ENVIRONMENTAL IMPACT ASSESSMENT

PROJECT:

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ENVIRONMENTAL IMPACT ASSESSMENT REPORT

CHAPTER 7 – DESCRIPTION OF FORECASTING METHODS USED FOR THE IDENTIFICATION AND ASSESSMENT OF SIGNIFICANT EFFECTS ON THE ENVIRONMENT

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7.1 IDENTIFICATION AND QUANTIFICATION OF EFFECTS

The approach to describing and evaluating the effects generated by project activities on environmental factors is based on the relationship:

Where:

Cause – represents the works/activities (interventions) proposed within the project

Effect – refers to the changes caused to the physical and biological environment as a direct consequence of the project

Impact – represents the changes caused by the effects of the project at the level of environmental sensitive receptors.

According to the environmental impact assessment methodology for certain public and private projects, the project's characteristics and the effects that could be generated by them on the environment must be considered for the impact assessment.

The following approach was used to identify the effects produced by the project activities:

- Identification of all interventions resulting from the project, in all stages of its development, with the specific works/ activities;
- Analysis of all interventions and identification of the potentially affected receiving environment;
- Identifying the effects on physical, biological and socio -economic factors.

Regarding the quantification of the effects, it was based on the following sources:

- The information provided by the project owner, respectively:
    - information and technical characteristics of the project;
    - studies carried out between 2018 and 2023 to characterize the state of the environment in the project location area (use of public sources of information, review of specialized literature, primary investigations carried out by competent experts);
    - inventory and calculation of resulting emissions according to AP42 and CORINAIR;
    - software modelling regarding atmospheric emissions resulting from operations phase;
    - underwater noise modelling during the construction phase of offshore installations;

- noise modelling during NGMS operation;
- modelling of the sediment plume during the construction stage of offshore installations;
- environmental risk modelling related to the discharge into the sea of effluents resulting from operation (DREAM model);
- spatial modelling and direction of hydrocarbon pollution in accidental situations;
- assessment of risk scenarios of major accidents and hazards.

- Estimates provided by international oil and gas industry best practice guidelines;
- Estimates based on the experience of similar projects in the international and national oil and gas industry;
- Estimates based on experts - the opinion of the team of elaborating experts.

The establishment of the area of direct influence of the project resulted from the spatial extent of the direct effects according to the modelling listed in the list above, with reference to the areas where the highest levels of: noise and vibrations, atmospheric pollutants, effluents discharged at the depth of 90m into the sea; turbidity caused by sediment disturbance, accidental pollution, etc.

7.2 ESTIMATION OF THE TYPE OF IMPACT

The impacts that the project may have on the environment were analysed in relation to the criteria established in the table below:

Table 7.1Criteria for establishing the type of impact

The nature of the impact	
Negative	Impacts that involve a negative (adverse) change in initial conditions or introduce a new, undesirable factor
Positive	Impacts that result in an improvement of the current state.
Both	An impact that involves a negative (adverse) but at the same time a positive change in the initial conditions.
The type of impact	
Direct	The impact resulting from a direct interaction between the projects forecasted activities and the recipient.
Indirect or secondary	Impacts that do not result directly from project activities, but that manifest themselves in indirect ways.
Cumulative	Impacts resulting from changes generated by past, present or reasonably anticipated human activities that may be amplified by the implementation of the project.

Reversibility of impact	
Reversible	The impact on the receiver (environmental factor), whose effects cease to be evident after the completion of a project, and the affected environmental factor may return to its original state.
Irreversible	The impact on receptors (environmental factors) whose effects persist after the completion of a project, and the environmental factor cannot return to its initial state.
Expanding impact	
Local	The impacts are limited to the area where the activity is carried out and do not exceed a radius of up to 5 km.
Regional	Impacts that affect receivers within a radius of approximately 5-40 km from the source and have a regional extent.
National	The impact affects the environmental factors at the national level and of the Romanian EEZ, the Black Sea
Cross-border	The impact is manifested outside the national borders and outside the Romanian EEZ, the Black Sea
Duration of impact	
Temporary	The impact manifests itself over a short period of time and possibly intermittently/ occasionally.
Short term	Impact manifested during the entire period of operation of the project, ceases when the activity is completed. The impact has a short duration if it is eliminated by appropriate measures or the environmental factor is restored to original state.
Long term	The impact manifests itself over a long period of time (**over the entire operating period, estimated at more than 25 years**), but ends with the closure of the project. Also, the impact has a long duration even if it is intermittent, but it manifests itself throughout the life of the project.
Permanent	The impact manifests itself in all phases of the project and remains active even after the closure of the project. In other words, it causes permanent changes to biotic and abiotic resources or receptors.
Impact intensity	
No impact	It has no impact on the receiver in the affected area.
Low	When the environmental factor has a value or/ and a reduced sensitivity. The impact can be predicted but is usually at the limit of detection and does not lead to permanent changes in receptor structures and functions. In other words, the effects of the impact manifestation fall within the receiver's natural limits of variability, without the need to restore the receiver.
Medium	When the environmental factor has an average value and/ or sensitivity. Receptor structures and functions are affected but basic structure/ function is not affected. In other words, the effects of impact manifestation exceed the receiver's natural limits of variability and the recovery time is medium (<2 years)

Impact intensity	
High	When the environmental factor has a high value and/ or sensitivity (e.g. Natura 2000 sites). Receptor structures and functions are completely affected. Loss of structures/ functions is visible. In other words, the effects of impact manifestation exceed the natural limits of variability, causing irreversible or reversible disturbances over long periods of time (>2 years).
Probability of impact	
Low	impact probability <25%;
Medium	impact probability 25-75%;
High	impact probability >75%.

Redundancies were eliminated in the evaluation process, namely by grouping the effects that lead to the appearance of the same form of impact, as well as grouping the causes that lead to the same effect, on the same area/ location and in the same time period.

7.3 ASSESSMENT OF SIGNIFICANCE OF IMPACTS

The assessment of the significance of the impact was carried out using the multi-criteria analysis method, given by the correlation of the 2 components: **the magnitude of the predictable effect** and **the sensitivity of the receptors' environment.**

The magnitude and sensitivity have been established for each environmental factor/ sensitive receptor potentially affected by the project, respectively: water (including the descriptors established in the Marine Environment Strategy Framework Directive), air, climate, soil, sediments, biodiversity, population and health human, material goods, cultural heritage, landscape.

Thus, the specific criteria for the 2 components are presented in the sections dedicated to each environmental factor, described in **Chapter 6.**

The impact classes used are as follows:

- **No impact or insignificant** – when the impact does not generate quantifiable effects;
- **Minor impact** – falls within the standards and/or is not associated with low or medium value receivers;
- **Moderate impact** – the impact that falls within acceptable support limits of the receiving environment;
- **Major impact** – impact that exceeds the acceptable support limits of the receiving environment.

The assessment of the level of significance was made based on the ratio between the magnitude and the sensitivity of the receiver, according to the following matrix, presented in the table below:

Table 7.2Matrix of overall impact significance

	Small magnitude	Medium magnitude	Large magnitude
Low value/ sensitivity	**Minor**	**Minor**	**Moderate**
Average value/ sensitivity	**Minor**	**Moderate**	**Major**
High value / sensitivity	**Moderate**	**Moderate**	**Major**
Impact significance			
Without or insignificant impact	The impact does not generate quantifiable (visible or measurable) effects in the natural state of the environment.		
Minor significance	The impact is of small magnitude, falls within the standards and/ or is associated with receptors of low or medium value/ sensitivity. Medium-magnitude impact affecting low-value receptors		
Moderate significance	Impact that falls within the limits, low magnitude affecting high value receptors, or medium magnitude affecting medium value receptors, or high magnitude affecting low value receptors.		
Major significance	Impact that exceeds limits and standards and is of high magnitude affecting medium value receptors or medium magnitude affecting high value receptors.		

7.4 CUMULATIVE IMPACT ASSESSMENT

To assess the cumulative impact, the following steps were taken:

- Defining the scope of the cumulative impact assessment, which consists of the following steps:
  - Defining the area of influence;
  - Identification of existing and/ or proposed projects located in the area of influence that could generate, in combination with the proposed project, a cumulative impact;
- Identifying the type and potential cumulative routes of transmission;
- Cumulative impact assessment.

7.5 DESCRIPTION OF THE RESIDUAL IMPACT

The residual impact results after the adoption and implementation of measures to avoid, prevent and reduce a significant negative impact.

The residual impact assessment was carried out on the basis of the impact significance assessment matrix, using the same magnitude and sensitivity classes described for each environmental factor in the corresponding sections of Chapter 6**.**