of different sizes
- ballast, sand
- raw stone sort of different sizes.

7 Description of environmental aspects likely to be significantly affected by the project

The potential impact on the environmental factors that the proposed works could have in order to rehabilitate the Bechet port infrastructure (works that were described in previous chapters), will be taken into account both during the execution of the works and during the operation period.

The factors that will be potentially affected will be taken into account, as well as the measures required to avoid, reduce or improve this potential impact, all types of activities being highlighted.

The potential impact from the period of the works, as well as from the exploitation period, its characteristics, the factors on which they act, as well as the measures to avoid, reduce or improve the significant impact on the environment are presented below. From the analysis of the tables below, it follows that the negative impact is mainly realized during the implementation period of the project and is local. The completion of the works will not lead to a large increase in naval traffic or activity in the port area with negative influences on the environmental characteristics.

7.1 Potential impact on population, uses, property and human health, including consideration of noise and vibration

The potential impact on the population, uses, material goods and human health, including the consideration of noise and vibrations is insignificant and is the result of the traffic associated with the works (table below). The project is being implemented near the city of Bechet. Material assets of the population are not affected.

The works proposed to be carried out on the banks of the Danube will only affect the population working in the area, and this to a small extent.

7.2 Potential impact on flora and fauna

The potential impact on flora and fauna, including consideration of noise and vibration is presented in the table below. These are insignificant, the area having strong anthropic influences. Compared to the current traffic, there will not be a significant increase in it, the damage to the flora and fauna being insignificant.

During the operation period, the objective proposed to be achieved does not generate negative effects on the environment.

7.3 Potential impact on air and climate

The potential impact on air and climate is presented in the table below. The impact is negative, local and manifests itself only during the construction period. On the general climatic background, in the site area there is a specific topoclimate of the meadow, wetter and cooler in the summer and wetter and less cold in the winter.

The specifics of the foreseen works do not involve air quality protection measures during the operation period.

7.4 Potential impact on the quality and quantitative regime of surface and underground water bodies

The quality of the water body is only affected for a short period of time, during the execution of the work on the modernization of the mooring front by building a vertical quay from weight blocks, excavation / dredging works for the construction of the quay, the easement berth, rehabilitation work of the RO-RO ramp.

In order to limit the impact of the water body, it is recommended to use less polluting technologies, the materials used should be inert so as not to change the quality of the water body, and in the case of the production of high concentrations of suspended matter in the water body, it is recommended to stop the works until they calm down in order not to disturb too much the habitat area for the fish species in transit.

7.5 Potential impact on soil

The dust resulting from the processes of loading, transporting and respectively unloading the used materials can be considered polluting only to the extent that they are associated with other pollutants (for example: SO₂ with dust particles). Given the location of the works, the impact on the soil is considered insignificant. The designed works do not generate pollutants for the soil.

7.6 Potential impact on the landscape and visual environment

The potential impact on the landscape and the visual environment is presented in the table below and is recorded only during the period of the works. During the operating period, the impact is positive by improving the conditions in the area by modernizing the mooring front, rehabilitating the RO-RO ramp and the access roads, the works proposed to ensure the utilities: water supply, household wastewater collection, rainwater collection, fire extinguishing installation, electricity supply.

Table no. 1- The potential impact on the landscape and the visual environment

Crt. no.	Activity	Potential impact	The nature of the impact	Expanding impact	The magnitude	Avoidance/reduction measures	Residual impact
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Documentation for obtaining environmental consent

1.	The location of the works	During the construction period, the visual impact is characteristic of construction site activity	Local, temporary	Local	In the work point area	Environmental management plan developed by the builder	Restoring the area affected by the work requires a period of time
2.	Period of operation of the works	The impact is positive through the improvement of the conditions in the rehabilitated area of the RO-RO ramp, the modernization of the mooring front at the Danube, the rehabilitation of the water supply and sewage networks, the provision of controlled access to the port area, the installation of a video surveillance system					

7.7 The potential impact on the historical and cultural heritage

Regarding the potential impact on the historical and cultural heritage, we mention that in the area of the works there are no heritage or architectural objectives that will be affected during the execution of the works or during the operation period.

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Table no. 2- The potential impact on the population, uses, material assets and human health, including consideration of noise and vibrations

Crt. no.	Activity	Potential impact	The nature of the impact	Expanding impact	The magnitude	Avoidance/reduction measures	Residual impact
1	Execution of works	Noise and vibrations produced by machinery	Temporary, direct, during the works	Function of the condition of the machines, the specifics of the activity and the number of machines operating simultaneously	Significant, in the works area	-reducing to the necessary minimum the operating times of the machines; - avoiding as much as possible the overloading of the installations, monitoring the operating parameters of the installations in order to detect and timely remove any defects, advanced wear, etc.; - compliance with the rules regarding the lubrication and maintenance of various gears	Does not have
2		Possible traffic accidents in the work area	Directly	Locally	Significant, if proper signalling measures are not taken for the works	Appropriate marking of works	Only in case of accident with bodily injury or vehicle damage
3	Traffic associated with the construction site	Noise and vibration production	Temporary, during the works, directly	Locally	Function of the type of transport (heavy, workers at work, etc.), the condition of the road and the buildings on the road	Heavy traffic through the nearby residential areas (respectively the town of Bechet) will be carried out with the speed reduced to a minimum - 30 km/hour	If the speed restrictions are not respected, damage to homes may occur as a result of the vibrations
4		Dirt on public roads	Temporary, during the works, directly	Locally	Significant, if no action is taken	Manual or mechanized tire cleaning points will be provided when leaving the site area.	Does not have

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Crt. no.	Activity	Potential impact	The nature of the impact	Expanding impact	The magnitude	Avoidance/reduction measures	Residual impact
5		Air pollution as a result of traffic	Temporary, direct, during the works	Locally	Depending on the condition of the transport vehicles and the condition of the roads	-proper maintenance of vehicles (ensuring periodic technical inspections) - the use of machines and trucks of recent generation, equipped with high-performance systems for minimizing and retaining pollutants released into the atmosphere	Is not the case
6		Air pollution - dusty material transport	Temporary, during the works	Locally	Locally	Covered transport of powdery materials	Is not the case
7	Period of operation of the works	The impact is positive through the improvement of the conditions in the rehabilitated area of the RO-RO ramp, the modernization of the mooring front at the Danube, the rehabilitation of the water supply and sewage networks, the provision of controlled access to the port area, the installation of a video surveillance system					

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Table no. 3- Potential impact on flora and fauna, including consideration of noise and vibration

Crt. no.	Activity	Potential impact	The nature of the impact	Expanding impact	The magnitude	Avoidance/reduction measures	Residual impact	
1.	The location of the works	Noise and vibration production	Temporarily, during the works	Locally	Function of the type of machinery and means of transport	Periodic revisions of the machines The use of machinery that complies with the provisions of HG 1756/2006	It has not been identified	
2.	Traffic associated with the construction site	Air pollution as a result of traffic	Temporarily, during the works	Locally	Depending on the condition of the transport vehicles, the duration of the works	Proper maintenance of vehicles (ensuring periodic technical inspections)	Is not the case	
3.	Period of operation of the works		Is not the case					

Table no. 4- Potential impact on air and climate

Crt. no.	Activity	Potential impact	The nature of the impact	Expanding impact	The magnitude	Avoidance/reduction measures	Residual impact
1.	The movement of the earth involving the handling of pulverulent materials	Pollution with suspended particles	Temporarily	Locally, short term	Dust emissions often vary substantially from day to day depending on specific operations, prevailing weather conditions	Reducing the height when unloading the bulldozer bucket Avoiding the execution of works in periods of very strong wind	Is not the case
2.	Traffic associated with the construction site	Air pollution as a result of the transport of powdery materials	Temporarily, during the works	Locally	Locally	Covered transport of powdery materials	Is not the case

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Crt. no.	Activity	Potential impact	The nature of the impact	Expanding impact	The magnitude	Avoidance/reduction measures	Residual impact
3		Air pollution as a result of traffic	Temporarily, during the works	Locally	Function of the condition of transport vehicles	Proper maintenance of vehicles (ensuring technical inspections)	Is not the case
4	Period of operation of the works	Is not the case					

Table no. 5- Potential impact on the soil

Crt. no.	Activity	Potential impact	The nature of the impact	Expanding impact	The magnitude	Avoidance/reduction measures	Residual impact
1	Work platform organization	Temporary occupation of the land for the organization of the work platform	Temporary, local	Locally	Reduced	Strict delimitation of the organization of the work point Rendering the land in its initial state upon completion of the works	Does not have
2	The location of the works	Accidental spills of some chemical substances/compounds directly on the ground	Temporary, during the works	Locally	Reduced	The storage and handling of substances/compounds will be done in safe conditions	Does not have
3	Traffic associated with the construction site and the period of operation of the executed works	The possibility of soil contamination with Cd, Cu, Cr, Ni, Se, Mn,	Temporarily, during the execution of the works or the movement of vehicles	Locally	Function of the type of transport (heavy, workers at work, etc.), the condition of the vehicles, the fuel used	Periodic technical reviews	They are not
4	Exploitation period	Is not the case					

7.8 The impact of the project on climate change

7.8.1 Description of current state

7.8.1.1 Temperature

In general, the climate is characterized by hot and dry summers and cold winters. Average annual temperatures are between 11-12°C, decreasing from upstream to downstream. The absolute minimum air temperatures were -30°C, and the absolute maximum temperatures recorded exceeded 40°C.

In the table below (table no. 6) the average monthly temperatures, the average annual temperature and the annual amplitude recorded between the years 1901-2000 and respectively for the year 2021 at the meteorological stations Calafat and Turnu Măgurele¹ are presented.

Table no. 6- Air temperature (monthly and annual average) in the years 1901-2000, respectively 2021 at Calafat and Turnu Magurele stations

Weather station	Year	January	February	March	April	May	June	July	August	September	October	November	December	Annual average	The annual amplitude
		Monthly average (°C)													
Calafat	1901 /2000	-1.4	0.6	5.7	11.9	17.4	21	23.3	22.8	18.2	11.9	5.7	1.0	11.5	24.7
	2021	2.1	3.6	6.1	10	17.6	22.9	26.7	25.5	18.8	10.0	7.3	3.9	12.9	24.6
Turnu Magurele	1901 /2000	-2.3	0.3	5.6	12.2	17.6	21.3	23.3	22.5	18.1	11.8	5.7	0.5	11.4	25.6
	2021	2.4	3.2	4.8	9.9	17.7	21.5	26	25.2	18.2	10.1	7.4	3.0	12.5	23.6

In Table no. 7 shows the absolute maximum and absolute minimum monthly and annual temperatures recorded in the years 1901-2000, respectively 2021 at the meteorological stations Calafat and Turnu Magurele.

¹ According to the Statistical Yearbook and considering the fact that there is no weather station in Bechet, and the data are collected from the closest weather stations to the location

Table no. 7- Absolute maximum and absolute minimum monthly and annual temperatures recorded in the years 1901-2000, respectively 2021 at the two Calafat and Turnu Magurele stations

Weather station	Year	January	February	March	April	May	June	July	August	September	October	November	December	The absolute maximum	The absolute minimum
		Monthly maximum (°C)													
Calafat	1901 /2000	20.5 /1993	22.4 /1990	27.6 /1952, 1994	34.5 /1985	36.6 /1969	39.5 /1908	43.2 /2000	41.3 /1945	39.8 /1946	31.6 /1991	25.9 /1970	21.2 /1989	43.2 /2000	-
	2021	13.7	21	21	25.8	31.8	39.3	40	41.1	34.1	24.2	17.3	17.1	41.1	-
		Monthly minimum (°C)													
	1901 /2000	-29.2 /1947	-24.6 /1950	-15.7 /1963	-3.0 /1912	1.6 /1952	6.2 /1962	9.0 /1913	7.3 /1904	-1.3 /1977	-6.2 /1988	-16.2 /1988	-21.8 /1948	-	-29.2 /1947
2021	-7	-7.5	-5.8	-0.4	4.3	9.1	15.1	9.4	24	28	12	2.3	-7.5	-	
Turnu Magurele		Monthly maximum (°C)													
	1901 /2000	18.0 /1983	24.1 /1995	29.6 /1951	34.2 /1985	38.8 /1950	38.2 /1957	43.2 /1987	41.4 /1952	40 /1946	36.4 /1952	26.7 /1963	22.0 /1903	43.2 /1987	-
	2021	15.6	20.6	19.6	25.5	30.4	37.2	39.3	40.4	32.9	23.1	23.1	17.6	40.4	-
		Monthly minimum (°C)													
1901 /2000	-30, /1942	-26.0 /1950	-22.2 /1929	-4.6 /1923	0.5 /1938	5.0 /1911	9.0 /1974	6.6 /1981	-2.5 /1977	-5.8 /1988	-18.2 /1993	-25.0 /1933	-	-30/ 2015	
2021	-30	-26	-22.2	-4.6	0.5	5	9	6.6	4.4	-1.1	-2.1	-8.2	-	-10.7	

7.8.1.2 Precipitation

Average annual precipitation in the regions adjacent to the Danube River fluctuates significantly - between 500 mm and 600 mm. The maximum level of precipitation is recorded in June, while their minimum level is recorded in February and there are some elements of transition (a secondary maximum in autumn and a secondary minimum in summer).

The annual average of the amounts of precipitation decreases from upstream to downstream, and the absolute maximum amounts of precipitation in an interval greater than 24 hours have exceeded 150 mm.

The table below shows the amounts of average monthly and average annual precipitation recorded in the period 1901-2000 and respectively in 2021 at the meteorological stations Calafat and Turnu Magurele.

Table no. 8- Average monthly and annual average precipitation amounts recorded in the years 1901-2000 and 2021 respectively at the Calafat and Turnu Magurele meteorological stations

Weather station	Year	January	February	March	April	May	June	July	August	September	October	November	December	Annual average
		Monthly average (mm)												
Calafat	1901 /2000	39	36.1	37	47.8	60	63.2	46.4	36	39.3	47.1	52	48.9	532.8
	2021	11,8,8	8.2	80.8	34	62.6	30.4	36.2	2.6	15	103.4	22.6	66.5	581.1
Turnu Magurele	1901 /2000	68.6	32.3	87.4	26.6	103.6	49.8	88.6	39.8	57.2	88.3	83.8	0.1	726.1
	2021	89.4	3,4	88.2	49.6	86.4	46.7	16.2	29.7	4.8	99.4	33.6	40.5	587.9

7.8.1.3 Fog and atmospheric inversion phenomena

The fog observed along the entire Danube valley is mainly caused by temperature inversions (inverse temperature drop coefficient). Inversions occur most frequently in the months of November, December, January, and February.

7.8.1.4 Winds

The direction of the wind is influenced by the river valley, with a predominant frequency from west and east (20-25%) between Bechet and Turnu Magurele. The atmospheric calm has variable values that depend on the local relief and the orientation of the valley: 46.7% at Drobeta-Turnu Severin, 49.2% - Calafat, 54.7% **at Bechet**, 34.4% at Turnu Magurele, 38.2% at Giurgiu, 18.8% at Calarasi.

7.8.1.5 The freezing phenomenon

The layers of ice along the Bulgarian sector of the Danube River can be seen during the winter - from December to March.

On average, ice lasts for 91 days, and drift ice for 74 days. The average annual probability of occurrence of the phenomenon in the Bulgarian part of navigation is 82%.

The specific position of the hydroelectric power plant at Portile de Fier, which narrows the channel, has an essential influence on the formation of ice along the Lower Danube.

Free ice drifting in the Middle Danube is limited. Upstream of the Iron Gates, a new layer of ice forms in the local meteorological conditions and in the conditions of a reduced speed of the water current. In the spring, usually after 8 days after the ice begins to melt, the Danube River is completely free of ice.

7.8.2 The potential impact during the execution period of the works

Considering the specifics of the activities that will be carried out in order to rehabilitate and modernize the port infrastructure and the use of modern machinery, equipped with engines whose emissions will comply with the legislation in force, it is estimated that, during the execution of the works, there will not be a significant impact, in terms of the production of greenhouse gases (GHG), on climate change.

The potential impact of the activities during the execution of the works on the climate, depending on its characteristics, will be:

- nature of the impact: negative;
- type of impact: direct;
- impact reversibility: reversible;
- impact expansion: local, limited to the area of the work fronts in Bechet port;
- duration of the impact: temporary, during the execution of the works;
- probability of impact: certain;
- impact magnitude: low magnitude;
- cross-border nature of the impact: no cross-border impact will be generated on the climate in the project area, in the Republic of Bulgaria.

Considering that the impact on the climate during the execution of the works is not a significant one, it is not necessary to provide the project with measures to avoid, reduce or improve the significant impact on the climate.

The main measures to reduce the impact on the climate provided for in the project, during the execution of the works, are:

- the use for the construction activities of the proposed structures and the realization of dredging activities, of modern machinery, equipped with engines whose emissions will comply with the legislation in force (reduction of the production of greenhouse gases);

- the use of vehicles for the transport of materials / personnel with low emissions to reduce the production of greenhouse gases.

7.8.3 The potential impact during the operating period

During the operating period, the main impact on climate change is related to GHG emissions, as a result of the increase in commercial transport traffic on the Danube in the Bechet port area.

The European Commission promotes the transport system on inland waterways, considering that it is mainly characterized by reliability, energy efficiency and high transport capacity.

Transport on inland waterways is a competitive alternative to road and rail transport, being an "environmentally friendly" alternative in terms of energy consumption and the level of noise generated. In addition, transport on inland waterways ensures a high degree of safety, especially with regard to the transport of dangerous goods.

The potential impact of the activities during the period of operation of the works on the climate, depending on its characteristics, will be:

- nature of the impact: negative;
- type of impact: direct;
- impact reversibility: irreversible;
- expanding the impact: at the local level;
- duration of the impact: permanent, during the development of naval traffic on the Danube, in the port area;
- probability of impact: certain;
- impact magnitude: low magnitude;
- cross-border nature of the impact: no cross-border impact will be generated on the climate in the area of the Republic of Bulgaria.

Considering that the impact of the project on climate change will not be significant, it is not necessary to provide measures to avoid, reduce or improve the significant impact on climate change.

The main measures to reduce the impact on climate change foreseen in the project, during the period of operation of the works, are:

- the use for dredging activities, of modern dredgers, equipped with engines whose emissions will comply with the legislation in force, with a direct effect on reducing the production of greenhouse gases.

7.9 The impact of climate change on the project

7.9.1 The potential impact during the execution period of the works

The impact of climate change on the project is evaluated globally for the entire life of the project, both for the execution stage of the works and during the operation period.

Despite all the global efforts to reduce GHG emissions, the average global temperature will continue to rise in the next period, requiring urgent measures to adapt to the effects of climate change.

Just as economic sectors and human activities have proven to be negatively influenced by climate change, the inland waterways transport sector is influenced by global warming.

In the field of transport on inland waterways, the main effects of climate change are related to:

- the prolonged periods of drought in correlation with the increase in water demand and the increase in extreme temperatures - the drop in the level of the Danube;
- periods of flooding caused by torrential rains and long-lasting heavy precipitation - the rise in the level of the Danube.

The impact of climate change on water bodies consists of seasonal changes in runoff, the occurrence of low flow situations and water shortages with the possibility of becoming more severe, the occurrence of more abundant and more frequent precipitation, both locally and regionally, but which are not relevant for the frequency and magnitude of floods and changes regarding biodiversity and aquatic and terrestrial ecosystems.

Increasing the level of risk associated with climate change can lead to the following effects:

- affecting navigability on the Danube during periods of drought and low flows;
- damage to hydrotechnical structures during floods;
- the modification of the bottom of the river bed as a result of the significant transport of sediments during the floods;
- damage to banks and ecosystems by erosion processes during flood periods;
- the increase in maintenance costs, unforeseen.

The potential impact of climate change on the activities during the execution and operation of the works, depending on its characteristics, will be:

- nature of the impact: negative;
- type of impact : direct;
- impact reversibility : reversible;
- expanding the impact : on the common Romanian-Bulgarian sector of the Danube;
- impact duration : temporary, in periods with extreme weather conditions;
- probability of impact : likely;
- impact magnitude : low magnitude;
- cross-border nature of the impact : no cross-border impact will be generated on the project in the Republic of Bulgaria.

Considering that the impact of climate change on the project will not be significant, it is not necessary to provide the project with measures to avoid, reduce or improve the significant impact on climate change.

7.9.2 The potential impact on operating times

The main measures to reduce the impact of climate change on the project, provided in the project, during the period of operation of the works are:

- the careful phasing of the dredging works so that they do not overlap with periods conducive to the production of floods caused by torrential rains and long-lasting heavy precipitation;
- interruption of activities in case of extreme weather phenomena (storm, floods, fog, frost);
- the protection and assurance of the executed works, of the equipment and machinery in safe areas, in case of floods.

8 Provisions for environmental monitoring

In order to supervise the quality of the environmental factors and to monitor the activity, it is proposed that the General Contractor hire a specialized company, which will carry out a periodic monitoring of the performance of the activity from the point of view of environmental protection, respectively compliance with the requirements of the Environmental Agreement and the provisions imposed by the legislation in force.

Monitoring during construction:

- *Supervision of construction and operation activities from the point of view of compliance with the measures to limit the negative impact included in the environmental management plan.*
- *Air quality monitoring: 2 containers will be placed in the site area for the monthly monitoring of the concentrations of sedimentable powders. Quarterly, air quality measurements will be made. NO₂, SO₂, powders will be determined .*
- *Monthly monitoring of the quantities by type of waste generated and handed over for disposal/utilization*
- *Monthly monitoring of utility consumption (water, gas, fuel)*
- *Water quality monitoring*

Samples will be taken from the water body in the area where the objective is located, downstream of the work area. The physico-chemical parameters will be determined, with an emphasis on the variation of turbidity compared to the situation upstream of the project location.

The riparian population will be consulted and the complaints made by the residents of the neighborhood and on the access roads regarding noise, dust/powders in the air, unpleasant smells, vibrations (on the access streets) will be analyzed, possibly with measurements.

The monitoring activity will be presented in the form of a report to the local authority for environmental protection, the beneficiary and the builder in order to establish possible measures for the protection of environmental factors. The monitoring plan is periodically updated, in agreement with the local authority for environmental protection.

During the execution period, the monitoring of environmental factors (analyzed indicators, period and frequency) will be established by the local authority for environmental protection. The responsibility for monitoring is the builder's and will depend on the duration of the works, the applied technology and the execution schedule of the hydrotechnical construction works.

9 Link with other normative acts and/or plans/programs/strategies/planning documents

This project falls under Law no. 292/2018 on the assessment of the impact of certain public and private projects on the environment, *Annex 2, point 10 e) infrastructure projects - the construction of roads, ports and port facilities, including fishing ports, other than those provided in annex no . 1*

The project does not fall under the provisions of other national normative acts transposing the Community legislation (IPPC, SEVESO, COV, LCP). The project falls under the Water Framework Directive.

According to art. 48 of the Water Law no. 107/1996, art. 48, letter d), the works provided for in the design documentation can be classified as follows:

- The object "a" can fall under letter d), respectively: defence constructions against the destructive action of water: dams, defences and consolidation of banks and riverbeds, rectification and reprofiling of riverbeds, water channelling works, combating soil erosion, regularization of runoff on slopes, torrent corrections, drainage and sanitation, other defence works;
- The objects "b" and "c" can fall under letter b), respectively: water use works, with related constructions and installations: potable, industrial and irrigation water supplies, fisheries facilities, hydroelectric plants, hydromechanical uses, facilities for navigation, flotation and flotation, floating bridges, spa facilities, tourist or leisure facilities, other works of this kind.

The works provided for in the design documentation fall under art 54, for which a water management permit is required.

According to the attached Urban Planning Certificate and to obtain the environmental consent, the water management approval is needed. The technical documentation substantiating the request for the water management permit was drawn up and submitted to AN Apele Române - SGA Dolj, being analysed.

- 9.1 Justification of the inclusion of the project, as the case may be, in the provisions of other national normative acts transposing European Union legislation: Directive 2010/75/EU (IED) of the European Parliament and of the Council of November 24, 2010 on industrial emissions (prevention and integrated control of pollution), Directive 2012/18/EU of the European Parliament and of the Council of July 4, 2012 on the control of major accident hazards involving dangerous substances, amending and subsequently repealing the Directive 96/82/EC of the Council, Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community water policy, Air Framework Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe, Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and the repeal of certain directives, and others).**

The project for which environmental consent is requested does not fall under any European directive from the accession treaty, respectively from the directives mentioned above.

- 9.2 The plan/programme/strategy/programming/planning document from which the project is made shall be mentioned, with the indication of the normative act by which it was approved**

The analysed project is not included in local or county development plans/programs/strategies.

10 Works necessary for site organization

The arrangement, location, equipment of the construction site organization is not the subject of this project, but in this chapter, some clarifications/recommendations regarding the location of the construction site organization, the potential sources of pollution of the environmental factors as well as the necessary measures for the protection of the environmental factors during the operation of the construction site organization will be mentioned.

10.1 Necessary works for setting up the site organization

In order to carry out the previously described works, it may be necessary to build a production base, storage of materials and equipment, the location of which will be indicated by the beneficiary of the work, in the next design phase, in case the investment objective will obtain financing, and the works proposed in the documentation will be executed. In the next design phase, the project for organizing the execution of the works will be drawn up.

On the location of the site organization/work point there must be no construction that needs to be demolished, nor networks that need to be diverted or protected.

The site organization will be set up as close as possible to the centre of gravity of the basic works, so that the necessary transports to the objective make the investment more economical.

Depending on the equipment and the needs of the builder, the organization of the site/work site will include the arrangement of a platform, fences and gates, equipment with containers, connection to the existing utility networks in the area.

The platform will be able to be used for placing containers, storing materials, parking, and maintaining machinery. It is specified that it is preferable that the supply of the work point is done in accordance with the commissioning of the materials, so that the area temporarily occupied with the storage of the materials is as small as possible.

Access is provided up to the work by the existing communication ways, so it is not necessary to set up additional access ways.

Depending on the number of personnel who will serve the work, the site organization will be able to be equipped with a site manager's office container, equipped with work desks and annexes (wardrobe, shelves), equipped with heating and air conditioning installations, workers' locker room container, shower and sanitary unit container, storage container and mechanical workshop, mini container for security.

10.2 Description of the environmental impact of site organization works

During the execution of the works, some toxic and dangerous substances will be used, especially

petroleum products and thinners, whose storage, handling and use regime will comply with the provisions and regulations in force. The most used products are fuel used for machinery and transport vehicles (gasoline, diesel) and lubricants (oils, paraffin). These will be purchased from the profile stations, or, if it will be necessary to supply the work point with these substances, they will be stored in sealed tanks that do not allow exfiltration.

Construction materials (especially pulverulent) stored in uncovered warehouses can be washed away by rainwater, and the fine particles can be carried to the adjacent lands. That is why material deposits (aggregates, cement, binders, and other types of materials) will be closed or covered, so that there is no danger of scattering in the atmosphere and depositing on the ground, or of infiltration into the underground water or the Danube, through rainwater.

The potential impact of site organization can be generated by the following factors:

- noxious emissions in air, water, and waste generation
- landscape impact during the existence of the site organization (although the area is one with industrial specifics, being the port area where various activities are carried out).

Noxious emissions into the atmospheric air will fall within the maximum limits allowed in Order 462/1993, for water discharges, appropriate collection and discharge systems will be provided so that the quality limits established by G.D. no. 188/2002 with subsequent amendments and additions, and the noise and vibration level will fall within the limits allowed by STAS 10009/2017. The impact of the machinery's activity on the air and water is reduced in the case of strict compliance with the environmental protection rules (as mentioned in the previous chapters 6.1.1 and 6.1.2 respectively of this memorandum).

The builder has the obligation to not affect the natural environment in the respective area through the activity he carries out on the construction site. The staff will be trained to comply with cleanliness within the construction site organization and hygiene standards.

10.3 Sources of pollutants and installations for the retention, evacuation, dispersion of pollutants in the environment during the operation of the construction site

The sources of pollutants during the site organization are represented by:

- the movement of vehicles and machinery;
- the activities carried out within the construction site organization;
- meteoric waters falling on the work platforms of the site organization.

If there is no possibility of connecting the sanitary groups within the site organization to the sewer network in the port area, ecological toilets will be provided for the collection of wastewaters. For the collection of wastewaters from the site, companies specialized in this regard will be called upon. Depending on the number of people who will use the water for domestic purposes, a system with one or more emptiable basins will be adopted, which will be emptied periodically, by the care of the contractor, based on a contract concluded with an authorized operator.

It is also recommended to provide a system of the type of perimeter gutters for the collection of liquid losses and rainwater that drains and washes the site organization platform.

If this does not exist, the platform of the site organization must be designed so that the meteoric water is also collected through a system of trenches or reinforced gutters, in the harbour rainwater drainage network.

10.4 Equipment and measures for emission control

In order to prevent and/or reduce the pollution of environmental factors during the operation of the site organization, it is necessary to consider the following measures:

- the storage of dangerous products/substances used for the execution of the works will be carried out in accordance with the legal provisions in force, in spaces with restricted access, covered, on an impermeable surface, provided with a collection system for accidental leaks
- periodic checks of machinery and means of transport regarding the level of carbon monoxide and the concentrations of emissions in the exhaust gases. They will be put into operation only after fixing any defects
- equipment with a low noise level will be used as much as possible
- the vehicles will be equipped with a catalyst and will be kept in good working condition, with up-to-date inspections.

In order to control pollutant emissions into the environment, throughout the execution period of the works, the following will be monitored:

- the operating condition of transport equipment and machines to reduce the risk of pollution, on a daily basis;
- the amounts of waste by type generated and handed over to authorized operators by the constructor - monthly;
- concentrations of dust emissions in the atmosphere - monthly;
- the quantities of water used and discharged - monthly.

It will not be accepted to wash machines or dump trucks in the site, as the water from these washes has an alkaline character, being potentially contaminated with petroleum products (oils, fuels). In order to eliminate the danger of oil contamination of the soil and, by implication, the water of the Danube, it is necessary to properly maintain the machines and perform oil changes from the machines in special stations for such operations. As I mentioned before, fuels and chemical products will be stored in sealed cells.

In order to eliminate the risk of surface water pollution, the work teams will have, at the end of the program, cleaning the workplace, collecting and storing household waste in bins.

The works carried out as part of the site organization will not negatively affect other works or existing networks in the area. After the completion of the basic works, the site organization will be decommissioned, the land returning to its original use.

11 Site restoration works

11.1 The works proposed for the restoration of the site upon completion of the investment, in case of accidents and/or upon termination of the activity

Considering the specifics of the works that are the subject of this presentation memo, which aim to:

- o modernization of the Danube mooring front, including:
 - the execution of a vertical quay, for which two variants were analyzed, namely: a quay made of weight blocks (recommended variant 1) or of sheet pile (alternative variant 2), with the quota of the crest at + 7.80 m compared to the local low water, with the cumulative length $L = 650$ ml, the resulting surface $S = 10,918$ sqm.

Compared to the current situation, where the existing mooring front, with a length of 650 m, is divided into 6 operating berths, in the feasibility study is proposed to divide the mooring front into 5 berths, each having the recommended length for a river berth, of 130 m, resulting in the same length of the mooring front, of 650 m (5 berths x 130 m/berth). The 5 berths will be numbered, from upstream to downstream, with the numbers 2, 3, 4, 5 and 6. Berth 1 will be a new easement berth, which will be executed in the floating berth solution, upstream of the operating front, for the relocation of the existing pontoons, having $L = 75$ ml;

- concrete platforms behind the new quay (new berths 2 – 6), in width approx. 20 m, with the possibility of placing the portico cranes Bocsa type of 16 tf x 32 m, for which beams and running rails have been provided, or of other machines established by common agreement with the economic operators that operate in the port and with the designer's approval, $S = 17,222$ sqm;
- the execution of a floating easement berth, with a length of 75 m, according to the previous specifications.
- o rehabilitation of the RO-RO ramp and access roads, including:
 - rehabilitation of the ferry crossing ramp, $S = 4,086$ sqm;
 - rehabilitation and expansion directing mole crossing point with the ferry, $S = 588$ sqm;
 - rehabilitation of precinct roads and platforms in the area of the border crossing point, $S = 12,410$ sq m.
- o related works, including:
 - dredging/excavations for the execution of the vertical quay, the easement berth and rehabilitation of the RO-RO ramp;
 - rehabilitation of the navigation signalling system for the entire work.

- o providing utilities in the port, including:
 - the water supply of the port through its connection to the drinking water network of the city of Bechet, in order to ensure the water necessary for port activity and resupplying ships. Execution of the connection from the main network to the internal supply network, L = 2500 m);
 - domestic wastewater collection network from the port, including its treatment;
 - rainwater collection network, including its treatment;
 - fire extinguishing installation;
 - the electricity supply of the port, by connecting to the LEA existing in the area, at the entrance to the port, in order to ensure the electricity consumption of the port operators, the charging of electric cars, as well as the resupply of electricity to the ships stationed in the berths. A new PT and a connection network in length of approx. 1,500 m);
 - perimeter lighting system and port premises;
 - video surveillance and access control system;
 - demand analysis and the possibility of equipping the port with a fuelling point for alternative fuels.

no site restoration works will be necessary, the works being carried out in an already built area.

11.2 Aspects related to the prevention and response to accidental pollution cases

The equipment and means of transport present on the site will have good technical condition and up-to-date technical checks.

In the case of malfunctions followed by losses of petroleum products, use material to collect the petroleum product (absorbent, etc.) and repair the malfunction.

11.3 Aspects related to the closure/decommissioning/demolition of the facility

Is not the case.

11.4 Ways to restore the initial state/rehabilitation for the future use of the land

After the execution of the works, the waste and material remains will be removed by the Contractor, the waste being eliminated / removed by authorized operators so that the area that constitutes the location of the proposed project will be free of materials and/or waste.

12 Annexes

The following drawings are attached:

- Location plan in the area (scale 1: 20000)
- Situation plan and systematization (scale 1: 1000)
- Transverse profile P1 (scale 1:100)

13 For projects falling under the provisions of art. 28 of the Government Emergency Ordinance no. 57/2007 regarding the regime of natural protected areas, conservation of natural habitats, flora and fauna, approved with amendments and additions by Law no. 49/2011, with subsequent amendments and additions

13.1 Brief description of the project and distance from the Natura 2000 protected natural areas, geographic coordinates (Stereo 70) of the project location

The purpose of this project is to carry out the rehabilitation and modernization of the infrastructure

The works consist of:

- o modernization of the Danube mooring front, including:
 - the execution of a vertical quay, for which two variants were analysed, namely: a quay made of weight blocks (recommended variant 1) or of metal piles (alternative variant 2),

with the height of the crest at +7.80 m compared to the local elevation, with the cumulative length $L = 650$ ml, the resulting surface $S = 10,918$ sqm.

Compared to the current situation, where the existing mooring front, with a length of 650 m, is divided into 6 operating berths, in the feasibility study it is proposed to divide the mooring front into 5 berths, each having the recommended length for a river berth, of 130 m, resulting in the same length of the mooring front, of 650 m (5 berths x 130 m/berth). The 5 berths will be numbered, from upstream to downstream, with the numbers 2, 3, 4, 5 and 6. Berth 1 will be a new easement berth, which will be executed in the floating berth solution, upstream of the operating front, for the relocation of the existing pontoons, having $L = 75$ ml;

- concrete platforms behind the new quay (new berths 2 – 6), in width approx. 20 m, with the possibility of placing the portico cranes Bocsa type of 16 tf x 32 m, for which beams and running rails have been provided, or of other machines established by common agreement with the economic operators that operate in the port and with the designer's approval, $S = 17,222$ sqm;
- the execution of a floating easement berth, with a length of 75 m, according to the previous specifications.
- rehabilitation of the RO-RO ramp and access roads, including:
 - rehabilitation of the ferry crossing ramp, $S = 4,086$ sqm;
 - rehabilitation and expansion directing mole crossing point with the ferry, $S = 588$ sqm;
 - rehabilitation of precinct roads and platforms in the area of the border crossing point, $S = 12,410$ sqm.
- related works, including:
 - dredging/excavations for the execution of the vertical quay, the easement berth and rehabilitation of the RO-RO ramp;
 - rehabilitation of the navigation signalling system for the entire work.
- providing utilities in the port, including:
 - water supply of the port through its connection to the drinking water network of the city of Bechet, in order to ensure the water necessary for port activity and resupplying ships. Execution of the connection from the main network to the internal supply network, $L = 2500$ ml;
 - domestic wastewater collection network from the port, including its treatment;
 - rainwater collection network, including its treatment;
 - fire extinguishing installation;
 - electricity supply of the port, by connecting to the LEA existing in the area, at the entrance to the port, in order to ensure the electricity consumption of the port operators, the charging of electric cars, as well as the resupply of electricity to the ships stationed in the berths. A new PT and a connection network in length of approx. 1,500 ml;
 - perimeter lighting system and port premises;
 - video surveillance and access control system;
 - demand analysis and the possibility of equipping the port with a fuelling point for alternative fuels.

The STEREO 70 coordinates of the location are:

x	y
415812.512	250439.136
415822.214	250415.691
416467.376	250400.330
416499.714	250380.118

The project is located in the Natura 2000 sites **ROSCI0 045 Jiului Corridor** and **ROSPA0 023 Confluence Jiu - Danube** , overlapped as territory (fig. 10).

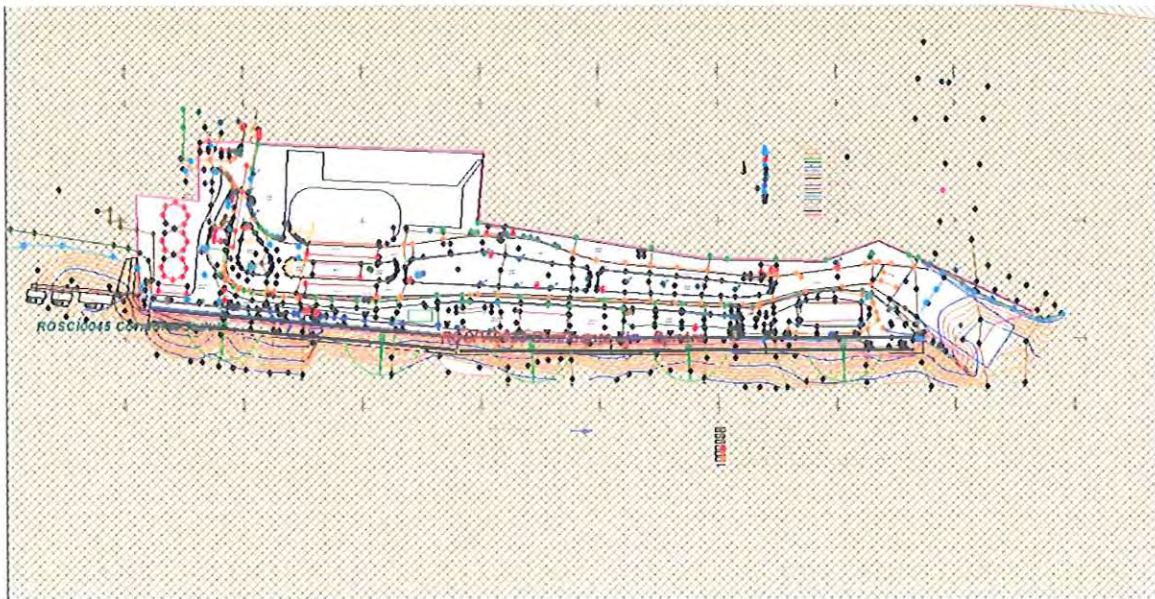
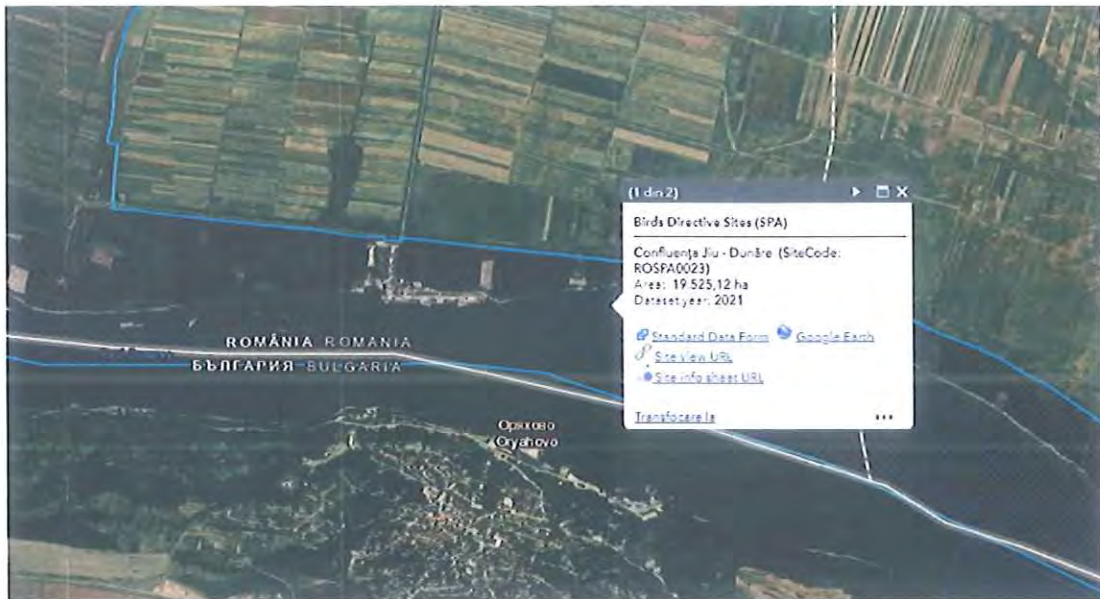


Figure no. 4 – Location of works in relation to **ROSCI0045 Jiului Corridor** and **ROSPA0023 Confluence Jiu - Danube**

13.2 Name, code and other descriptive details of the Natura 2000 protected natural areas intersected by the project

13.2.1 **ROSCI0 045 Jiului Corridor**

ROSCI0045 Jiului Corridor it was designated by OM no. 1964 of December 13, 2007, with subsequent amendments and additions, and has an area of 27,109 ha. It includes the **ROSPA0 023 Avifaunistic Special Protection Area**. Both sites belong to the continental biogeographical region (100 %) (fig. 11).

From an administrative point of view, the **ROSCI0045** site is located in:

- Dolj county on the administrative territory of the localities of Almaj (4%), Bechet (27%), Bistreț (42%), Brădești (6%), Braloeștița (14%), Bratovoești (23%), Breasta (5%), Bucovăț (41%), Călărași (10%), Calopăr (21%), Cârna (79%), Coțofenii din Dos (10%), Coțofenii din Față (13%), Craiova (3%), Dăbuleni (7%), Dobrești (47%), Drănic (17%), Filiași (7%), Gângiova

(28%), Ghindeni (4%), Gighera (39%), Goicea (<1%), Ișalnița (<1%), Măceșu de Jos (41%), Malu Mare (5%), Mârșani (2%), Ostroveni (63%), Podari (10%), Rojiște (4%), Sadova (29%), Scaești (4%), Segarcea (<1%), Teasc (18%), Tuglui (76%), Tuglui (14%), Valea Stanciului (19%), Vârvoru de Jos (14%)

- Olt county on the administrative territory of Ianca locality (4%)
- Mehedinți county on the administrative territory of Butoiești locality (3%)
- Gorj county on the administrative territory of the localities of Aninoasa (23%), Bălteni (23%), Bălteni (33%), Bărbăți (9%), Borăscu (<1%), Brănești (35%), Dănești (6%), Drăguțești (14%), Ionești (13%), Negomir (<1%), Plopșoru (54%), Săulești (<1%), Tântăreni (9%), Țicleni (24%), Turburea (3%), Turceni (28%), Urdari (99%), Urdari (33%).

The main types of habitats identified in the area are: sandy beaches - 0.26%, rivers, lakes - 11.54 %, swamps, peatlands - 9.30 %, crops (arable land) - 18.33 %, pastures - 9.48%, other arable land - 1.72 %, deciduous forests - 45.78 %, vineyards and orchards - 0.26%, other land artificial lands (localities, mines) – 0.46 %, forest habitats (forests in transition) – 2.73 %.

The coordinates of *ROSCI0045 Jiului Corridor* are: 23.0031055 longitude and 43.0044805 latitude.

Ongoing research reveals that the area belongs to the priority territories for the conservation of its continental biodiversity with a very high value. Thus, although it occupies only 0.5% of the country's forest area and 0.6% of the national area, it still concentrates 9 (91E0*, 91F0, 91I0*, 91M0, 91Y0, 9130, 91V0, 9170, 92A0), respectively 32% of the 28 types of natural forest habitats protected by Romanian and EU legislation, of which 2 (91E0*, 91I0*), respectively 33%, of the 6 priority protected ones, arranged in 4, respectively 36%, of the 11 phytoclimatic floors of the country (The hilly floor of oaks – sessile oaks, wild oak, Hungarian oak, mixtures of these - and hills roads; The hilly floor of oaks – and with wild oak, Hungarian oak, common oak, mixtures of these s; Forest plain); 56 (26 %) of the 212 forest resort types identified in Romania; 22 (44 %) of the 50 forest formations, with 97 (32 %) of the 306 forest types highlighted in the country. The Jiului Valley is one of the main trans-Balkan bird migration routes (the Central European-Bulgarian route) followed by an impressive number of birds. Along with the sedentary ones, 135 (33%) of the 406 avifaunistic species reported in Romania were identified in the Jiului Corridor, of which 114 (84%) are protected by Romanian and EU laws. The cantonment of some relevant contingents from the country's living inventory, of which many rare sub-Mediterranean elements, others endemic, part protected, gives the territory a remarkable specificity, highlighted by: - the concentration of plant associations of great biohistorical value that reflect the interference of southern thermophilic elements with central European ones; - the preservation of unaltered relict fragments of archetypal forest structures located on the edge of biogeographic areas or even disjoint (beech islands from Dâlga, Țuglui, Bucovăț) or anthropically insularized (brumăriu oak from Branișteea Bistrețului Forest, etc.); - housing sustainable populations of animal and plant species whose conservation requires, according to the law, the designation of special conservation areas, areas of special avifaunistic protection and strict protection, etc.

The sustainable exploitation of this exceptional natural heritage justifies and requires:

- the use of the natural forest as a management benchmark for practical forestry close to nature - the conservation of wildlife, relict natural habitats and a local reservoir of valuable genes;
- responsible management of the entire local natural heritage, in general and of the forest, in particular;
- the maintenance of some wild, rare and unusual landscape units, with a great power of seduction;
- the formalization of a natural park that, through its multiple functions, will provide the basis for the reconversion of the local workforce and jobs in an area of great national and international interest;
- ensuring a natural space for ecological education and training - promoting ecotourism, a source of non-polluting currency, by perpetuating traditional local activities;

- optimizing the decision, protecting the environment, protecting life and health and increasing the quality of life.

The territory, located along the middle and lower reaches of the Jiu, includes one of the rarest and most representative relict samples of a rapidly disappearing little-altered European meadow.

Located between 23 ° 30'02" and 24 ° 14'05" east longitude and between 43 ° 42'01" and 44 ° 54'55" north latitude, with a length in the NNW-SSE direction of about 129 km, this area crosses 4, respectively 27% of the 15 ecoregions (Getic Plateau, Găvanu-Burdea Plains, Romanian Plain Forest - Steppe, Danube Meadow) of the continental biogeographical region in Romania, on a level difference of 355 m, arranged between 50 and 405 m alt. Of the total area of 147,540 ha, 34,979 ha (24 %) belong to the forest fund, of which the forests own 33,543 ha (23 %) and concentrate a complex of predominantly natural ecosystems, with a considerable diversity and a local abundance 764 – 5,000 times higher than the average values specific to the Romanian forest, which gives it an exceptional biogeographic personality.

The Site of Community Importance *ROSCI0045 Jiului Corridor* has been designated for the conservation of:

- o 18 types of habitats :
 - 1530* - Pannonian salt marshes and steppes ;
 - 92A0 - Galleries of *Salix alba* and *Populus alba*;
 - 91F0 - Mixed riparian forests of *Quercus robur*, *Ulmus laevis* and *Ulmus minor*, *Fraxinus excelsior* or *Fraxinus angustifolia*, along large rivers (*Ulmion minoris*);
 - 9110* - Euro-Siberian steppe forests with *Quercus* spp.;
 - 3130 - Oligotrophic to mesotrophic stagnant waters, with *Littorelletea uniflorae* and/or *Isoëto-Nanojuncetea* vegetation;
 - 3140 – Oligo-mesotrophic hard waters with benthic vegetation of *Chara* spp;
 - 3150 – Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* vegetation;
 - 6120* – Xeric and calciphile meadows on sands;
 - 6430 - Grasslands of tall hydrophilic lowland and montane to alpine grasses;
 - 3260 - Watercourses from plain to mountain level, with *Ranunculion fluitantis* and *Callitriche-Batrachion* vegetation;
 - 3270 - Rivers with muddy banks with vegetation of *Chenopodion rubri* and *Bidention*);
 - 6440 – Alluvial meadows of the river valleys of *Cnidion dubii*;
 - 6510 - Low altitude hay (*Alopecurus pratensis*, *Sanguisorba officinalis*);
 - 9130 – *Asperulo-Fagetum* type beech forests
 - 9170 – *Galio-Carpinetum* hornbeam oak forests
 - 91M0 - Balkan-Pannonian forests of sessile oak and common oak.
- o **2 mammal species** (1335 *Spermophilus citellus* – ground squirrel; 1355 *Lutra lutra* - Otter)
- o **3 species of amphibians and reptiles** (1188 *Bombina bombina* - European fire-bellied toad; 1166 *Triturus cristatus* - Crested Triturus; 1220 *Emys orbicularis* - European pond turtle)
- o **12 species of fish** (4125 *Alosa immaculata* - Pontic shad; 1130 *Aspius aspius* – Asp; 6963 *Cobitis taenia complex*; 1157 *Gymnocephalus schraetzer* – Schraetzer; 1145 *Misgurnus fossilis* – Weatherfish; 2522 *Pelecus cultratus* – Ziege; 5339 *Rhodeus amarus* – European bitterling; 5329 *Romanogobio vladykovi* ; 534 7 *Sabanejewia bulgarica* ; 1160 *Zingel streber* ; 1159 *Zingel zinge l*);
- o **5 species of invertebrates** (4013 *Carabus hungaricus*, 4045 *Coenagrion ornatum*, 1042 *Leucorrhinia pectoralis*, 1083 *Lucanus cervus*, 4045 *Pholidoptera transsylvanica*)
- o **2 plant species** (1898 *Eleocharis carniolica*, 1428 *Marsilea quadrifolia*)

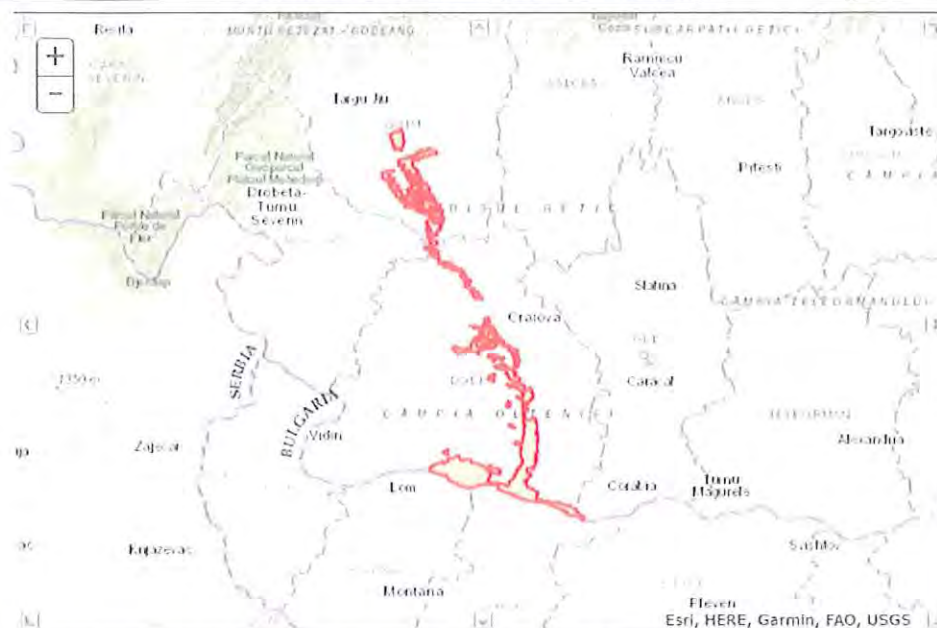


Figure no. 5- Geographical location of ROSCI0045 Jiuului Corridor

13.2.2 ROSPA0023 Confluence Jiu - Danube

The special avifaunistic protection area *ROSPA0023 Jiu-Danube confluence*, with an area of 19,530.20 ha, falls entirely within the continental area and covers the counties

- Olt: Ianca (4%)
- Dolj: Bechet (27%), Bratovoesti (23%), Calopăr (16%), Călărași (10%), Dăbuleni (7%), Dobrești (12%), Drânic (13%), Gângiova (28%), Ghindeni (4%), Gighera (26%), Malu Mare (5%), Mârșani (2%), Ostroveni (62%), Podari (3%), Rojiște (3%), Sadova (12%), Segarcea (<1%), Teasc (15%), Țuglui (9%), Valea Stanciului (6%).

The coordinates of *ROSPA0023 Confluence Jiu - Danube* are: 23.865008 longitude and 43.918472 latitude.

Special Avifaunistic Protection Area *ROSPA0023 The Jiu - Danube Confluence* hosts important populations of some protected bird species. According to the data, we have the following categories:

- a) number of species from Annex 1 of the Birds Directive: 34
- b) number of other migratory species, listed in the annexes of the Convention on Migratory Species (Bonn): 77
- c) number of globally endangered species: 5 The site is important for the nesting populations of the following species: *Crex crex Haliaeetus albicilla Ciconia ciconia Burhinus oediconemus*.

The site is important during the migration period for the species: *Tringa glareola Pelecanus crispus Platalea leucorodia Plecadis falcinellus*.

The site is important for wintering for the following species: *Phalacrocorax pygmaeus*.

During the migration period, the site hosts more than 20,000 specimens of marsh birds, possibly being nominated as a RAMSAR site.

Jiuului Meadow presents itself as a rich territory in terms of habitats, here meeting meadow and sedge forests, orchards, meadows, agricultural land, wetlands - ponds and canals and numerous anthropogenic habitats, all concentrated on this surface, so that interpenetrating, and their delimitation sometimes becomes difficult. The presence of waterfowl species, which have found living and breeding conditions here, can be noted.



Figure no. 6– Geographical location of ROSPA0023 Confluence Jiu – Danube

13.3 The presence and flocks of avifaunistic species in the project area

The sites *ROSCI0045 Jiului Corridor* and *ROSPA0023 Confluenta Jiu - Danube* have an integrated management plan, and the data in this report is based on information from the FS, the management plan as well as field data.

13.3.1 *ROSCI0045 Jiului Corridor*

According to the Standard Form of the *ROSCI0045 Corridor Jiului site*, out of the 18 habitats, 4 are of priority interest. Due to the arrangement along the middle and lower course of the Jiu, covering various altitudinal steps, the types of habitats are conditioned by these elements, indicating their heterogeneity, from aquatic and meadow habitats, to natural forest habitats, meadows, hayfields and thickets.

The Bechet port area, which is the site of the works that are the subject of this memorandum, is an anthropized, industrial area, being circulated by vehicles and heavy tonnage machines, ships. Several operators operate in the port area, especially grain ships are loaded. The site is concreted, being prepared for the activities that take place here, from the transit of vehicles to the activities of loading grain into ships.

92A0 - Galleries of *Salix alba* and *Populus alba* (according to the figure below) can be found in the port area.

92A0 *Salix alba* and *Populus alba* gallery-forests

- 1) Meadow forests in the Mediterranean and Black Sea basins dominated by *Salix alba*, *S. fragilis* or other related willow species (44.141). Mediterranean and Central-Eurasian multilayered meadow forests with *Populus* spp., *Ulmus* spp., *Salix* spp., *Alnus* spp., *Acer* spp., *Tamarix* spp., *Quercus robur*, *Q. pedunculiflora*, *Fraxinus angustifolia*, *F. pallisiae*, vines. Large poplar species usually dominate the crest by their height; they may be absent or rare in certain plant groups, which are then dominated by species from the genera listed above.

- 2) Plants: *Salix alba*, *Populus alba*.
- 3) HDR R4406.

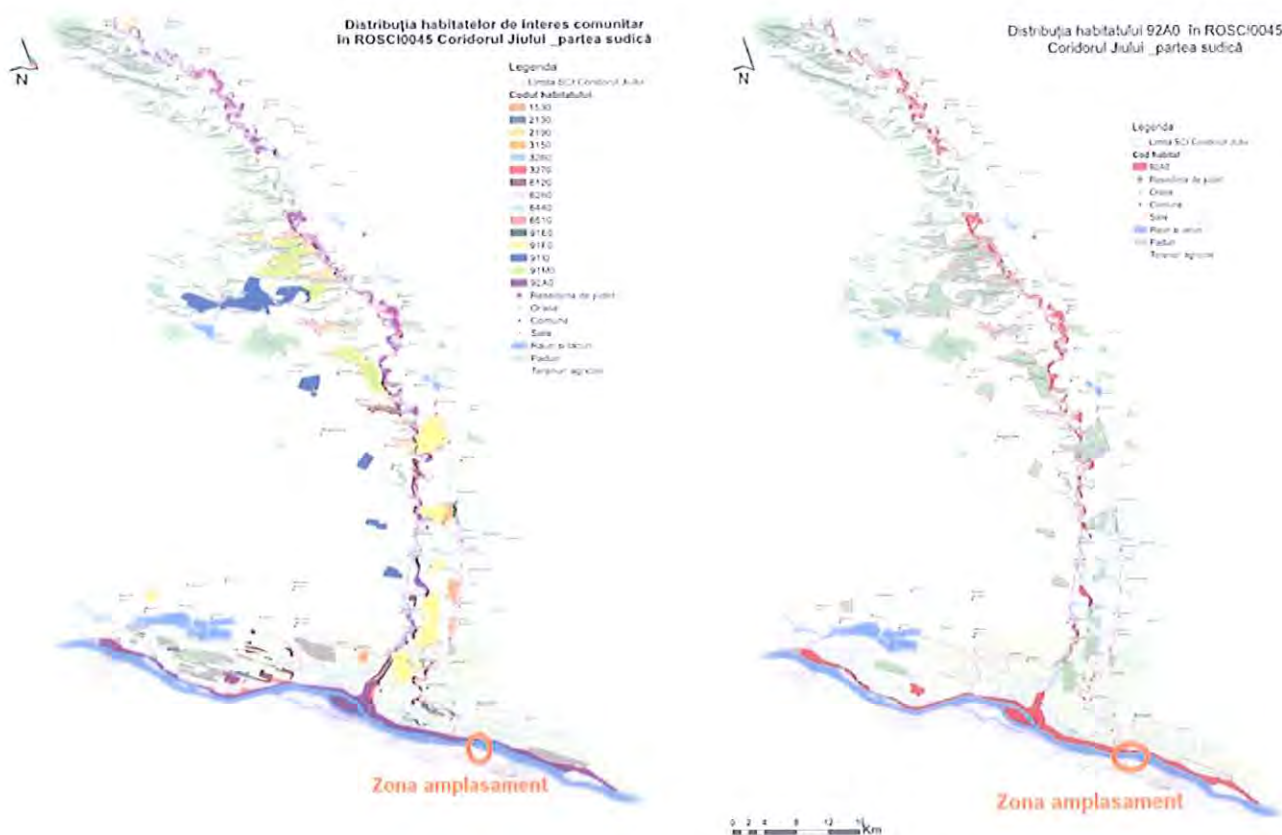


Figure no. 7– Location of the project and habitat 92A0

Written explanation from the picture:

Distribuția habitatelor de interes comunitar în ROSCI0045 Coridorul Jiului _ partea sudică = Distribution of habitats of community interest in ROSCI0045 Corridorul Jiului _ southern part

Distribuția habitatelor 92A0 în ROSCI0045 Coridorul Jiului _ partea sudică = Distribution of habitats 92A0 in ROSCI0045 Jiu River Corridor _ southern part

Zona amplasament = Location area

As can be seen, the port area - the area where the works that are the subject of this memorandum will be carried out, occupies a small area compared to the area of the site (0.12% of the habitat area). Moreover, the port area is concreted, man-made, with constructions and intensively trafficked, the works will be carried out in the already occupied area without occupying additional land surfaces.

The fish species for which the site was designated can be found in the waters of the Danube, but in the bordering area of the port, being the area where specific port activities are carried out (ships in transit, ships that can stay in the port being unloaded, etc.) these fish species can be found occasionally, being in transit, looking for food and not for reproduction.

According to the distribution maps from the Management Plan of ROSCI0045, the following species can be found in the project area: *Alosa immaculata*, *Aspius aspius*, *Zingel zingel*, *Gymnocephalus schraetzer*, *Rhodeus amarus*, *Zingel zingel*, *Pelecus cultratus*.

As for the species of reptiles and amphibians, as stated previously, being the area with port activities (anthropogenic area), the habitat is not favorable for these species. The two species of mammals mentioned in the FS (*Lutra lutra* and *Spermophilus citellus*), can be found in search of food, they can only be found in search of food, the habitat not being suitable for reproduction.

1352 *Lutra lutra* L. – Freshwater otter

The otter is widespread from Europe to central Asia and northern Africa. Here, it is located in the Delta and next to the mountain rivers rich in trout. The biotope of the otter is the wooded shores of flowing and stagnant waters, be they mountain or lowland. Although it can be seen during the day, the otter is a crepuscular and nocturnal animal. It lives alone or at most in family groups. Its solitary character derives from the fact that it needs a large living space to carry out all its activities.



The otter feeds on fish, frogs, crustaceans and other aquatic invertebrates, but can also eat insects, waterfowl and even small mammals. Otters do not have a stable mating period, being able to reproduce throughout the year. Otters prefer the wooded shores of lakes, marshes, rivers and any watercourses, from the lowlands to the mountains and even in the coastal areas near the Delta.

The presence of the species is an indicator of clean waters, which are sensitive to pollution (Goriup, 2008). As a rule, it does not build a gallery, but occupies a gallery of foxholes or badger, or natural depressions under the shores, tree roots on the bank, which it deepens, possibly with an exit below the water level and a wider nook above it, provided with an opening for ventilation (Ionescu et al, 2013).

Resident species, widespread in the site. The species occupies 100% of the optimal habitats within the site: the entire course of the Jiu plus the Dead Jiu and the irrigation canals, the entire course of the Danube and all lakes and canals in the floodplain of the river.

In the project area, the occasional presence, when feeding, of some individuals from the site's population is estimated.

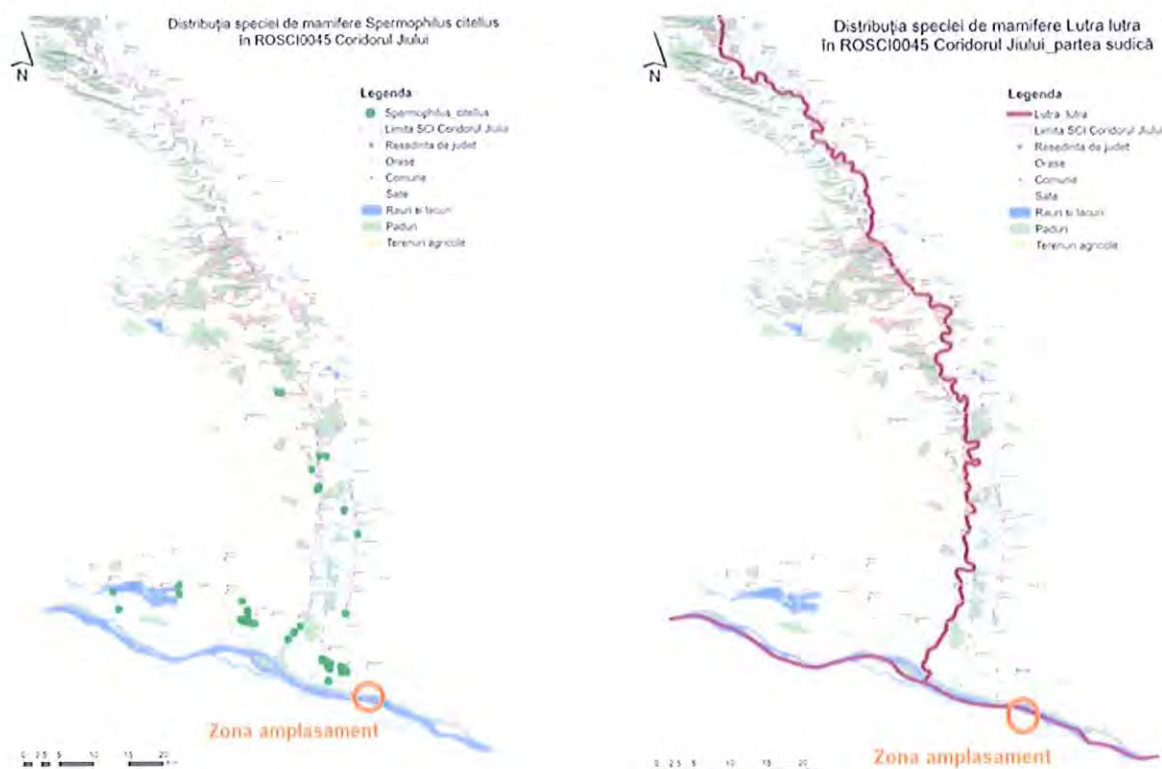


Figure no. 8- Location of mammal species and project works

1355 *Spermophilus citellus* - Ground squirrel



It is a small species with a body length of about 20 cm. The body is elongated, roughly round head with small ears, with short limbs, adapted to living in galleries dug into the ground. Body weight is variable, depending on available food sources. At maturity it reaches a weight of 240-340 grams, and during hibernation it can even double its weight. The colour of the fur is yellowish on the dorsal part of the body and white on the ventral side, neck and limbs.

There are white-yellow hairs around the eyes. The limbs are short and strong, finished with sharp claws, adapted to life in underground galleries. The forelimbs have 4 toes and the hind limbs have 5 toes. The tail is a third of the length of the body and has longer hairs, giving it a bushy appearance. At the base of the tail there are 3 perianal papillae that secrete an odorant substance with a role in selecting partners for mating and delimiting the individual territory. On the ventral side, it shows 5 pairs of mothers arranged as follows: two pairs in the thoracic area, one pair in the abdominal area, and two pairs between the hind limbs (Baltag et al. The specific habitat is the steppe, with low and very low grassy vegetation, in general, surfaces with well-drained soil (pastures, meadows, marshes, etc.). It avoids the forest and areas with high vegetation. For galleries, it looks for slopes, pastures, dykes, gentle slopes. It has also been reported in cultivated land, especially with perennial plants. Their presence depends on the maintenance of a short vegetation (grazing).

It lives in colonies, each individual having its own gallery. Colony is a territorially defined group, which is spatially separated from other groups that populate the same region; such groups are able to exchange individuals among themselves within the local population. The galleries have a varied architecture, depending on factors such as: population density, age of the specimens, soil structure, relief shape, rainfall. Galleries can have one or more openings whose colour can be branched. According to the way of use, two types of galleries are distinguished: temporary and permanent. In the temporary galleries they temporarily shelter and feed. In the permanent galleries, the females give birth and raise their young, gather supplies, and hibernate. Temporary galleries are simple galleries or galleries with a room at their end, with a single opening, located at a depth of 20-40 cm and with a different length, from 30-40 cm to 3-6 m. Permanent galleries have a more complicated structure, with one vertical exit and one oblique or with 3-4 vertical exits and are usually located at a depth of 80 cm (Danilă, 1982). Towards the end of the active period, the ground squirrel prepares for hibernation by gathering nutritional reserves in the form of fats; builds its hibernation bed using dry grass and covers the gallery entrances with dry vegetation or soil (Pop & Homei, 1973). The periods of activity and hibernation are closely related to the temperature factor. At an air temperature below 15°C, the woodpecker no longer leaves the shelter, going into staggered hibernation, depending on external factors such as temperature, but also on physiological factors such as the sex or age of the individuals. Waking up and entering the activity also occurs staggered, (2014).

Mating takes place between March and April, immediately after coming out of hibernation (when temperatures exceed 10-15°C) and lasts about 3 weeks (Nemath et al., 2009). After a gestation of 23-28 days, the cubs appear in June, their number being between 2-13 individuals. Most males are not capable of reproduction in the first season after hibernation, only approx. 18% of them having optimal androgen levels when they surface.

Chickadees are vulnerable in the period immediately following the exit from hibernation, the birth of young, etc. They can be affected by various human activities (agricultural work, restoration of dykes), extreme cold - frosty winters, heavy rains (which can cause the galleries to flood).

Resident species, widespread in the site. The highest densities are found between Craiova and Bechet on the high banks guarding the Jiul River and on the sand dunes in the Danube meadow.

Lower densities are also found in the low Jiu meadow especially along dykes, roads and agricultural land which is in the safe zone, i.e. non-flooding.

In the project area, the occasional presence, when feeding, of some individuals from the site's population is estimated.

13.3.2 ROSPA023 Confluence Jiu - Danube

The site hosts important populations of some protected species, being also important for the nesting populations of the species *Crex crex*, *Haliaeetus albicilla*, *Ciconia ciconia*, *Burhinus oediconemus*.

According to the avifaunistic species distribution maps from the ROSPA0023 site management plan, none of the species mentioned in the FS can be found in the project area.

Among the species listed in the standard form, 2 avifaunistic species may be present in the perimeter of the works (in the passage, in search of food): A122 *Crex crex*, A075 *Haliaeetus albicilla*. Table 6 presents the relevant ecological information for these species, their presence and numbers in the project area.

Table no. 1- Bird species of conservation interest, present in the project area

Code	Scientific name	Type	Size		United mass	Category	Site			
			Min	MAX			Pop	Conservation	Isolation	overall
A122	<i>Crex crex</i>	R	100	500	p		c	B	c	B
A075	<i>Haliaeetus albicilla</i>	R	1	2	p		c	B	c	B

A122 *Crex crex* – Corn crane

Hatchery species, which can also be observed during the breeding and passage season. The species is present pointwise in the wet meadows of the site ROSPA0023 Jiu-Danube Confluence, with higher abundance in its southern part, in the area of the confluence of the Jiu with the Danube, to the west and southwest of Ostroveni as well as to the west and southwest of Bechet. It was also observed between the towns of Stanciului Valley and Padea.

In the project area, the occasional presence of some individuals from the species population is estimated, when feeding or passing through.

A075 *Haliaeetus albicilla* – White - tailed eagle

Passage and nesting species that uses the site during the breeding season

ROSPA0023 for feeding, having a rather rare presence. The species has been observed in the south site, in the area of the confluence of the Jiu with the Danube, as well as southwest of Bechet. No nests were located. The species was observed several times in the southern part of Lake Bistreț 1 as well as on the sand dunes near the town of Cârna.

In the project area, the occasional presence of some individuals from the species population is estimated, when feeding or passing through.

13.4 The connection of the project with the management of the protected natural area of community interest

ROSCI0045 Jiului Corridor and *ROSPA0023 Jiu – Danube Confluence* have an integrated management plan.

According to the analysis in this document, the project is important through its contribution to the sustainable development of the area, with all the socio-economic consequences, which arise from the works proposed to be carried out regarding the modernization of the Danube mooring front, the rehabilitation of the RO-RO ramp and the access roads, dredging, excavations for the execution of the vertical quay at the mooring front, the rehabilitation of the insurance system with utilities, especially water supply and the sewage network.

According to the data from the Management Plan of the two sites located in the area of interest of the project, the general objectives are as follows:

❖ **General objective no. 1:**

Maintaining or improving the conservation status identified for the habitats and species of community interest for which Natura 2000 sites have been designated;

❖ **General objective no. 2:**

Promoting a sustainable development of localities located on the territory or in the vicinity of the sites by preserving traditional activities and stimulating tourist activities;

❖ **General objective no. 3:**

Increasing the level of public information regarding the site's natural values and activities with a negative impact on them;

❖ **General objective no. 4:**

Ensuring an efficient and adaptable management of the sites by supporting a functional management structure during the implementation of the management plan.

Thus, the analysed project falls within the general objective no. 4 of PM.

13.5 The potential impact of the project on Natura 2000 sites and on species and habitats in protected areas of community interest

The project refers to the rehabilitation and redevelopment of the hydrotechnical works at the existing berths as well as the rehabilitation of the infrastructure of the border crossing point, to cope with the development of traffic in the port of Bechet.

The main proposed works are the following:

⚡ **Modernization of the mooring front at the Danube**, including:

- the execution of a vertical quay, for which two variants were analyzed, namely: a quay made of weight blocks (recommended variant 1) or of sheet pile (alternative variant 2), with the quota of the crest at + 7.80 m compared to the local low water, with the cumulative length $L = 650$ ml, the resulting surface $S = 10,918$ sqm.
- Compared to the current situation, where the existing mooring front, with a length of 650 m, is divided into 6 operating berths, in the feasibility study is proposed to divide the mooring front into 5 berths, each having the recommended length for a river berth, of 130 m, resulting in the same length of the mooring front, of 650 m (5 berths x 130 m/berth). The 5 berths will be numbered, from upstream to downstream, with the numbers 2, 3, 4, 5 and 6. Berth 1 will be a new easement berth, which will be executed in the floating berth solution, upstream of the operating front, for the relocation of the existing pontoons, having $L = 75$ ml;
- concrete platforms behind the new quay (new berths 2 – 6), in width approx. 20 m, with the possibility of placing the portico cranes Bocsa type of 16 tf x 32 m, for which beams and running rails have been provided, or of other machines established by common agreement with the economic operators that operate in the port and with the designer's approval, $S = 17,222$ sqm;
- the execution of a floating easement berth, with a length of 75 m, according to the previous specifications.

⚡ **Rehabilitation of RO-RO ramp and access roads**, including:

- rehabilitation of the ferry crossing ramp, $S = 4,086$ sqm;
- rehabilitation and expansion directing mole crossing point with the ferry, $S = 588$ sqm;

- rehabilitation of precinct roads and platforms in the area of the border crossing point, S = 12,410 sqm.

✚ **Related works**, including:

- dredging/excavations for the execution of the vertical quay, the easement berth and rehabilitation of the RO-RO ramp;
- rehabilitation of the navigation signalling system for the entire work.

✚ **Providing utilities in the port**, including :

- the water supply of the port through its connection to the drinking water network of the city of Bechet, in order to ensure the water necessary for port activity and resupplying ships. Execution of the connection from the main network to the internal supply network, L = 2500 ml;
- domestic wastewater collection network from the port, including its treatment;
- rainwater collection network, including its treatment;
- fire extinguishing installation;
- electricity supply of the port, by connecting to the LEA existing in the area, at the entrance to the port, in order to ensure the electricity consumption of the port operators, the charging of electric cars, as well as the resupply of electricity to the ships stationed in the berths. A new PT and a connection network in length of approx. 1,500 ml;
- perimeter lighting system and port premises;
- video surveillance and access control system;
- demand analysis and the possibility of equipping the port with a fueling point for alternative fuels.

Even if they will be carried out on the surface of the Natura 2000 sites, these works will not permanently occupy additional areas of land, especially in the area of the banks of the Danube River in the area of the Bechet port (as mentioned in the previous chapters where the works that are the subject of this project are described in detail).

For the location of the site organization, the material warehouses, the parking lots for the machines and vehicles used during the execution of the works, the surfaces in the port area will be used (concreted, humanized areas, currently used for port activities).

The described works will require dredging works in the quay area (for arranging the vertical quay of the mooring front), works that will be carried out between May and March, outside the reproduction period of the fish species that can be found in the port area.

The works in the project present a risk of short-term insignificant negative influence on the water quality of the Danube River, on aquatic species but also on aquatic habitats through changes only during the execution period. Thus, this negative impact has an indirect influence on the food chain and will remove the birds and mammals that feed here. Excavation works have the potential to disrupt aquatic ecosystems by temporarily altering (only during the work) aquatic habitats, leading to the temporary loss of vegetation. Also, during the execution of the works, the accidental losses of hydrocarbons from the machines used for the execution of the works can lead to changes in the quality of the waters in the area of execution of the works.

Aquatic organisms can also be directly affected by the quality of the body of water, especially in the section where the dredging / development of the vertical quay is carried out. During the period of execution of the works, the upheaval of the bed has as a result a negative impact on the life stages of the fish in the area of execution of the works. The effects consist in reducing the quality of breeding, feeding and sheltering habitats. Reducing water clarity and visibility reduces the ability of aquatic organisms to find food, reproduce and escape predators, eliminates potential food sources such as: insects and aquatic invertebrates, either through loss of habitats or by clogging them.

Also, during the execution period of the excavation/dredging works, the turbidity of the water will increase, with the direct and immediate result of decreasing the penetration of sunlight into the water, to the detriment of photodependent organisms. Another direct effect of the

excavation/dredging works consists in increasing the concentration of suspended matter, reducing the light intensity in the water, thus affecting the photosynthesis processes specific to algae and other aquatic organisms found in the body of water (Danube River).

As for the more mobile swimming organisms, the effects are reduced due to their ability to avoid the area of increased turbidity. Another form of impact on the aquatic fauna is manifested by its withdrawal to less favourable areas, but it is estimated that this impact will be local and only during the execution period of the works.

From the analysed data regarding the habitats and faunal species listed in the standard forms of the analysed Natura 2000 sites, *ROSCI0045 Jiului Corridor* and *ROSPA0023 Confluence Jiu - Danube*, as was mentioned in the previous sub-chapters, in the project area 2 mammal species can occasionally be found: *1355 Spermophilus citellus*, *1352 Lutra lutra* and 2 avifaunistic species: *A122 Cre x crex* and *A075 Haliaeetus albicilla*.

Analysing the potential negative impact of the project on the Natura 2000 sites, the following aspects were found, correlated with the quay parameters:

- ✓ The specifics of the works in the project do not directly or indirectly affect the functionality of the habitats needed by faunal species, because they refer to works in the anthropized area of the Bechet port, without disturbing the areas with vegetation (areas with habitats) that represent places of rest, feeding and reproduction typical of Natura 2000 sites.
- ✓ The integrity of the habitats necessary for fauna species will be maintained and will continue to provide the necessary territory for shelter, reproduction and feeding for species of conservation interest, without affecting the size of the populations. Likewise, there will be no functional fragmentation of the habitats of faunal populations.
- ✓ Permanent surfaces from the surface of the Natura 2000 sites will not be occupied. The surfaces occupied by the site organization are insignificant compared to the size of the sites and in addition, the surfaces in the port area (humanized surfaces) will be occupied (during the execution of the works) without affecting other areas outside the port area.

The works to be carried out present a temporary insignificant negative impact on Natura 2000 biodiversity, during the excavation/dredging, rehabilitation and redevelopment of Bechet port (as described in detail in the previous chapters). In the long term the impact will be positive.

During construction and operation, the proposed works will not exert current or future negative pressures on Natura 2000 sites and will not impede specific conservation measures, both on and off site. The individuals of the species identified as possibly present in the area of the location of the objective and/or in the vicinity, especially during the warm season, are in small numbers compared to the dimensions of the site, their populations being dispersed throughout the site area. A few specimens may rarely appear in the project area.

In order to maintain the state of conservation of faunal species, the following **preventive measures are proposed:**

1. Prohibition of the capture and destruction of faunal species by the personnel performing the works;
2. It is recommended to carry out excavation / dredging works outside the fish reproduction period in the months of March - May, in order to avoid the destruction of possible spawning in the site area
3. It is recommended to respect the break times between dredging operations to allow the water to calm down and the suspended matter to settle
4. the dredged material excess in places other than those of stability together with the local authorities for environmental protection is prohibited;
5. Avoiding the accidental leakage of fuel from machines into the body of water (Danube river);
6. The use of silent machines and means of transport, in order to reduce the noise due to the construction activity that drives away faunal populations, as well as the equipping with efficient systems to minimize and retain pollutants in the atmosphere;

7. It is recommended to use existing access roads to reduce the area affected by the works.

14 For projects that are carried out on or related to water

The project that is the subject of this presentation memorandum is located in the perimeter south of the city of Bechet, between km 678-681, UAT Bechet, Dolj county, on the left bank of the Danube, in the area of the port of Bechet.

- water course / name and cadastral code: Port Bechet is located in the river basin of the Danube river, cadastral code XIV-1.000.00.00.0, on the left bank of the Danube.
- body of water (surface and/or underground): the Danube river.

14.1 Classification of surface waters

The area of the works falls into the category of surface waters - code *RO12 Danube - Cazane River*. In this category - water sector located in the plain area, with a geology b - calcareous with a lithological structure of sand, gravel, boulders with a slope of 0.07, altitude 100 - 200 m and a basin area of 570,900 - 574,850 kmp.

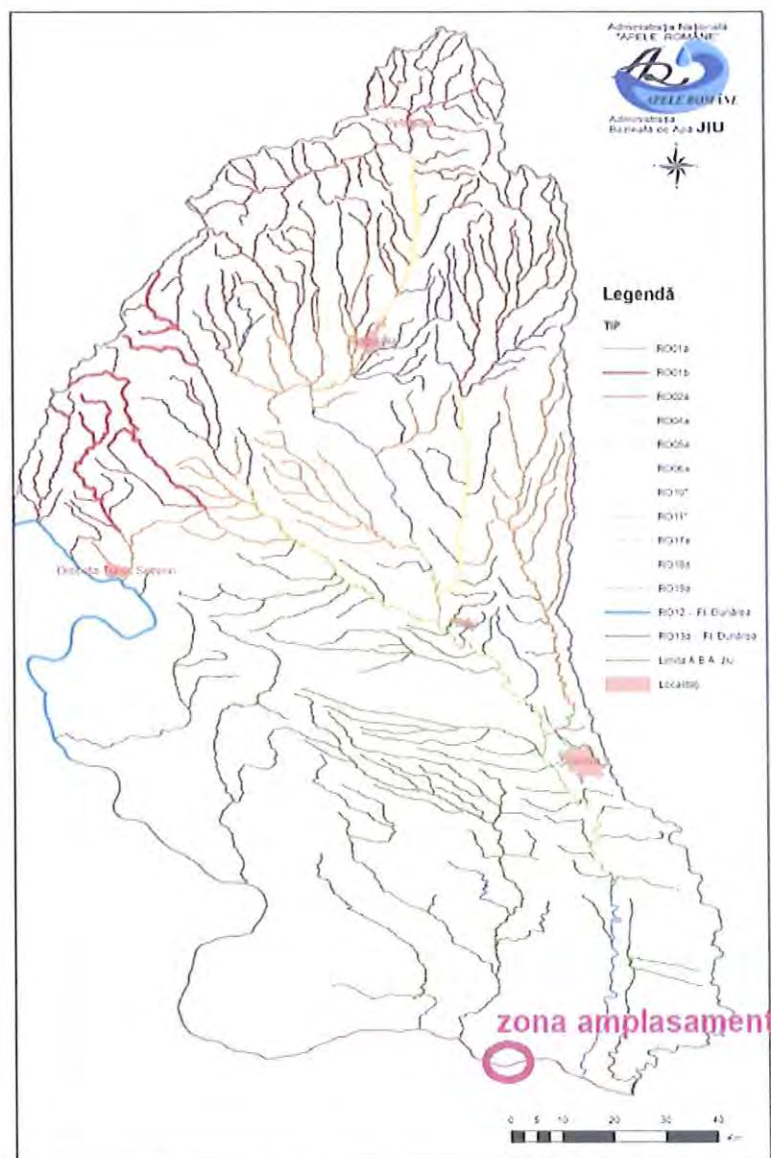


Figure no. 9 – Typology of water courses

I.2 Reference conditions of coastal waters

Is not the case.

I.3 Delimitation of surface water bodies

In the period 2013 - 2015, the redelimitation of water bodies was carried out as a result of the change in the typology of water bodies (for example the grouping of typologies RO17 with RO18 - typologies specific to non-permanent water bodies), the results of research studies developed by specialized institutes "Study for the completion of environmental / management objectives for rivers with non-permanent flow", based on the Atlas of Drainage of Rivers in Romania, Draft 2014 version, as well as new data and information available, obtained from the field, in the period 2011-2015.

Considering the above, at the level of the second Management Plan of the Jiu hydrographic basin, a total number of 169 bodies of surface water were identified, of which:

- 147 bodies of water - rivers, among them a number of
 - 35 water bodies are represented by non-permanent water bodies,
 - 112 are permanent bodies of water;
- 14 bodies of water - natural lakes;
- 7 bodies of water - reservoirs;
- 1 artificial body of water .

The maximum length of the water bodies is 237.60 km and the minimum length is 1 km. The average length of water bodies delimited in the Jiu hydrographic space is 29.80 km.

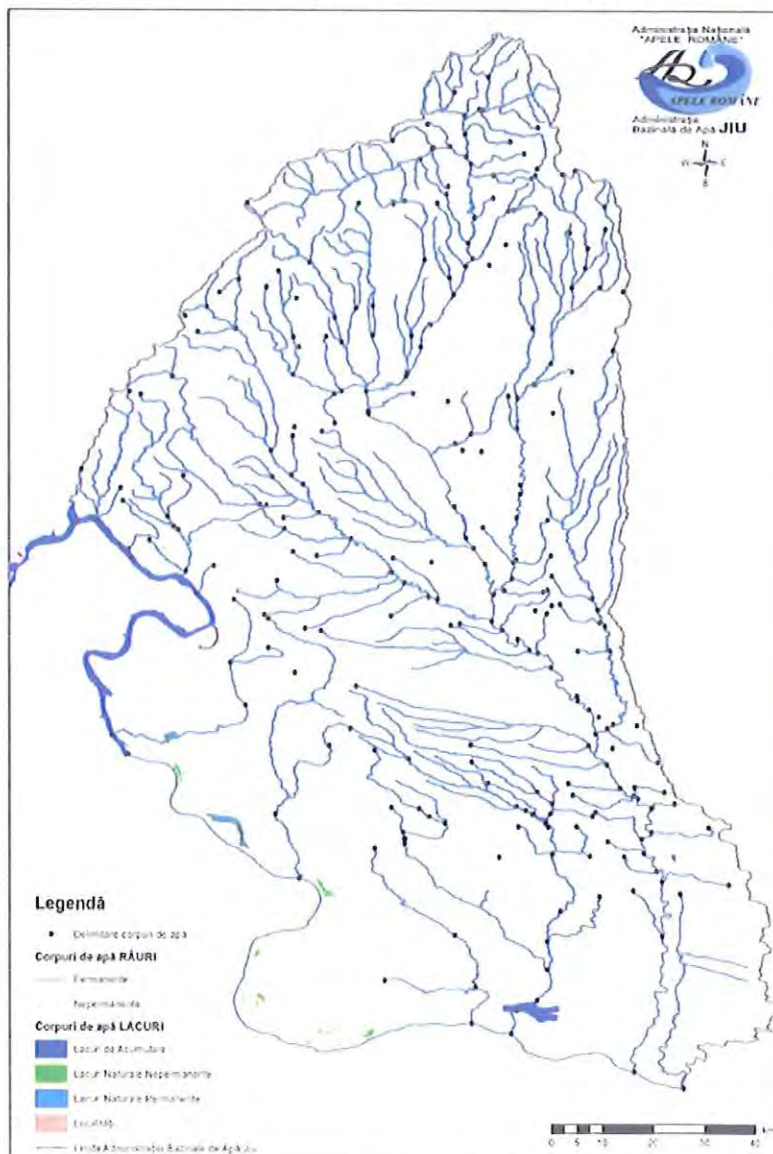


Figure no. 10 – Surface water bodies

Written explanation from the picture:

Legendă = Legend

Delimitare corpuri de apă = Delimitation of bodies of water

Corpuri de apă RĂURI = Water bodies RIVERS

Permanente = Permanent

Nepermanente = Non-permanent

Corpuri de apă LACURI = Bodies of water LAKES

Lacuri de acumulare = Accumulation lakes

Lacuri naturale nepermanente = Non-permanent natural lakes

Lacuri naturale permanente = Permanent natural lakes

Localități = Localities

Lista Administrației Bazinelor de Apă Jiu = Jiu Watershed Administration List

I.4 Underground water bodies

Delimitation of underground water bodies was done only for areas where there are significant aquifers in terms of importance for water supply, namely exploitable flows greater than 10 m³ /day.

In the rest of the area, even if there are local conditions for the accumulation of water underground, they do not constitute water bodies, according to the provisions of the Framework Directive 2000/60/EC. The geological criterion intervenes not only through the age of the water-bearing deposits, but also through the petrographic, structural characteristics, or their capacity and properties to store water.

Porous and karst-fissural water bodies were thus delimited and characterized. The hydrodynamic criterion acts especially in relation to the expansion of water bodies. Thus, bodies of phreatic water extend only to the limit of the hydrographic basin, which corresponds to their balance line, while deep bodies can also extend outside the basin. The state of the water body, both quantitative and chemical, was the central objective in the process of delimitation, evaluation and characterization of an underground water body.

Groundwater bodies that develop in the border area and continue on the territory of neighboring countries are defined as transboundary.

In the territory administered by ABA Jiu, a number of 8 underground water bodies were identified, delimited and described.

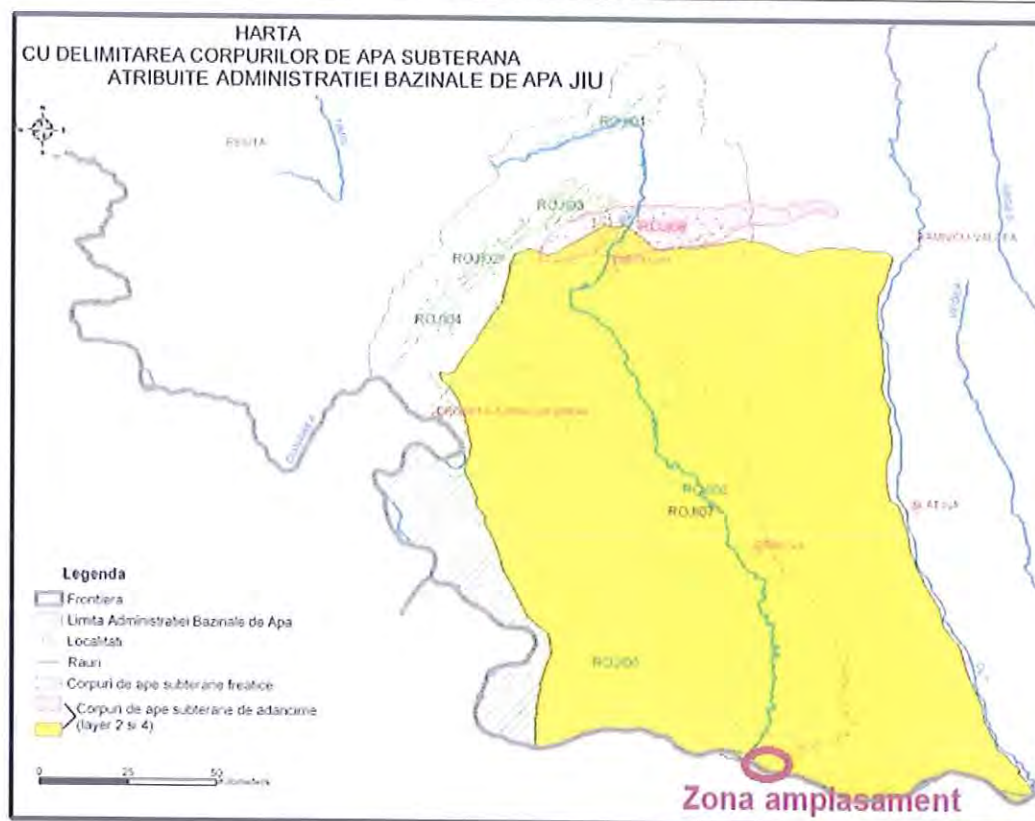


Figure no. 11 – Delimitation of underground water bodies

Written explanation from the picture:

Harta cu delimitarea corpurilor de apă subterană atribuite administrația bazinelor de apă Jiu = Map with the delimitation of underground water bodies assigned to the administration of water basins Jiu

Legendă = Legend

Lista Administrației Bazinelor de Apă = List of Water Basin Administration

Localități = Localities

Râuri = Rivers

Corpuri de ape subterane featicice = Bodies of underground phreatic water

Corpuri de ape de adâncime (layer 2 și 4) = Deep water bodies (layer 2 and 4)

Zona amplasament = Location area

In the project area, the underground water bodies that are found are ROJ106 – Meadow and terraces of the Danube (Calafat).

The body has an area of 4896 km², it is type P - porous, it is not a body under pressure, the water is used for purposes PO - water supply of the population, I - industry, Z - animal husbandry and P - fish farming. The global protection degree is PM - average, the quality status is B - good.

The underground water body is interdependent with the surface water body of the Danube river.

1.5 Quantitative and qualitative monitoring of water bodies

14.1.1 Characterization of the state of surface water bodies

In the case of rivers, the ecological potential characterization was based on the analysis of benthic invertebrates, phytobenthos, phytoplankton, fish fauna, general physico-chemical elements and specific pollutants.

It was found at the bh Jiu level that out of 3 heavily modified water bodies - rivers and an artificial water body, 25% reach good ecological potential.

The evaluation of the chemical status of highly modified water bodies was carried out following the same methodology as in the case of natural water bodies, having the same environmental objectives.

At the b.h. Jiu level, all 3 heavily modified water bodies (rivers) reach good chemical status.

1.5.1 Characterization of the condition of underground water bodies

The quality of the underground water in the ROJ106 underground water body was monitored through boreholes belonging to the National Hydrogeological Network, springs, as well as boreholes for the control of groundwater pollution located in the area of the Băilești industrial platform.

From the analysis based on monitoring data from 2012 and 2013, threshold values for NH4 and phosphates were exceeded, as well as for the quality standard for NO3. Due to the fact that exceedances of more than 20% of the surface of the underground water body in nitrates (31%) are found, the chemical status of this water body is considered to be poor.

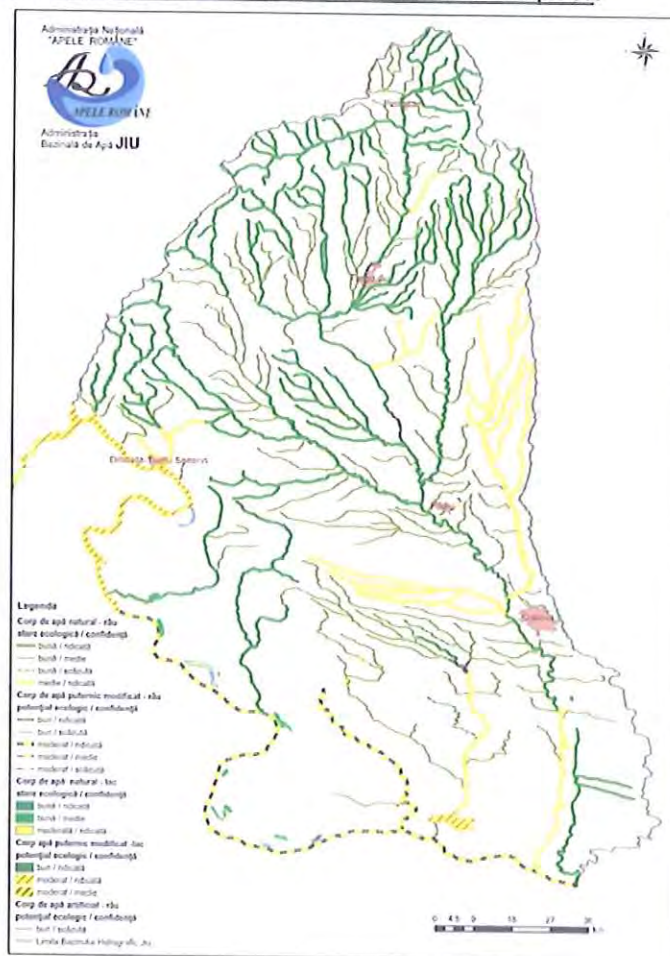


Figure no. 12 – The ecological state / ecological potential of surface water bodies

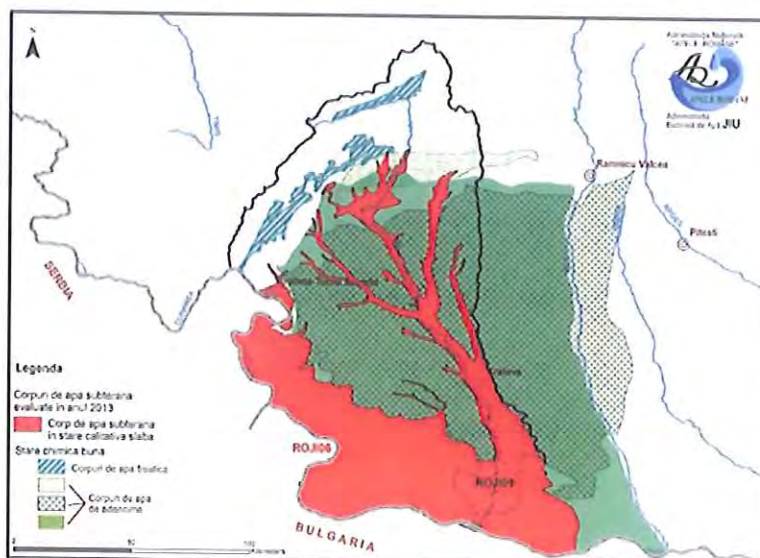


Figure no. 13 – The chemical state of the underground water bodies

I.6 Environmental objectives

The classification into quality classes was made in accordance with Order 161/2006, regarding the classification of surface water quality in order to establish the ecological state of water bodies, Biological, chemical and physico-chemical quality elements and standards for establishing the ecological state of surface waters, annex C, Chemical and physico-chemical quality elements and standards in water.

Physico-chemical analyzes were carried out in the accredited laboratories of ABA Jiu.

Following the evaluations resulting from this monitoring, measures will be decided to improve water quality.

II. Criteria provided in annex no. 3

The criteria that were taken into account in the impact analysis detailed in this memorandum are (according to Annex 3 to Law 292/2018):

- Project features:
 - o the size and conception of the entire project
 - o cumulation with other existing projects
 - o pollution and other negative effects
- Project location
 - o The absorption capacity of the natural environment, paying special attention to the following areas: coastal and marine environment, protected natural areas of national, community, international interest, Natura 2000 sites
- The types and characteristics of the potential impact
 - o the nature of the impact
 - o the intensity and complexity of the impact
 - o probability of impact
 - o expected duration, frequency and reversibility of the impact
 - o the possibility of effective impact reduction
 - o cumulative impact of other existing projects.

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The undersigned Crăciun Persida, authorized interpreter and translator for English and Italian under the 18443 Permit issued by the Romanian Ministry of Justice on December 13, 2006, certifies the accuracy of the translations from Romanian into English, that the text presented has been completely translated, without omissions, and that by translating the document it was not distorted its summary and meaning.

