

1. Introduction

This section presents the environmental component of the Technical, Economic and Environmental Feasibility Study – EVTEA for the lease area **STS08A**, intended for the handling and storage of liquid bulk (especially petroleum products), located in the Port of Santos Complex.

This preliminary environmental study aims at supporting an evaluation of relevant environmental aspects associated with the development of port leasing activities in the Alamoia region. The study evaluation bases its estimates in conclusions using the following sources: studies previously carried out for this area, the current occupation situation of the area and its surroundings, environmental licensing situation of the port/leasing area, on-site field surveys, proposals for future occupation and future operation of the terminal, and the applicable environmental legislation. The study's review of compliance with existing environmental law covers the following topics:

- Description of the rental area;
- Environmental licensing;
- Document analysis and technical visits;
- Definition of the environmental study necessary for adequate licensing;
- Assessment of potential environmental liabilities;
- Identification of main environmental impacts;
- Proposition of environmental programs;
- Management of contaminated areas; and
- Pricing of environmental costs.

Based on these evaluations, the environmental licensing process for the enterprise is forecasted and environmental control and management measures proposed or, where relevant, compensatory measures to be adopted by the future tenant, as well as estimating the costs associated with the licensing process and environmental management.

2. Description of the Rental Area

STS08A is located in the Alamoia region, within the city of Santos, part of the State of São Paulo. Navigation wise, the area lies on the right bank of the navigation channel of the Organized Port of Santos.

The region surrounding **STS08A** is flanked by vegetation and the navigation channel to the north, other liquid bulk terminals to the south and east as well as vegetated areas to the west. Figure Figure 3. illustrates geographical disposition for **STS08**.

Currently, the existing tenant handles petroleum products, including LPG. The operation is under the responsibility of Transpetro, a Petrobras subsidiary.

According to information provided by the Port Authority (not Transpetro), the Terminal's water supply is bought from the local water company (Sabesp). As for electricity, the terminal is connected to Companhia Paulista de Força e Luz – CPFL's distribution network. The terminal's sewage system is an unusual situation, as sanitary liquid effluents are treated at the Sewage Treatment Plant - ETE inside the area itself, before being released into the local body of water (estuary). The right of the terminal to properly dispose of its sewage given by the State of São Paulo's Department of water and Electricity, under its special grant program. Finally, to verify the terminal's compliance with quality standards for the disposal of its swage, a parametric analyses must be performed regularly, as dictated by CONAMA's Resolution No. 430/2011 and State Decree No. 8,468/1976.

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It is worth noting that, since the study did not plan for the construction of a new treatment plant for STS08, Terminal **STS08A** and STS08 will have to share the existing ETE plant.

According to engineering studies for the area, terminal **STS08A** will ensure that operations are not interrupted during transition. Meanwhile, the terminal is also expected to meet additional demand by expanding its storage and handling capacities. Section C - Engineering details assumptions used in formulating **STS08A**'s future structures.

3. Document analysis and technical visit

The methodology for evaluating this area of interest is based on compilation, systematization, and analysis of available environmental information. In sourcing its material, the study follows the process below:

3.1. Document analysis

- Relevant Environmental Legislation;
- Conditions to environmental licensing of the port and the lease, if any;
- Recorded Documents of mapped environmental liabilities;
- Studies and documents prepared for the terminal and port, such as: Environmental Study, Conduct Adjustment Term - TAC, Environmental Audit Report, Existing Environmental Licenses and Authorizations, Environmental Plan and Program reports, Annual Environmental Information Report - RIAA, among others;
 - Relevant environmental information (Conservation Units, Permanent Preservation Areas, Historical and Archaeological Heritage, Indigenous Lands, Traditional Communities, *Quilombolas*);
 - Prior evaluation of recent satellite images to verify possible conflicts with other activities or occupations in the surroundings;
 - Temporal evaluation of the area by means of satellite imagery.

3.2. Technical Visit

- Evaluation of existing structures and the collection of evidence of potential contamination or environmental non-conformities;
 - Visual evaluation of the surroundings of the area of interest: during the technical visits, the team performs a visual evaluation of the surroundings, aiming at identifying adjacent activities that may affect or present potential risks to the environmental quality of the area. Naturally, the inspection also aims at identifying whether activities developed inside the area impact the surrounding environmental quality;
 - Interviews with people familiar with the historical operation in the area; and
 - Collecting environmental data and information necessary for completing this report with the following authorities:
 - Local port authority;
 - Responsible for the administration of the Terminal.

3.3. Environmental Information for area STS08A

Table Table 1 presents the documentation available to EPL, in November 2019 and September 2020, regarding the situation of the environmental licensing of the Terminal, including its certifications, in addition to the Port of Santos.

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Terminal Documentation	Issuing Body	Object	Date of Issuance	Validity
LO No 18002881	CETESB/SP	Pipeline Transportation	23/01/2018	04 years old
LO No. 1,382/2017-Rectified (granted to SPA)	IBAMA	Organized port of Santos, including waterway protection and access infrastructure, as well as dredging operations	-	05 years old
Certificate No. BR032332	Certificator Bureau Veritas	ISO 9.001:2008	05/07/2019	04/07/2022
Certificate No. BR032334	Certificator Bureau Veritas	ISO 14.001:2004	05/07/2019	04/07/2022
Certificate NO. BR032333	Certificator Bureau Veritas	OHSAS 18.001:2007	05/07/2019	11/03/2021
Neighborhood Impact Study - EIV	INERCO/TRANSPETRO	Preparation of EIV - Santos Waterway Terminal - SP	14/06/2019	-
Remediation Completion Report	PETROBRAS and ESTRE Ambiental	Santos Waterway Terminal - SP - Tank Storage Area 301	01/12/2016	-
Master Plan SANTOS PORT COMPLEX	MINFRA	Support in the Planning of the National Port Sector	Feb/2019	-
Santos EZoned Development Plan - 2012-2024	Port of Santos/SEP/MINFRA	Strategic planning of the occupation of public areas	Jul/2020	-

 Table 1: Evaluated documentation for area **STS08A**.

Source: Own elaboration, based on the information collected (2019).

The following Figure presents the approximate delimitation of the area currently leased to Transpetro.

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Figure 1: Delimitation of the area currently leased to Transpetro.
Source: SPA.

The study reached its preliminary diagnosis for this area while analyzing the following sources: the on-site verification, interviews conducted on 16 and 17 September/2019, contributions received in Public Hearings regarding STS08A's lease process and meetings held in September/2020 with SPA. Based on this information, the study surmised its conclusions in the topics below:

- Existing structures and evidence of potential contamination or environmental non-conformities:

According to documentation provided by SPA and on-site inspection, it was found that part STS08A is being evaluated in internal remediation studies. Specifically, the terminal is evaluating the intervention's efficiency and effectiveness on the environment.

- Visual assessment of surroundings, potential risks to the environmental quality of the area or surrounding area:

The region surrounding STS08A is flanked by vegetation and the navigation channel to the north, other liquid bulk terminals to the south and east as well as vegetated areas to the west.

There are potential risks to surrounding areas due to handling/storage of liquid bulk (various chemicals), mainly due to the risk of possible leaks.

- Interviews and technical meetings

In interviews with those responsible for the administration of the Organized Port of Santos, the study acquired relevant documents pretraining the existing tenant's activity. The information that the team gathered on the

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subject allowed for the creation of a complete picture regarding the environmental situation in the area of interest.

4. Environmental Licensing, Definition of Licenses, and the Environmental Studies Necessary for Acquiring a License

This topic aims to clarify the guidelines for acquiring and maintaining an environmental license. Specifically, the topic elaborates on the licensing process for the specific type of enterprise that is the subject of this viability study.

Hence, regarding the type of environmental license that will be necessary for operating **STS08A**, the study based its conclusion by analyzing the following items:

- Environmental agency responsible for environmental licensing;
- Current situation of the area;
- Activities currently performed in the area;
- Operational and structural changes proposed for the area;
- Existing environmental license;
- Legal framework.

As described in Section C, the study designed a transition phase, aiming at safeguarding the operational continuity of terminal. This section summarizes the objectives of the first transition stage below:

- I. Consolidate existing operations under **STS08A**, guaranteeing a smooth transition by allowing the new tenant to run a set temporary areas; and
- II. Storage capacity expansion in the then undeveloped areas that are now part of Terminal **STS08**;

And in the 2nd Transition Stage:

- I. Complete the capacity expansion of STS08 in areas that were provisionally managed by **STS08A**; and
- II. Expansion of Alamoá berthing system by building a new pier (2 additional berths).

Based on this information, it was possible to define the most appropriate environmental licensing strategies for the area, as follows.

Regarding handling and storage operations, the study concluded that **STS08A** licensing status is regular. Specifically, according to Operating License (LO) no. 18002881, the terminal is currently allowed to "handle and store oil, its products and ethanol in the Santos Waterway Terminal. However, the authorization is contingent on adequacy "of buildings and equipment contained in plant DE-4300.27-6210-911-PTP-001".

Hence, as there will be changes in the current structure of the Terminal, including the development of new areas, the study expects that a new license will be required to incorporate the new structures into **STS08A**'s operation. With that said, the study also designed a phased-out strategy taking advantage of the existing license, as described ahead.

It is worth noting that maintenance dredging is not included in the present study, as is currently SPA's responsibility.

In short, the terminal can be classified as a brownfield asset that is currently in operation. In addition, as the study currently stands, there are several improvements and expansions planned to its existing structure.

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Regulatory wise, the licensing of Area **STS08A** is the responsibility of the Environmental Company of the State of São Paulo - CETESB /SP. The study assumes that this agency will continue to be the relevant body in charge of licensing in the state. Thus, the study followed CETESB resolution and procedures in relation to developing a licensing strategy for **STS08A**.

Considering that it is paramount that the terminal does not suffer operational discontinuity, the new tenant will have to apply for an LO transfer with CETESB. Indeed, to ensure liquid bulk operational continuity, the new tenant will transfer LO no. 18002881 from Transpetro to itself. In a worst-case scenario, If CETESB decides against the transfer of LO ownership, the new tenant should be prepared to immediately request a new LO. However, this scenario is unlikely, given that the agency does provide for transfership in its website.¹

It must be emphasized that the area regulated under LO no. 18002881 covers **STS08A** as well as STS08’s storage tank areas. However, during the transition phase, these tanks will be provisionally managed by **STS08A**. Hence, requesting the transferring of this larger LO to **08A**, serves the objective of avoiding interrupting existing operations. In essence, the LO-covered section will be operated for 3 years by terminal **STS08A**. To be clear, the existing LO does not distinguish between terminals, covering what is going to be divided into **STS08** and **STS08A**.

The following figure shows the Terminal’s 1st Transition Stage, lasting for 3 years.

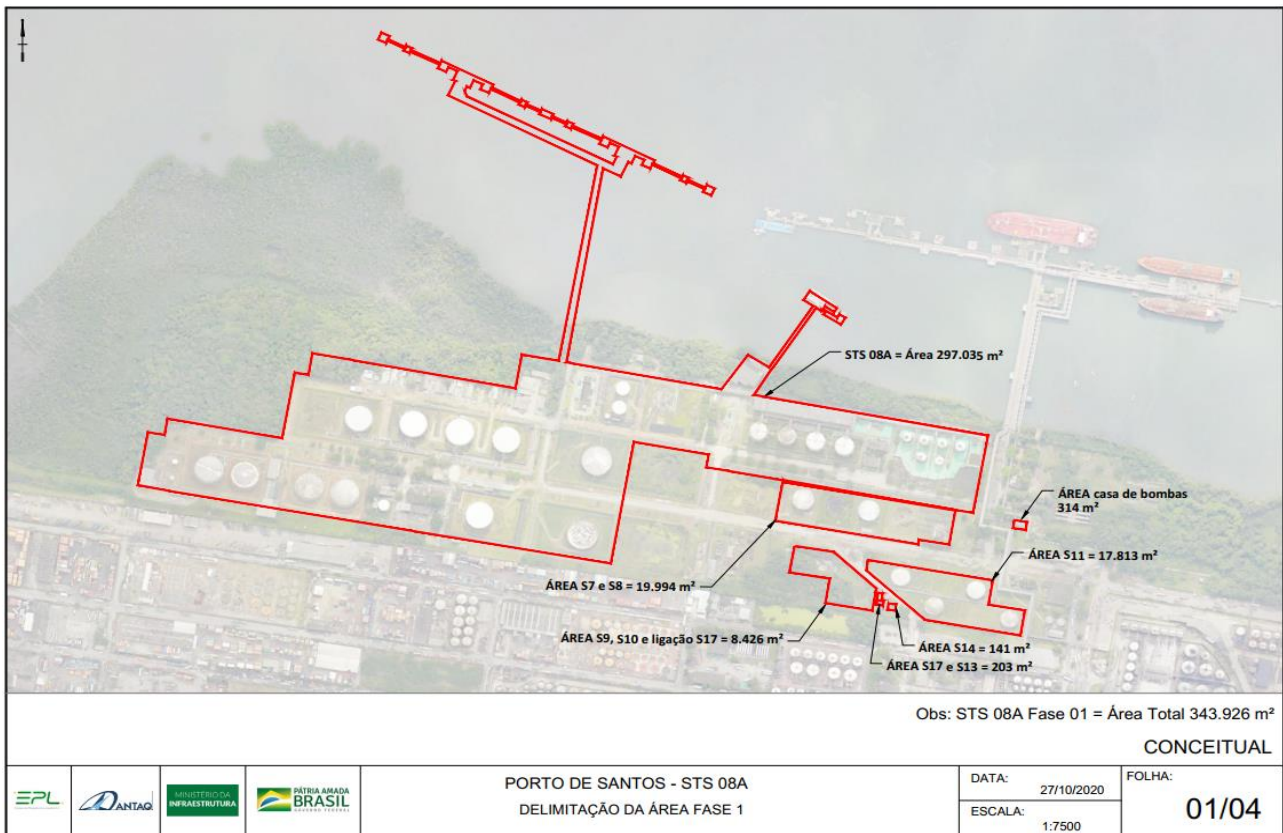


Figure 2. 1st Transition Stage of **STS08A**.
Source: EPL (Section C).

¹ https://www.cetesb.sp.gov.br/licenciamento/pdf/Alteracao_de_documento.pdf

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STS08A will require the use of the existing LO until STS08 starts operating, which is scheduled to occur by the end of the second year after the concession.

STS08A is also expected to acquire a new LO that also cover its new structures, elaborate in Section C – Engineering. In short, the new LO must cover **STS08A**'s new tanks, physical structures, pier and dredging. Thus, the new tenant will have to proceed through the ordinary, three-phase licensing process, as detailed in CETESB's Board Decision No. 210/2016/I/C, of September 28, 2016.

Namely, the terminal will have to first acquire its Prior License (LP) and its Installation License (LI). These licenses must be acquired during the first year of the lease. As for the LO, it will have to be granted in the third year, allowing the regularization of the tenant's new facilities, and the transfer of **STS08**'s area that was being provisionally operated by **STS08A**. **STS08** is scheduled to be receive back its area in the beginning of the fourth year of the lease.

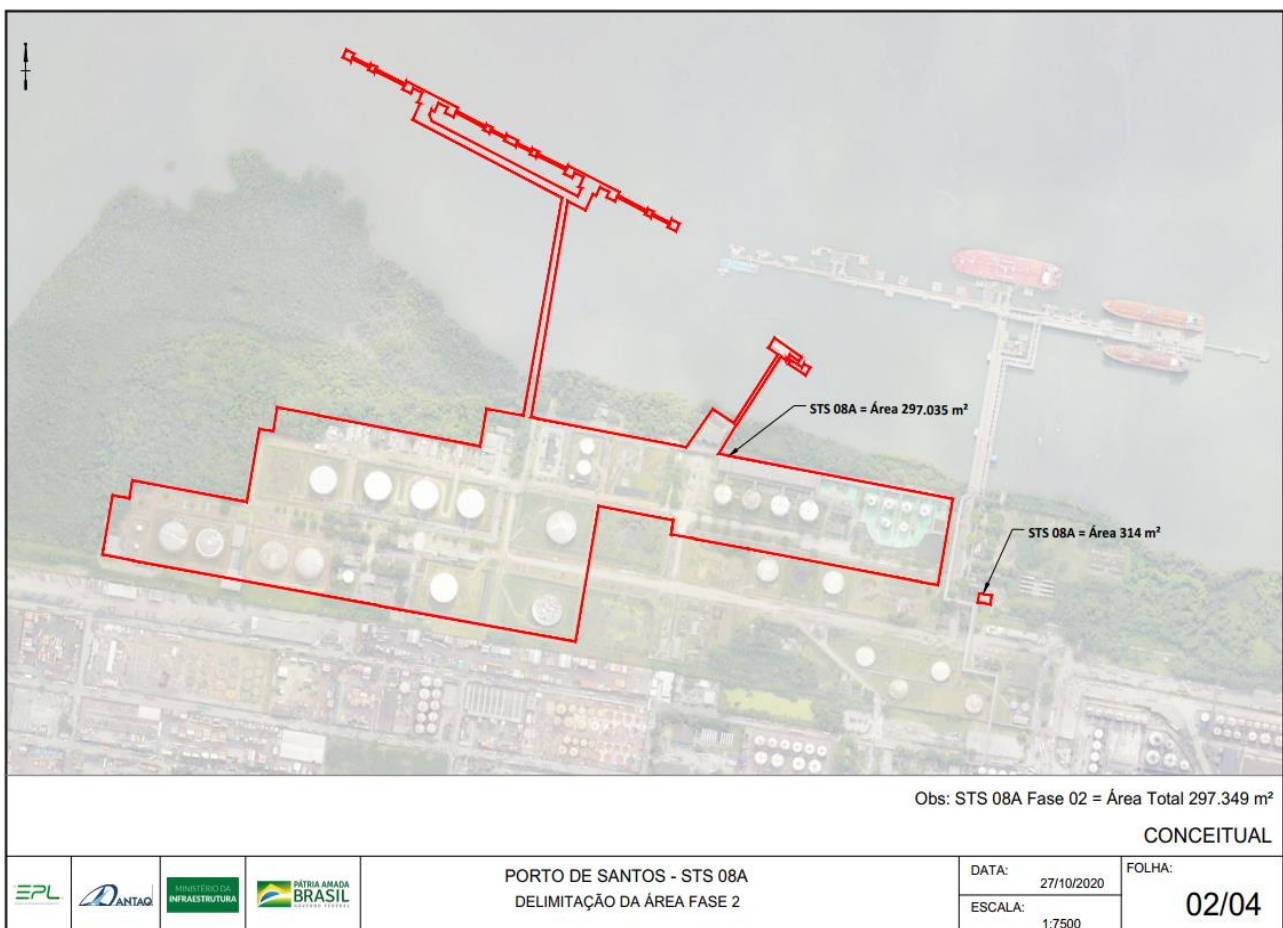


Figure 3. 2nd Transition Stage STS08A.
Source: EPL (Section C).

One of the challenges of acquiring a Prior License (LP) is correctly selecting environmental studies that can support the issuance of licenses. With that in mind, in selecting the best study, this section considered the following points: the terminal's area characteristics, its intended operation, insights from SMA Resolution No.49, of 28/05/2014 that elaborates on CETESB's environmental licensing procedures and other legislations. Hence, given a scope of interventions that include tank capacity expansion, construction of a new pier and its

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dredging, this section recommends the most complete study. Namely, this section recommends implementing the Environmental Impact Study and its respective Environmental Impact Report (EIA / RIMA).

In relation to obtaining the next license (LI), the study assumes that CETESB will require a Basic Environmental Program – PBA report and compliance with all LP’s constraints. As for obtaining the new LO, the terminal will have to comply with all conditions laid out in the in the LI .

The following figure illustrates the construction works of the new pier in Alamoia (AL05 and AL06) and its accompanying dredging area

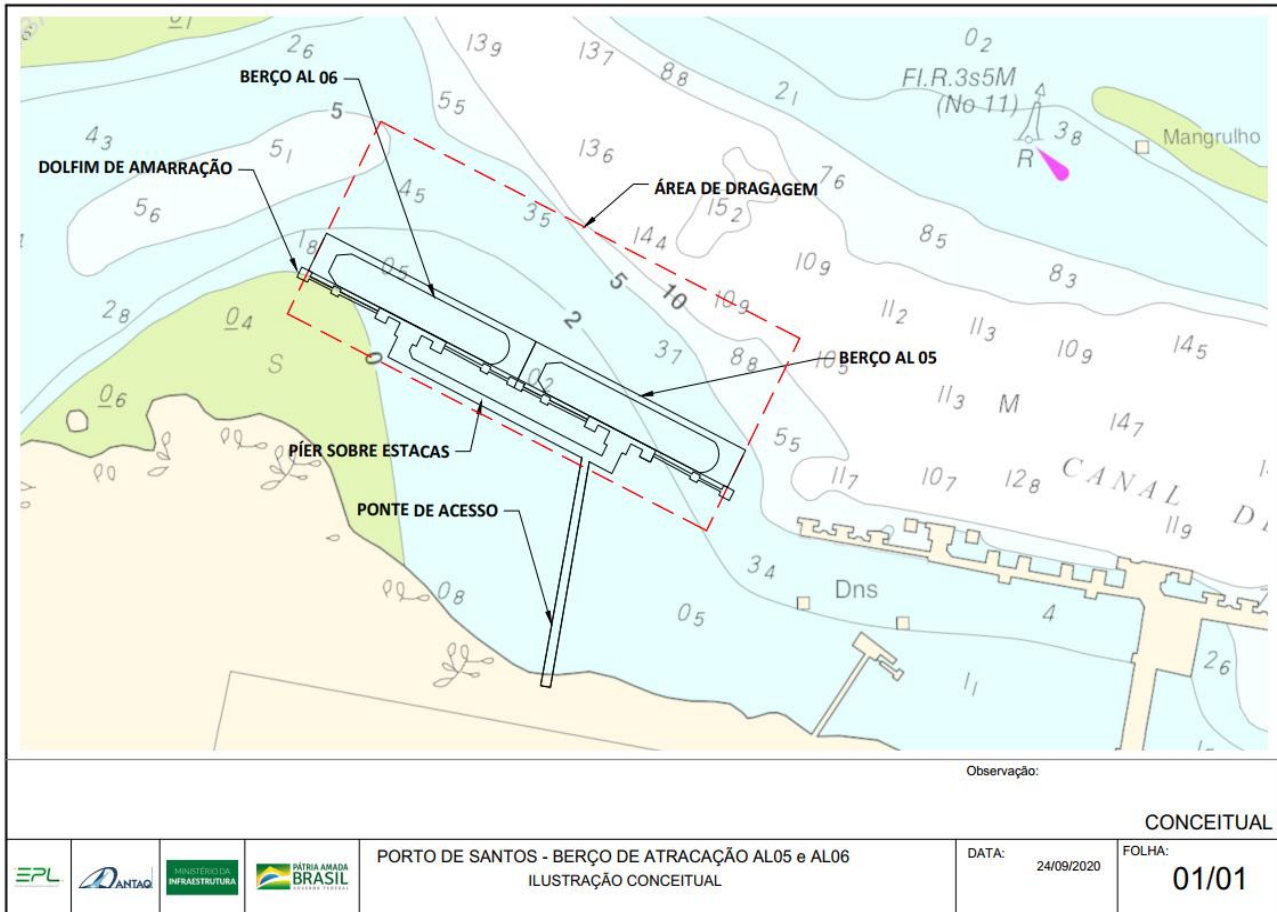


Figure 4: Illustration of the new mooring cradles of the Alamoia (AL05 and AL06) and the dredging area. Source: EPL

Furthermore, considering that implementing the new pier will require the suppression of vegetation, a successful license application would have to include in its EIA/ RIMA report a characterization of the vegetation impacted.

Finally, the new tenant must also observe relevant municipal legislation impacting its investment implementation. In particular, this section highlights Complementary Law No. 793 of January 14, 2013 and its amendments (Complementary Law No. 869 of December 19, 2014 and Complementary Law No. 916 of December 28, 2015) from the municipality of Santos. Indeed, the law imposes the requirement of an additional study know as a Preterit Neighborhood Impact Study – EIV, as defined in Art. 9, item V below:

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"Art. 9 ° Preterit Neighborhood Impact Study - EIV will be mandatory for undertakings or activities listed in Annex I of this supplementary law, in the following cases:

V – To get approval for remodeling with addition of area in projects or existing, regular and compliant activities, with the use of shopping center, hypermarket and retail sellers, university, convention center and fair pavilions/exhibitions, wholesale traders and port and / or retroport activities, provided that the increased area exceeds 5% (five percent) of the existing area, regularized prior to the publication of this complementary law, considering the cumulative amount for the calculation of reported percentages; "

Although Transpetro has already met this requirement, in view of the new proposals for the lease and future facilities in **Terminal STS08A** (in addition to a possible change of tenant), the study assumes that a new EIV will have to be presented to the City of Santos. Consequently, the new tenant new may face additional mitigating and compensatory measures related to the new area.

In **STS08A's** environmental licensing process, in addition to interfacing with CETESB, the new tenant may have to interact with other stakeholders such as Port Authority, Navy, and among others agents that may have material concerns regarding the Terminal's environmental impact.

The following table presents a conceptual summary for ensuring compliance with environmental licensing process:

#	Type of the Occupation in the Port Area	Type of Study	Environmental Licenses
1	Operating <i>brownfield</i> area	EIA/RIMA with Technical Report for ASV Neighborhood Impact Study - EIV	LP
2		Basic Environmental Program - PBA LP Conditioning Report	LI e ASV
3		Compliance report for LI and LO Conditions	LO

Table 2: Characteristics and typology of environmental studies and licenses - area STS08A.

Source: EPL

With regard to the possibility of environmental compensation, in which Federal Law No. 9,985/2000 applies, CETESB will define whether or not to require environmental compensation to the enterprise. It is emphasized that there is no term of commitment regarding the environmental compensation reequipments related to Terminal **STS08A**.

5. Assessment of Potential Environmental Liabilities

An environmental liability shall be recognised where there is an obligation on the company to incur costs relating to recovery, restoration, closure or removal of environmental issues. After being aware of the liability, the business must notify the agency so that the necessary actions can be carried out.

The evaluation of potential environmental liabilities is the result of document analysis and information obtained through technical inspection in the area of interest, as presented in item 3 - Document Analysis and Document analysis and technical visit

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Regarding the investigation of potential liabilities in area **STS08A**, the study collected the following information, evidence and/or indication of conflicts between this area and its surroundings:

- Technical survey in the area of interest in 2019: evidence of potential contamination or environmental non-compliance.
- Analysis of independent third-party data on the surveyed area, focusing on possible signs of contamination.

Regarding classification standardization of environmental liabilities related to contaminated areas, the study observed the assumptions in CETESB Board Decision 103/2007/C/E/2007. It is worth noting that this Decision is in line with CONAMA Resolution No. 420/2009, Abnt Standard NBR 15515-1/2007: Environmental Liability in Soil and Groundwater – Part 1: Preliminary Assessment and the North American Standard *ASTM E 1527-05 Environmental Site Assessments: Phase I Environmental Site Assessment* Process. Thus, according to the aforementioned methodology, the following definitions may apply to the study area:

- **Potentially Contaminated Area (PA):** These are the areas where potentially contaminating activities are being or have been developed, i.e., where the management of substances whose physical-chemical, biological and toxicological characteristics occurring or occurred, can cause damage or risks to human health and other protected assets;
- **Suspicious Contamination Area (AS):** These are the areas in which, after carrying out the Preliminary Environmental Assessment, there is evidence that supports suspicion of presence of contamination in the area or its surroundings;
- **Contaminated Area under Investigation (AI):** These are areas where there is evidence of the presence of contaminant products, or when there is a finding of substances, conditions or situations that, according to specific parameters, may pose danger to the environment;
- **Contaminated area (CA):** area, land, site, installation, building or physical improvement, previously classified as contaminated area under investigation (AI), and, after conducting risk assessment studies, the amounts or concentrations found cause or may cause damage to human health.
- **Rehabilitated area for declared use (AR):** area, land, site, installation, building or physical improvement, previously classified as an area under monitoring for rehabilitation (AMR) that, after carrying out conducting a final monitoring, is considered fit for its declared use.
- **Area Excluded from Registry:** These are areas that, based on the findings raised in the Preliminary Assessment, do not present enough evidence of danger. Thus, such areas would not be reclassified as Potentially Contaminated (PA).

In conclusion, in view of the information collected and relevant standards of classification, the **STS08A** falls in into the **Contaminated Area (CA)** category.

According to information that the port authority provided, the study reaches in conclusion on the basis of the following facts:

- ✓ The area under Transpetro's control does figure in CETESB's register of contaminated areas. The reason for its appearance is such list lies in the existence metal contamination of the groundwater

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below the terminal. This public information does not provide further detail on the status of existing remediation efforts to resolve this issue;

- ✓ Regarding more detailed information on current and past environmental remediation efforts being carried out in the area, this study was able to review a report from private consultants hired by Transpetro. The name of the report is Remediation Resolution and it was prepared by Estre Ambiental S.A. (reference RC_TASANTOS_TQ301_2016_05_r02) on December 2016.
- ✓ According to the report, in January 2006, there was a diesel leakage due to a hole in a pressurized drain line in "Tank 301". The emergency compelled Transpetro to act, ordering vacuum trucks to remove the product and its personal to scrape the nearby soil's surface. Transpetro also brought in environmental consultants to investigate the area for further damage. On same year, in its geological survey, the investigation found the following contaminants in the area's soil: some limited area with oily material contaminant and three spots with higher than allowed concentrations of Total Petroleum Hydrocarbons (TPH). The figure below presents information regarding the area next to Tank 301.

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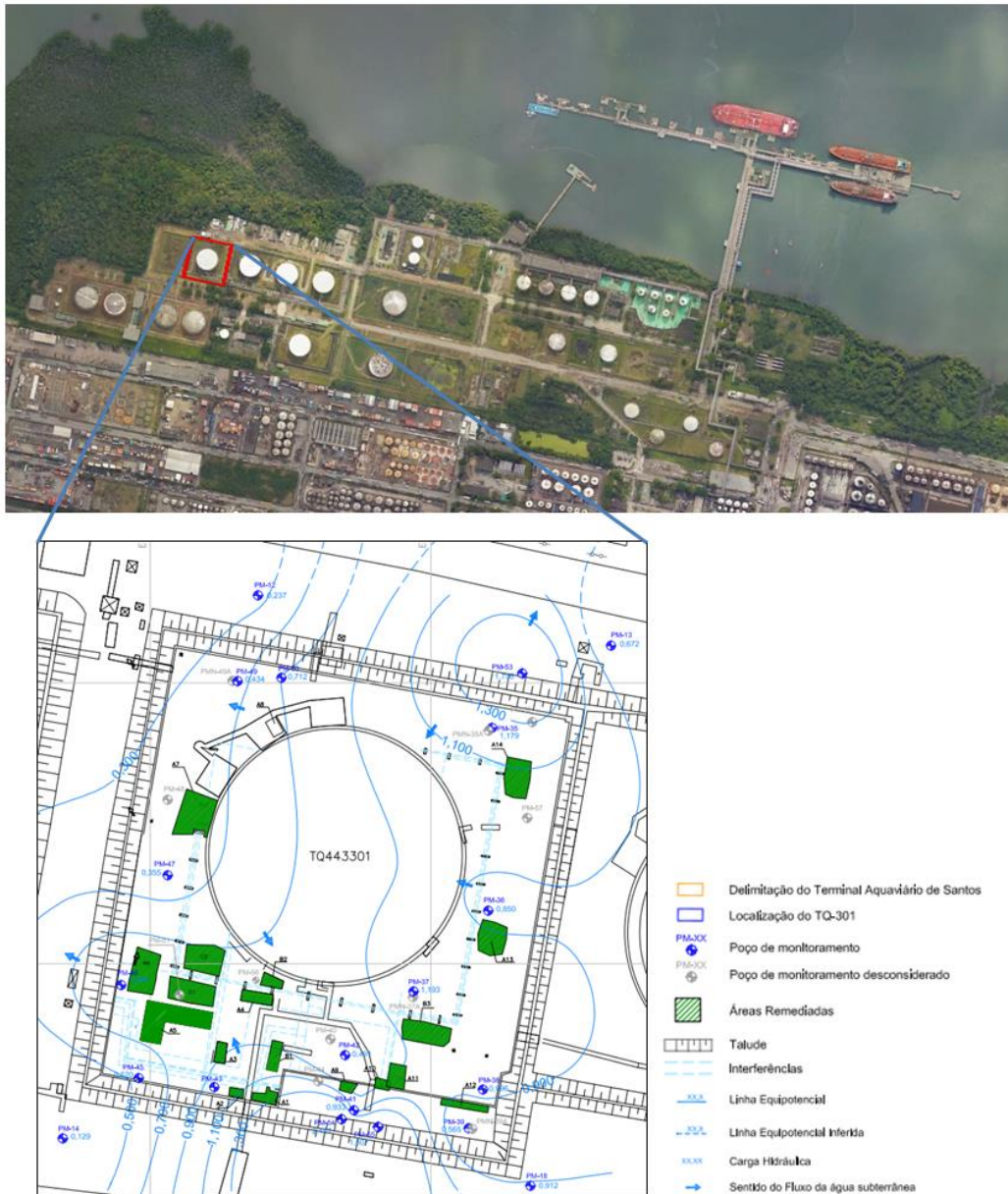


Figure 5: Overview of the enterprise, with emphasis on the area of Tank 301.
Source: Adapted and Estre Ambiental, 2016, p. 29.

- ✓ According to the Remediation Completion Report, remediation work was carried out from November 2014 to September 2015 and basically consisted of the removal of contaminated soil by manual and mechanized excavations, due to existing interference.
- ✓ In June 2014, groundwater samples were collected in the "Tanque 301" region, the results of which did not indicate concentrations above the intervention values for organic compounds. However, in relation to total and dissolved metals, concentrations above the intervention values for Total Arsenic (two wells), Dissolved Arsenic (one well), Total Rate (one well), Total Lead (ten wells) and total vanadium (one well) were detected.

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- ✓ In November 2015, six monitoring wells were installed in the dam area to complement the existing well network, composing a total of 27 monitoring wells and four multilevel monitoring wells.
- ✓ In March 2016, an underground water sampling campaign was carried out. In this campaign, there was a free phase of 0.006 meters in one of the wells, south of "Tanque 301". For the other wells, no concentrations of organic compounds were quantified above the Intervention Values established in legislation in force at the time. For inorganic compounds, lead concentrations were detected (higher in the PM-40 well, with 287 micrograms per liter, CETESB Intervention Value of 10 micrograms per liter), Arsenic (higher in the PM-54 well, with 24.20 micrograms per liter, total form, CETESB Intervention Value of 10 micrograms per liter) and Vanadium (in the PM-40 well, with 287 micrograms per liter, EPA Reference Value R9/2015 of 10 micrograms per liter).

According to Transpetro, remediation was completed in 2016 and post-remediation monitoring extended until 2019. In 2020, the final report of the monitoring for closure was completed, which did not indicate a return of contamination in groundwater and Cetesb was asked to terminate the contaminated area process.

However, after analyzing the existing documentation, it is observed the absence of completion of the management process of the area with CETESB, not being possible to rule out the possibility of requesting, by this environmental agency, new analyses, in addition to the continuity of the expanded monitoring of groundwater throughout the tanning park.

It is emphasized that no records of preventive investigation/monitoring actions were found in relation to environmental liabilities in other parts of the land.

That said, if the rule that has been adopted in the notices of the Rental Program remains the responsibility of the PowerTobe known until the date of the contract, provided that the new lease is 360 (three hundred and sixty) days after the Date of the Assumption.

6. Possible Social and Environmental Impacts

In view of the brownfield area, where the installation of new tanks and a berth is planned, the environmental impacts that should be managed during the stages of implementation of the aforementioned structures and operation of the Terminal, are those related to any type of work on land, i.e., atmospheric emissions, noise and vibrations, release of liquid effluents, generation of solid waste, etc. For this, actions and measures already established in the management of the various environmental aspects involved in the construction phase should be implemented.

It is also emphasized that this is the expected environmental impacts related to the dredging of the new cradle to be implanted.

Positive impacts were identified as the direct generation of jobs, with increased supply of employment and income in the region, increased capacity of production, increase in tax collection and increase in municipal and state economic activity.

The following table lists the main socio-environmental impacts related to the situation on screen.

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Impacts	Phases		
	I	the	D
Generation of solid waste and liquid effluents	X	X	
Air pollution	X	X	
noise pollution	X	X	
Proliferation of harmful sinanthropic fauna		X	
Change and disorder in the daily life of the population	X	X	
Incompatible practices of workers involved in installation and operation	X	X	X
Risk of accidents with dangerous products	X	X	
Soil contamination and waterproofing	X	X	
Change in soil and groundwater quality	X	X	
Change of local flora	X		
Change in submerged table of stability			X
Changing water quality			X
Interference in aquatic biota			X
Formation of sediment plumes			X

Table 3: Impacts related to the deployment (I), operation (O) and dredging (D) phases of the **STS8A rental area**.

Source: Own elaboration, based on the characteristics of the study area.

The negative environmental impacts resulting from the implementation, dredging and operation of the project are listed below.

6.1. Generation of Solid Waste and Liquid Effluents

The main solid waste generated in the port terminal operation process should be included in classes I and II of NBR 10.004/2004:

- **Class I** - Dangerous;
- **Class II** - Not dangerous.

The waste considered as Class I - Hazardous - is generated in the processes of preventive and corrective maintenance of critical equipment, with oily waste, and residues such as lamps, building maintenance waste, alkaline batteries, among others.

Waste classified in Class II is non-polluting and may be inert or non-inert, such as food waste, paper and cardboard waste, wood waste and textile materials, among others.

The effluents generated in the terminal's activities are related to domestic sewage, rainwater and possible oil leaks and spills from machinery and equipment during the installation and operation of the project. The risk of contamination lies in possible leaks, for which appropriate prevention and control actions should be provided.

6.2. Air Pollution

In the implementation phase of the new structures and during the operation it is expected the emission of particulates on the service fronts, mainly related to the operation of machinery and maintenance vehicles.

In addition, during the implementation and operation of the Terminal, atmospheric emissions from fossil fuel-powered machinery and equipment occur, in addition to the fugitive emissions of volatile gases.

6.3. Noise pollution

Due to the implementation of the new structures, it is expected that noise levels are increased, mainly related to the operation of machinery and maintenance vehicles.

6.4. Proliferation of Harmful Sinanthropic Fauna

The activities of the terminal can generate accumulation of residues and favorable conditions for the proliferation of pests and vectors, such as como, mosquitoes, cockroaches and rats.

6.5. Change and Disorder in the Daily Life of the Population

The lack or failure in communication between the actors involved in the execution of the enterprise, with emphasis on the tenant, port authority, workers, municipality and the community, increases the possibility of disturbances, and may cause negative impacts for the implementation and operation of the Terminal.

Another relevant factor to be analyzed is that the change in the flow of people at the project site, in the phase of labor recruitment, may result in changes in the daily life of the population, especially local residents.

6.6. Incompatible Practices of Workers Involved in Installation and Operation

The lack of training of the workers involved in the installation, dredging and operation of the project may have negative impacts on the execution of activities, including the day-to-day terminal, the implementation of the planned socio-environmental programs, the relationship with the surrounding population, and put at risk the health and safety of those involved.

6.7. Risk of Accidents with Hazardous Products

Any accidents involving the storage and transportation of dangerous products can affect the users of the enterprise, the beautiful populations and the environment.

The risk of contamination lies in possible leaks, for which appropriate prevention and control actions should be provided.

6.8. Soil Contamination and Waterproofing

Soil contamination occurs by infiltration of water from the flow of highly waterproofed and contaminated surfaces. Thus, a resized rainwater drainage system, appropriate to reality, should mitigate impacts in places where the soil is impermeable by asphalt or cement. The consequences of contamination and destabilization of the margins and railing for water courses generates contamination of water, soil and groundwater, facilitating the accumulation of waste.

6.9. Change in soil and groundwater quality

The activities of implementation of the new structures of the terminal as well as the operation of the terminal can promote changes in the quality of water in the region of the terminal, including groundwater.

The effluents generated in the terminal's activities are related to domestic sewage, rainwater and possible leaks and spills during operations in the Terminal and can contaminate soil and groundwater.

6.10. Change of local flora

The suppression of vegetation planned for the implantation of terminal structures is likely to bring changes in the flora of the region in quantitative and probably qualitative terms.

6.11. Change in Submerged Titus Stability

The change in the stability of the submerged table (plank piles) in the region in front of the mooring cradles can occur mainly due to: alteration in the topography of the bottom, the geotechnical characteristic of the material in the bed of the cradles, and the overload present in the terrestrial part of the pier.

6.12. Changing Water Quality

Dredging activity may cause a change in water quality, considering the increase in the concentration of suspended sediments in the water column, which results in the increase of turbidity levels and changes in water color. The change may also occur by making contaminants available to the aquatic environment.

6.13. Interference in Aquatic Biota

Dredging activity involves the physical removal of ocean material, and together with this material end up being sucked into the aquatic biota that occupy these areas causing their deaths.

6.14. Sediment Plume Formation

Dredging activities are intrinsic to the port operation and performed periodically, in most cases. Dredging can intensify the transport of sediment plumes in a given location, causing economic and environmental impacts.

Sometimes operations are carried out in estuaries, and environments of high complexity, hindering the predictability of hydrodynamic and sedimentological behavior.

This concern with the estuarine system stems from the importance that it has unique environmental characteristics and is responsible for the high biological productivity. These ecosystems play important ecological roles, such as nutrient exporters and organic matter to adjacent coastal waters, vital habitats for species of commercial importance, and generate goods and services for local communities.

Urban settlements, fishing activities, tourism, among others, can be affected by the plume of sediment stemming from dredging, without proper planning and endangering the basic attributes of estuaries and associated ecosystems, resulting in the degradation of local quality of life.

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7. Proposition of Environmental Programs

From the identification of the main negative environmental impacts that may result from the execution of activities in the **Terminal STS08A**, in the phases of installation, operation and dredging, the environmental programs, listed in the following table, are proposed. It is also emphasized with regard to the negative environmental impact "change in the stability of submerged rocks" was not proposed Environmental Program, in view of the control actions being of engineering order.

Environmental Programs and Plans	Negative Environmental Impacts	Phases		
		I	th e	D
- Program of Environmental Management and Environmental Control of works	Air pollutions; sound, water and soil; generation of solid waste and liquid effluents; modification and disorder in the daily life of the population; incompatible paths of the work-makers involved in the installation, dredging and operation	X	X	X
- Solid Waste Management Subprogram	Generation of solid waste; soil contamination and waterproofing	X	X	
- Liquid Effluent Control and Monitoring Subprogram	Effluent generation; soil contamination and waterproofing	X	X	
- Air Quality Monitoring Subprogram	Air pollution	X	X	
- Noise Control and Monitoring Subprogram	noise pollution	X	X	
- Environmental Education and Social Communication Sub-program	Incompatible practices of workers involved in installation and operation; modification and disorder in the daily life of the population	X	X	X
- Water Quality Monitoring Subprogram	Changing water quality Interference in aquatic biota	X	X	
- Sub-program for monitoring vegetation suppression	Change of local flora	X		
Risk Management Program/Emergency Action Plan (PAE) Individual Emergency Plan (PEI) Mutual Aid Plan (WFP)	Soil contamination and waterproofing Risk of accidents with dangerous products	X	X	
Pest and Vector Control Program	Proliferation of harmful sinanthropic fauna		X	
Water and Sediment Quality Monitoring Program	Changing water quality Interference in aquatic biota			X
Environmental Monitoring Program of the Dredged Material Disposal Area	Changing water quality Interference in aquatic biota			X
Benthic Community Monitoring Program, Ichthyofauna, Phytoplankton and Zooplankton	Interference in aquatic biota Changing water quality			X

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Environmental Programs and Plans	Negative Environmental Impacts	Phases		
		I	th e	D
Hydrodynamic Parameter Monitoring and Modeling Program	Change in Submerged Titus Stability			X
Sediment Plume Monitoring Program	Formation of sediment plumes			X

Table 4: Main environmental programs and negative environmental impacts related to the dredging (D), implementation (I) and operation (O) phases of **STS08A**.

Source: Own elaboration.

7.1. Deployment/Dredging Phase

7.1.1. Program of Environmental Management and Environmental Control of Works

The Program of Management and Environmental Control of Works - PGCAO covers a set of recommended basic guidelines and techniques, to be used previously and during the implementation and dredging, in what falls, aimed at avoiding or minimizing potential negative environmental impacts.

In general, the main objectives of this program are:

- Ensure that the development of the planned interventions occurs in accordance with current legislation, in order to avoid or reduce possible negative environmental impacts, through the implementation of preventive, control and mitigating measures;
- Implement environmentally appropriate operational practices;
- Implement monitoring actions necessary to evaluate the effectiveness of environmental control actions adopted;
- Perform actions aimed at the health and safety of the worker;
- Monitor and supervise other environmental programs;
- Ensure full compliance with the legislation, regulations and requirements and recommendations of environmental agencies;
- Implementation and adequacy of the construction site and proper and sustainable use of the construction sites;
- Definition of access to work fronts; and
- Demobilization of construction sites, if necessary.

For the ordering of the proposed actions, these are divided into specific sub-programmes, presented below:

- Solid Waste Management Subprogram:

Solid waste management aims to establish a set of activities that allows the correct process of collection, packaging, transportation and final disposal of the generated waste.

The waste generated shall, when it is appropriate, have a certification document entitled Waste Manifest and the respective Certificates of Final Disposal of Waste, referring to the treatment and final disposal of solid waste.

In this subprogram the following activities should be carried out:

- Classification and Segregation of waste/tailings generated, according to the applicable standards and resolutions;
- Proper packaging and storage;

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- Collection and transportation, according to existing technical standards;
- obtaining certificates for the disposal of waste/waste, industrial and issuance of industrial waste transport manifests, where applicable;
- Proper final destination/disposal; and
- Specific procedures for generation, segregation, packaging and final transport of waste from the Terminal.

- Liquid Effluent Management Subprogram

This subprogram presents as its main purpose the adequate disposal of the liquid effluents produced by the enterprise.

The main actions foreseen in this subprogram are:

- Verification of the correct handling of cement and concrete;
- Prevention against oil and grease leaks;
- Drag control of materials for drainages and water bodies;
- Effluent Monitoring:
 - Definition of monitoring points;
 - Definition of collection methodology;
 - Treatment of samples;
 - Effluent analysis methodology; and
 - Quality control.

- Air Quality Monitoring Subprogram

Below are the main actions:

- Wetting of unpaved traffic routes and piles of materials;
- Definition of vehicle speed limits on traffic routes;
- Permission to use only for authorized vehicles in the areas involved
- Maintenance of equipment equipped with diesel engines; and
- Inspection of black smoke in machines, vehicles and various engines.

- Noise Monitoring Subprogram

The evaluation of sound pressure levels should be foreseen, mainly due to the proximity of the terminal to inhabited areas. For this, the noises of the enterprise should be characterized in the day and night periods, referring to the internal and external areas, in a systematized way to enable continuous evaluation.

If the noise level measurement values are above the tolerance limits established in CONAMA Resolution No. 01/90 and ABNT Standard NBR 10.151/2000, the planning and implementation of control measures that reduce the emission of noise pollution should be expected, as well as the implementation of monitoring to monitor the efficiency of the measures adopted.

Below are the main actions:

- Implementation of control measures, such as verification of the correct maintenance of equipment;
- Restriction of times of implementation of the works, avoiding night work, so as not to cause discomfort to the surrounding population (when it exists);
- Monitoring of noise levels:
 - Definition of noise monitoring points;

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- Performance of noise measurements based on NBR 10.151, which is contained in Conama Resolution No. 01/90; and
- Analysis of the results obtained in all points.

- Social Communication and Environmental Education Sub-Program

Media

For Social Communication, it is necessary to establish the forms and means of communication to inform workers, different segments of the population and/or other institutions as to the main proposals and programs to be adopted and the environmental control measures of the negative environmental impacts arising from the enterprise.

Thus, the implementation of a Social Communication Subprogram will provide a rapprochement between the various stakeholders and the entrepreneur, disseminating information about the progress of the implementation and operations of the Terminal.

At the same time, this Subprogram allows the suggestion of criticisms, expectations and claims of the population. The systematization of proposals and the possibility of evaluation tools should permeate the entire communication process.

Among the main activities, the following stand out:

- Preparation and distribution of information material aimed at meeting the demands related to the implementation and operation;
- Dissemination and guidance on the opening of new jobs;
- Creation of an Ombudsman' s Office, with free telephone line and public e-mail, for community service by technicians able to provide information about the Terminal and its activities and receive suggestions, doubts, criticisms, besides constituting the contact between port managers and the community;
- Conducting periodic meetings with municipal, state and federal authorities related to port activities and environmental inspection to present and discuss the progress of environmental programs;
- Appoint and train spokespersons who have good knowledge of the Environmental Programs developed by the terminal, in order to prepare them to deal with the press and the community.

environmental education

The Environmental Education Subprogram should have as main objectives:

- Mobilize and guide the workers and inspectors involved in the enterprise on environmental protection measures, as well as on appropriate conducts of relationship with the community;
- Present the measures to be adopted to minimize the interference of the enterprise with the environment;
- Improvement and professional training of workers who are involved in the work, training of these in relation to the adoption of occupational safety procedures, including the mandatory use of PPE, and environmental awareness regarding the minimization of negative environmental impacts related to the work and environmental preservation actions, the promotion of the improvement of the quality of the work, the reduction of its costs and compatibility with the legal requirements related to the environment, health and safety of workers. - Water Quality Monitoring Subprogram

- Water Quality Monitoring Subprogram

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The sub-program in question aims to periodically monitor the impact of the terminal's activities on the quality of the port channel water due to the implementation activities, as well as the fresh and groundwater in the terminal area.

Water samples should be collected at points along the navigation channel used by this terminal and in the area covered by it. After collection, physicochemical measurements should be performed in situ in and after, chemical analyses in the laboratory.

- Monitoring programme for the suppression of vegetation

The main objectives of this program are:

- Organize and analyze preliminary information about the areas subject to removal of the vegetation cover.
- Determine the premises and criteria for the structuring of vegetation suppression operations.
- Delineate guidelines relevant to the implementation of vegetation suppression control of the areas necessary for the implementation of the works.
- Perform within the necessary limits the suppression of vegetation through environmental procedures, adopting effective control and monitoring measures to perform the activity.
- Identify the occurrence of protected cut species and propose measures for their preservation, if it is really necessary to suppress native vegetation.
- Estimate the volume of woody material to be removed.
- Quantify the vegetation effectively suppressed by phytophysiology, aiming at the control of woody material, obtained by vegetation suppression activities, if any.
- Enable the economic use of firewood and wood from vegetation suppression actions.
- Enable the direction of the migration of terrestrial fauna to the remaining forest areas, thus reducing mortality and "stress" caused by the manipulation of animals during rescue actions.
- Promote the scientific use of the botanical material available in the area and the use of germplasm (seeds, seedlings, rhizomes and cuttings) for the work of recovery of areas degraded by the works, including areas that have riparian vegetation.

7.1.2. *Water and Sediment Quality Monitoring Program*

The objective of this Program is to ensure that the activities developed during the dredging phase of the enterprise do not result in the degradation of the quality of surface water resources, which may have their quality altered due to:

- The supply of solids from the movement of soils and/or inadequate disposal of solid waste;
- Possible leaks of oils and greases from machinery, equipment and vehicles during the works and operation of the enterprise.

The main activities of this program are:

- Monitor the quality of water around the operation area during dredging with control station to compare material concentrations;
- To predict the analysis for the parameters Aromatic Polycyclic Hydrocarbons - HPAs throughout the dredging work, and with evaluation of the values for the limits established in CONAMA Resolution No. 357/2005;
- Monitor parameters: dissolved oxygen; turbidity; pH; temperature; Conductivity; salinity; water transparency; heavy metals and Arsenic: Arsenic (As), Boron (B) Lead (Pb), Cadmium (Cd), Zinc (Zn), Mercury (Hg) and Nickel (Ni);e, Polycyclic Aromatic Hydrocarbons - HPA's. b) Sediment quality: Granulometry - Sedimentology; Arsenic (As); Mercury (Hg); Nickel (Ni); Zinc (Zn); Cadmium (Cd); Lead (Pb); Copper (Cu); Total Phosphorus; Total Organic Carbon - TOC; Total Nitrogen;

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- Performance of bathymetry and current measurements;
- Collection of water samples to determine suspended solids.

7.1.3. *Environmental Monitoring Program of the Dredged Material Disposal Area*

This program is recommended for the dredging phase of the enterprise and has as main objectives:

- Monitoring the release of sediments in the disposal area: inspecting throughout the dredging work, positioning the vessel in the dredging area and at the sediment dump site;
- Record the location during dredging and at the disposal site, plotting its location, date and time of the activity;
- Monitoring of dredged volume through the execution of hydrographic surveys (bathymetry) in the dredging area and sediment disposal area.

7.1.4. *Benthic Community Monitoring Program, Ichthyofauna, Phytoplankton and Zooplankton*

The monitoring of dredging and material disposal areas should follow the provision of Resolution of the National Council for the Environment (CONAMA) no. 454 of 2012, which establishes the general guidelines and minimum procedures for the evaluation of the material to be dredged in Brazilian waters.

Biological monitoring is an important tool in assessing the integrity of the marine environment, as organisms function as a sensory basis that reacts to any stress that affects the system where they are inserted.

The objectives of this program are:

- Identify and evaluate the possible effects resulting from the implementation of dredging on aquatic fauna. The following biological groups are suggested as monitoring: phytoplankton, zooplankton, ichthyoplankton, benthos and ichthyofauna;
- Identify the possible changes in the community analyzed as a result of the operation;
- Provide information that serves as subsidies, if necessary, to the adoption of measures aimed at minimizing the possible negative effects of the enterprise on the biodiversity of the region;

The composition of species from the phytoplankton, ichthyoplankton, zooplankton and zoobenthos community directly affected by dredging activities should be determined.

7.1.5. *Hydrodynamic Parameter Monitoring and Modeling Program*

Dredging to be performed will include the removal of sediments from the areas as well as the change in their morphology. In view of this, it is necessary a bathymetric and hydrodynamic survey to monitor and monitor this morphological change, as well as to study and evaluate the dynamics of currents and sediments in the nearby area in order to monitor and predict the occurrence of erosion or sediment deposition in it.

The environmental impact of dredging will be reassessed by simulating a series of hydrodynamic and meteorological scenarios. These scenarios (consisting of combinations of wind speed and direction, variations in water level, river discharges, precipitation, etc.) will be selected according to the available database, through field measurements, after dredging.

7.1.6. *Sediment Plume Monitoring Program*

In general, this program, which is specific to the dredging phase, has as main activities:

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- Monitoring of Turbidity Concentrations - Turbidity Plume for the measurement of turbidity concentrations;
- Other parameters: pH, salinity, water temperature, conductivity, dissolved oxygen, total dissolved solids, oxireduction potential and depth. In pre-dredging; dredging and after-dredging.

7.2. Operation Phase

7.2.1. Environmental Management and Control Program

The Environmental Management and Control Program aims to monitor and control environmental conditions within the area of the enterprise, thus allowing the anticipation of corrective or preventive actions, minimizing environmental risks related to the activity.

It establishes the measures for the evaluation and control of the generation of solid waste, liquid effluents, atmospheric emissions and noise from port facilities. The implementation of monitoring measures aims to monitor the proper functioning of control systems, ensuring compliance with established standards

This program groups the proposed actions for monitoring and controlling possible impacts on the environment due to the operation of the terminal. The proposed actions were subdivided into specific subprograms, presented in the sequence, which should be implemented during the operation of the terminal.

For the environmental management of the terminal operation, the project must have its own team that will be responsible for planning and monitoring the programs executed under the Basic Environmental Plan - PBA, in addition to taking care of the issues inherent to work safety and the PGR/PAE.

- Solid Waste Management Subprogram

- Classification and segregation of waste/tailings generated, according to the applicable standards and resolutions;
- Proper packaging and storage;
- Collection and transportation, according to existing technical standards;
- obtaining certificates for the disposal of industrial waste/waste and issuing industrial waste transport manifests, where applicable;
- Proper final destination/disposal; and
- Specific procedures for generation, segregation, packaging and final transport of waste from the Terminal.

- Liquid Effluent Management Subprogram

- Definition of monitoring points;
- Definition of collection methodology;
- Treatment of samples;
- Effluent analysis methodology; and
- Quality control.

- Noise Control and Monitoring Subprogram

- Definition of noise monitoring points;
- Performance of noise measurements based on NBR 10.151, which is contained in CONAMA Resolution 01/90; and
- Analysis of the results obtained in all points.

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- Air Quality Monitoring Subprogram

- Maintenance of equipment equipped with diesel engines;
- Inspection of black smoke in machines, vehicles and engines;
- Monitoring of mangoes filters; and
- Monitoring of compact filters.

- Water Quality Monitoring Subprogram

- Monitoring of water quality, aiming to periodically monitor the impact of port activities on the quality of the water of the port channel due to the activities of the operation, as well as fresh and groundwater in the terminal area.
- Water samples should be collected at points along the navigation channel used by this terminal and in the area covered by it. After collection, physicochemical measurements should be performed in situ in and after, chemical analyses in the laboratory.
- Integration of the results of water and sediment quality analysis and other programs, seeking an understanding of the relationships between the environments, their properties and the living conditions of these animals.

- Social Communication and Environmental Education Sub-Program

The media establishes the ways and means of communication to inform different segments of the population and public, private, educational, trade unions, associations and NGOs about the purposes and intentions of the entrepreneur.

Thus, the implementation of this Program will provide a rapprochement between the various stakeholders and the entrepreneur, disseminating information on the progress of the Terminal's operations.

At the same time, this program allows the suggestion of criticisms, expectations and claims of the population. The systematization of proposals and the possibility of evaluation tools should permeate the entire communication process.

Among the main activities, the following stand out:

- Preparation and distribution of information material aimed at meeting the demands related to its operation.
- Implementation of a core relationship between community and entrepreneur (a place for the reception of visitors, meetings with the community, presentation of institutional programs, relationship with the press, public institutions, academics and opinion makers); and
- Preparation of an agenda of communication activities.

Environmental education actions should have as main objectives:

- Promote a process of awareness of the various social actors of the communities close to the enterprise, in order to encourage the adoption of practices compatible with the protection of the environment.
- Mobilize and guide the workers and inspectors involved in the operation of the terminal, on environmental protection measures, as well as on appropriate conducts of relationship with the community.
- Present the measures to be adopted to minimize the interference of the enterprise with the environment.

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➤ Produce and edit educational material, aimed at the population of the region in order to instrumentalize educators and opinion makers to support the process of sensitizing the population about the importance of conserving and/or recovering the environment.

7.2.2. *Pest and Vector Control Program*

- Actions to control and reduce the population of rodents, pigeons, mosquitoes, cockroaches, bees and other vectors; and
- Environmental management measures and various management actions, aiming at the continuous improvement of the quality of the environment and port facilities.

7.2.3. *Risk Management Program / Emergency Action Plan - PGR/PAE*

The Risk Management Program (PGR) includes operational procedures, preventive maintenance procedures, employee training procedures and the Emergency Care Plan designed specifically for possible accidental scenarios.

The PGR has as its basic principle the compliance with current legislation and standards, always seeking:

- Minimize the risk of operation;
- Ensure the safety of your employees and the community;
- Develop processes and materials suitable for the preservation of the environment;
- Valuing and preserving the company's assets; and
- Improve the use of available resources, focusing on safety, quality and productivity.

The Program should contain the following activities at all:

- Security information;
- Risk analysis;
- Change management;
- Maintenance procedures;
- Operational procedures;
- Training program;
- Incident investigation procedures;
- Internal audits of the production system; and
- Emergency Response Plan (PAE).

The activities provided for in the Risk Management Program (PGR) should be available to all employees who have responsibilities related to the activities and operations carried out in the Terminal.

The Emergency Action Plan (PAE) is an integral part of the Risk Management Program. The purpose of a PAE is to provide a set of guidelines, data and information that provide the necessary conditions for the adoption of logical, technical and administrative procedures, structured to be triggered quickly in emergency situations, which have the potential to cause external repercussions to the limits of the enterprise and to minimize impacts to the population and the environment.

The procedures contained in the PAE are based on the characteristics of the facilities and on the operational and safety procedures adopted in the activities of receiving, storing and consuming chemicals.

In addition to defining emergency procedures, the Plan has a specific structure in order to:

- Define the responsibilities of those involved in responding to emergency situations, through a specific organizational structure for accident care;

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- Promote the integration of emergency response actions with other institutions, thus enabling the triggering of integrated and coordinated activities, so that the expected results can be achieved;
- Predict the resources, human and material, compatible with the possible accidents to be attended, in addition to the trigger procedures and routines to combat emergencies, according to the typology of the accidental scenarios studied.

7.2.4. Individual Emergency Plan - PEI

Depending on the characteristics of its activities, the enterprise in its operation phase should have an Individual Emergency Plan - PEI for incidents of oil contamination in waters under national jurisdiction, as determined by Federal Law No. 9,966/2000 and CONAMA Resolution No. 398/2008.

The EIP must ensure at the time of its approval the capacity of the facility to immediately execute the actions of responses provided to meet the incidents of oil contamination, in its various types, with the use of own resources, human and material, which can be complemented with additional resources of third parties, through agreements previously signed.

7.2.5. Mutual Assistance Plan - WFP

The WFP aims to ensure and enable effective compliance with the relevant standards, technical improvement, the exchange of information and integrated knowledge of the potential risks of each company and collectives, defining fast, efficient and coordinated actions.

It is a civil organization, with the involvement of the private initiative, non-profit, which operates without a certain deadline, being denied the provision of services to third parties, as well as the exercise of any activity not linked to the fulfillment of its objectives of protection of human life, the preservation of heritage and the environment.

For the participation of companies in the WFP, it is essential that they have their respective Emergency Control Plans - PCE, in accordance with the number of NR29 and Law No. 9966/00.

The WFP acts in complementation, and with permanent cooperation of the State Fire Department, establishing understandings with other public or private institutions, providing mutual help and conditions of infrastructure, techniques, and service that allows synergy between all. It promotes the development of the studies necessary for the technical and operational improvement of the actions to control the identified emergency scenarios, defining in a strategic, rational and economic way the availability of material resources applicable to each case.

8. Environmental Audit

Internal audits should be carried out at the terminal operation phase to verify the effectiveness of the implanted socio-environmental system. For the non-conformities detected, the necessary treatments and corrective actions should be presented to ensure adherence of the system to ISO 14.001, CONAMA Resolution No. 306 of July 5, 2002 and ISO 45,001, which updates OHSAS 18,001.

9. Contaminated Area Management - GAC

In the lease phase of the Terminal, the future tenant should provide for the management of contaminated areas (GAC) in its scope of work, through the definition of actions aimed at the knowledge of the characteristics of these sites, in addition to the impacts caused in them, providing the necessary instruments for decision-making regarding the most appropriate forms of intervention to minimize the risks to which they are subject to the population and the environment where they are located.

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It is necessary that the methodology used by the new tenant is based on sequential steps, where the information obtained in each step is the basis for the execution of the later stage, basically constituted by the Preliminary Environmental Assessment (Phase I), Confirmatory Investigation (Phase II), and Detailed Investigation (Phase III).

9.1. Preliminary Environmental Assessment (Phase I)

Phase I aims to carry out an initial diagnosis of potentially contaminated areas (PA), i.e., the preliminary identification of environmental liabilities, which will be possible by gathering available information about each of the areas identified in the previous stage and recognizing them through field inspections.

Briefly, the implementation of this step will make it possible to:

- Collect information about each AP in order to support the development of the next steps of the GAC;
- Document the existence of evidence or facts that lead to suspicion of contamination in the areas under evaluation;
- Establish the initial conceptual model of each area under evaluation;
- Check the need for emergency measures in the areas.

9.2. Confirmatory Environmental Investigation (Phase II)

The confirmatory investigation stage closes the process of identifying possible contaminated areas, with the main objective of confirming or not the existence of contamination and verifying the need for a detailed investigation in the suspicious areas, identified in the preliminary evaluation stage.

Thus, the results obtained in the confirmatory investigation stage are important to support the actions of the management body or environmental control body in the definition of the person responsible for contamination and the work necessary to solve the problem.

The confirmation of contamination in an area is basically given by taking samples and analysis of soil and/or groundwater, at strategically positioned points. Next, the results of the analyses performed on the collected samples should be interpreted by comparing the concentration values obtained with the concentration values established in lists of standards, defined by the body responsible for managing contaminated areas.

The conduction of a Confirmatory Environmental Research study consists basically of the following steps:

- Sampling plan;
- Collection of soil and groundwater and surface water samples;
- Conducting chemical and physicochemical analyses;
- Interpretation of the results; and
- Integrated diagnosis.

9.3. Detailed Environmental Research (Phase III)

From the confirmation that an area is contaminated, it is necessary to define what measures should be taken, in order to immediately safeguard the possible risk receptors identified around the area.

These measures are established from a prior assessment of the probable extent of contamination, the nature of contaminants, their toxicity and carcinogenicity, as well as the possible effects on persons, the environment and other assets to be protected, identified around the area, and may include:

- Adoption of emergency measures: elimination of non-aqueous free phases and restriction of access to the area;
- Application of remediation techniques: application of remediation methodologies for soil and groundwater aiming at reducing the concentrations of the different compounds identified to achieve acceptable levels of concentrations based on the limits calculated in the risk assessment (SSTL/CMA);
- Establishment of institutional control measures: investigation with the competent bodies on notifications of restrictions on land use or groundwater in the region;
- Establishment of engineering measures: recomposition of the areas after the remediation actions;
- Environmental Management Actions: monitoring of groundwater quality and the management of the removal and disposal of contaminated waste soil in areas where contaminants of interest (secondary sources) have been quantified.

In the detailed investigation stage, the objective is to quantify the contamination, that is, to evaluate in detail the characteristics of the source of contamination and the affected means, determining the dimensions of the affected areas or volumes, the types of contaminants present and their concentrations. Similarly, the characteristics of the contamination plumes, such as their limits and their propagation rate, should be defined.

The area contemplated in this investigation should cover, in addition to the object area itself, that is, that of ownership or domain of the company that caused or where the contamination occurred, all its surroundings of interest, to enable:

the total delimitation of sources of contamination, such as the extension of waste deposits, dump infiltration ditches, outbreaks of soil contaminated by leaks or other episodes;

- The total three-dimensional delimitation of groundwater contamination plumes.
- The identification of all risk receivers and users of the resources impacted in the surroundings.

10. Pricing of Environmental Costs for Terminal Licensing

The calculation of the socio-environmental costs associated with the implementation and operation of the terminals was based on the following assumptions:

- The costs of permanent activities, such as monitoring and environmental controls, were calculated for the entire lease period.
- All costs related to environmental studies and programs are referenced in dnit's consulting contracting table, as of June/2020.

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- The costs related to "environmental licensing" include the costs of the preparation of environmental studies compatible with the scale of the enterprise, analysis and licensing fees – covering the obtaining of prior licenses, installation, operation and their renewals throughout the rental period.
- The permits required and their environmental studies are those indicated in the chapter on environmental licensing.

10.1. Licensing Fees

The costs related to environmental licensing include the analysis fees related to the issuance of the Prior, Installation and Operation Licenses, having as parameter the activity carried out by the enterprise, the complexity factor of the polluting source and the price according to CETESB regulations.

The licensing fees were calculated based on the values established by CETESB, as indicated in the following table.

Calculation of the price for shipping licenses

The formula to be applied for the calculation of the price varies according to the nature of the activity / enterprise.

A - Manufacturing Industries

- Warehouse and wholesale of flammable products.

For LP concomitant with LI, LI and LO

$P = 70 + (1.5 \times W \times Ac)$ where:

P = price to be charged, expressed in UFESP;

Ac = square root of the sum of the built area + outdoor activity area (m²); and

W = source complexity factor.

For LP = 0.30 x P

For ME and EPP = 0.15 x P

For LO Renewal = 0.5 x P(LO)

P(LO) = LO price

UFESP 2020 = R\$ 27,61

Table 5: Costs issuance of environmental license Terminal **STS08A**.
Sources: <https://licenciamento.cetesb.sp.gov.br/cetesb/detalhes.asp> and
<https://licenciamento.cetesb.sp.gov.br/cetesb/fator.asp>.

Thus, considering the size of the area to be licensed for **the STS08A** of 305.688 m² and the complexity factor of the polluting source (W) in the value 3.0 (<https://licenciamento.cetesb.sp.gov.br/cetesb/fator.asp>) has as price to be charged. At this stage the terminal area will be defined for the 1st Transition Stage, i.e., 330,006 m².

$$P = 70 + (1,5 \times W \times Ac)$$

$$P = 70 + (1,5 \times 3,0 \times \sqrt{343.926})$$

$$P \cong 2.709,03 \text{ UFESP}$$

The value of obtaining LI and LO is calculated by multiplying ***P by the value*** of UFESP in 2020:

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$$P = 2.709,03 \times R\$ 27,61$$

$$P = R\$ 74.796,43$$

The analysis value para the lp is calculated below:

$$LP = 0,3 \times P$$

$$LP = 0,3 \times 2.709,43$$

$$LP = 812,71 \times R\$ 27,61$$

$$LP = R\$ 22.438,93$$

It is worthy of note that the terminal in addition to transfer go to LO the activities of the equipment park already installed in the area, for the new tenant, will also have to pay for the obtainmentof the newlicenses (LP, LI and LO) for the expansion of its equipment park, when the expansion of its activities,including the construction of the new pier and the realization of dredging.

It was also considered that the operating license will be issued with validity of 5 years, and should be renewed with this frequency throughout the period of the lease. At this stage the terminal area will be defined for the 2nd Transition Stage, i.e., 283,429 m².

$$P = 70 + (1,5 \times W \times Ac)$$

$$P = 70 + (1,5 \times 3,0 \times \sqrt{297.349})$$

$$P \cong 2.523,84 UFESP$$

$$LO \text{ (renovação)} = 0,5 \times P$$

$$LO \text{ (renovação)} = 0,5 \times 2.523,84$$

$$LO \text{ (renovação)} = 2.523,84 \times R\$ 27,61$$

$$LO \text{ (renovação)} = R\$ 34.841,57$$

Prices for the analysis of licensing services for undertakings subject to environmental impact assessment were estimated, according to a table provided by CETESB (Annex 3 of Decree No. 62,973 of November 28, 2017),taking into account the licensing phase and the environmental study necessary for thearea, in this case the EIA/RIMA. An analysis was considered for each licensing phase (LP, LI and LO), the renewal of LO every 5 years and the analysis of request dand suppression of native vegetation for ASV.

STS08	LP	LI	ASV	LO year 1 to 5	LO from the 5	LO Renewal
License	R\$ 22.438,93	R\$ 74.796,43	R\$ 1.119,40	R\$ 74.796,43	R\$ 67.820,45	R\$ 34.841,57
Analysis	R\$ 62.122,50	R\$ 62,122,50	R\$ 1.380,50	R\$ 62.122,50	R\$ 62.122,50	R\$ 62.122,50
Total	R\$ 84.561,43	R\$ 136.918,93	R\$ 2.499,90	R\$ 136.918,93	R\$ 129.942,95	R\$ 96.964,07

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Table 6: Costs of environmental licensing for Terminal **STS08A**.
Sources: <https://licenciamento.cetesb.sp.gov.br/cetesb/detalhes.asp> and
<https://licenciamento.cetesb.sp.gov.br/cetesb/fator.asp>.

10.2. Environmental Studies

In view of the characteristics of the area and the activity historically carried out in the region, it is observed that the most indicated study for the enterprise, to support the analysis of the LP application will be the EIA/RIMA. For LI, a Basic Environmental Plan - PBA should be prepared and, in order to meet municipal regulations, it will be necessary to prepare a new Preliminary Neighborhood Impact Study - EIV. And to mitigate the impacts arising from the implementation of new structures and the operation of the Terminals, it will be necessary to implement a PBA.

In view of the requirements regarding the procedures and scope of environmental studies to support emissions from installation and operation licenses, the professionals needed to develop environmental programs for port enterprises were provided.

It is emphasized that the values were referenced by the price list used by The DNIT for hiring professionals, which considers the social charges, administrative expenses, tax costs and profit of the company hired to perform the service, as shown in the following table.

Environmental Studies			EIV		EIA/RIMA		PBA	
	R\$/h		hours	Cost (R\$)	hours	Cost (R\$)	hours	Cost (R\$)
General coordination	33.748,50	191,75	100	19.175,28	200	38.350,57	140	26.845,40
Characterization of the enterprise	20.803,99	118,20	50	5.910,23	200	23.640,90	120	14.184,54
Biotic Medium	20.803,99	118,20	50	5.910,23	200	23.640,90	120	14.184,54
Physical Medium	20.803,99	118,20	100	11.820,45	200	23.640,90	120	14.184,54
socioeconomic	20.803,99	118,20	100	11.820,45	100	11.820,45	60	7.092,27
Diagrammer / Reviewer / Writer	20.803,99	118,20	10	1.182,05	20	2.364,09	10	1.182,05
Subtotal labor				55.818,68		123.457,81		77.673,33
	Unot	R\$/un id	As	Cost (R\$)	As	Cost (R\$)	As	Cost (R\$)
Offsets + daily	budget		1,00	5.581,87	1	12.345,78	1	7.767,33
Administrative + operational expenses	budget		1,00	16.745,60	1	37.037,34	1	23.302,00
Subtotal materials and services				22.327,47		49.383,12		31.069,33
SUBTOTAL				78.146,15		172.840,93		108.742,67

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profit	12,00%			9.377,54		20.740,91		13.049,12
taxes	16,62%			14.546,44		32.173,30		20.241,79
OVERALL TOTAL				102.070,13		225.755,15		142.033,58
TOTAL EIV+ EIA/RIMA + PBA								R\$ 469.858,86

Table 7: Estimated costs with preparation of study to define environmental control measures.

Source: Own Elaboration, from DNIT ConsultingTable.

10.3. Forest Compensation

It is observed that the works to be implemented in the Terminal will require the suppression of native vegetation, being necessary to obtain authorization for the suppression of vegetation and the payment of environmental compensation.

As established in Resolution SMA No.7 of January 18, 2017, for the definition of environmental compensation due to the Terminal, it is necessary to identify the Priority Class in which the area is located in the Map of Priority Areas for Restoration of Native Vegetation (Annex I) and the stage of regeneration of the vegetation to be suppressed (Art. 4). Thus, it is verified that the entire Port of Santos, including the STS08A, falls into the Low Priority Class of said Map. In addition, recent studies conducted on site show that it is secondary vegetation in the middle stage of regeneration, a fact that refers to area compensation equivalent to 1.5 (one point five) times the authorized area (paragraph 2, art. 4).

In view of the estimate of vegetation removal in an area of approximately 8.000 m², applying the definitions of SMA Resolution No. 7/2017, it is estimated that it will be necessary to pay compensation for an area equivalent to 12,000 m². From the area, the amount of compensation was calculated, based on costs the proposition of the TPU/DER/SP, from June 2019, updated by the IPC-A of July 2020, reaching the value of R\$ 68.962,75, as shown below. The maintenance of the planting was considered for a period of 36 months.

activity	Unit Value	quantity	Total
30.01.40.03 Planting Essential Native Forests h>=1.50M (ha)	R\$ 29.914,94	1,20	R\$ 36.571,91
Maintenance of Planting with Native Forest Essentials (ha/month)	R\$ 735.97	43,20	R\$ 32.390,83
TOTAL COST			R\$ 68.962,75

Table 8: Estimated costs with the preparation of study to define and environmental control measures.

Source: Cost base - TPU/DER/SP: June/2020, IPC-A (June/19-June/2020) = 1.018775.

10.4. Mitigating and Compensatory Measures Foreseen in the EIV

As already discussed, it will be necessary to present a new EIV to the City of Santos, with the establishment of specific mitigating and compensatory measures for the new area, to be executed by the new tenant. However, in view of the lack of information regarding the methodology used by the City of Santos to define the measures

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to be implemented, it is not possible to price such measures, however, it is understood that these will require costs to be borne by the lessee.

Thus, the GrantingPower is responsible for any costs related to the execution of the Previous Neighborhood Impact Study required by the Municipality of Santos, to be implemented by the Tenant for environmental licensing purposes.

10.5. ETE Maintenance Cost

As already discussed, the costs of maintaining the effluent treatment plant, present in STS08A, should be shared between the two terminals. The annual maintenance value for each of the terminals is estimated at R\$ 134,880.00, as shown below.

It is notable that the mentioned video was estimated based on Electronic Trading No. 5/2019, conducted by CODESP, available at: http://intranet.portodesantos.com.br/lei_acesso/licitacoes.asp, and that the remuneration will be based on the m³ of treated sewage.

Item	discrimination	Pcs .	As. total	Unit Cost	Total Monthly (R\$)	Total Annual Total (R\$)
1	Collection, Treatment and Disposal of Domestic Sewage	m ³	1.00 0	R\$ 11,24	R\$ 11.240,00	R\$ 134.880,00
TOTAL MONITORING					R\$ 11.240,00	R\$ 134.880,00

Table 9: Estimated costs of maintaining the TEE present in **STS08A**.
Source: Electronic Trading No. 5/2019 - CODESP.

10.6. Environmental Programs

For the definition of environmental programs necessary for the implementation and operation of port terminals, the programs for control and mitigation of impacts required in Installation Licenses and Operating Licenses issued by IBAMA and CETESB for undertakings with these characteristics, as well as in license constraints issued by state environmental agencies for port terminals, are adopted as references, as acquired in the updating of other EVTEAs under the Lease Program – PAP.

Thus, the implementation of these programs was defined as follows:

- The Program of Control and Environmental Management of Works - PCGAO and the respective Subprograms in the installation phase of the Terminal were planned to be executed by contracting outsourced services through a specialized company.
- The environmental management structure for the Environmental Management Program – PGA in the operation of the project will be the responsibility of the tenant of the Terminal, which will have its own team, specialized in the area of environmental management and work safety. This structure will also develop actions aimed at Solid Waste Management, Social Communication/Environmental Education that will manage the terminal's relationship with the community and raise employee awareness of sustainability issues. In addition, the team will be responsible for participating in the port's Mutual Assistance Plan (WFP). The sizing of the own team will depend on the size of the terminal.
- It is emphasized that the costs of personnel allocated for the management of environmental programs and for the execution of Solid Waste Management Programs, Social Communication and

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Environmental Education are provided in Section D – Operational as its own labor, therefore, it does not compose the environmental costs priced here.

- All other environmental programs and actions in the operation phase will be outsourced, with the hiring of specialized consultancies that will be subordinated to the environmental management structure of the terminal tenant. In this case, the DNIT table for hiring professionals as a reference was also used, plus the charges.

The following are cost estimates for the Rental Area **STS08 A** **foreach** phase of the enterprise.

Mitigating Measures and Environmental Programs		
Previous Study	Costs/Year (R\$)	Obs
Previous Environmental Assessment Study	45.383,43	1st year
Installation Phase		
Program of Environmental Management and Environmental Control of Works	Costs/Year (R\$)	Obs
Program of Environmental Management and Environmental Control of Works	226.917,14	1st to 5th grade
Solid Waste Management Subprogram	<i>Own team</i>	1st to 5th grade
Liquid Effluent Control and Monitoring Subprogram	45.383,43	1st to 5th grade
Air Quality Monitoring Subprogram	45.383,43	1st to 5th grade
Noise Control and Monitoring Subprogram	45.383,43	1st to 5th grade
Environmental Education and Social Communication Sub-Program	<i>Own team</i>	1st to 5th grade
Water Quality Monitoring Subprogram	45.383,43	1st to 5th grade
Monitoring vegetation suppression	45.383,43	1st to 5th grade
Deepening Dredging Phase		
Water and Sediment Quality Monitoring Program	45.383,43	3rd year
Environmental Education and Social Communication Program	<i>Own team</i>	3rd year
Environmental Monitoring Program of the Dredged Material Disposal Area	45.383,43	3rd year
Benthic Community Monitoring Program, Ichthyofauna, Phytoplankton and Zooplankton	45.383,43	3rd year
Hydrodynamic Parameter Monitoring and Modeling Program	45.383,43	3rd year
Sediment Plume Monitoring Program	45.383,43	3rd year
TOTAL	226.917,14	
Operation Phase	Cost/Year	Periodicidade
Environmental management	Own team	-
SGA deployment - year 1	R\$ 144.636,90	1st year
SGA deployment - year 2	R\$ 72.318,45	2nd year
Environmental Management and Control Program	R\$ 181.533,71	semiannual
Solid Waste Management Subprogram	Own team	semiannual
Environmental Education and Social Communication Sub-Program	Own team	biannual

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Mitigating Measures and Environmental Programs		
Liquid Effluent Management Subprogram	R\$ 45.383,43	semiannual
Noise Control and Monitoring Subprogram	R\$ 45.383,43	semiannual
Air Quality Monitoring Subprogram	R\$ 45.383,43	semiannual
Water Quality Monitoring Subprogram	R\$ 45.383,43	semiannual
Pest and Vector Control Program	R\$ 52.001,08	monthly
Risk Management Program / Emergency Action Plan (PGR/PAE)	R\$ 65.216,77	-
elaboration	R\$ 43.477,85	3 years old
Training	R\$ 21.738,92	annual
Individual Emergency Plan (PEI)	R\$ 43.477,85	5 years old
Social Communication Program / Environmental Education Program	Own team	semiannual
CONAMA Audit 306/02	R\$ 34.013,80	2 years old
ISO 14001 Audit	R\$ 34.013,80	3 years old
OHSSAS Audit 18,001	R\$ 34.013,80	3 years old

Table 10: Costs with environmental programs in the implementation and operation phase of the STS08 Area.

Source: Own elaboration, from DNIT Consulting Table, base date junho o/2020.

Some environmental programs had part of their costs parameterized from the Port Lease program, and technical, methodological and operational information was used that supported the definition of the effort necessary for the execution of certain environmental programs. These values, when used, were updated by applying the IPC-At to the base date of June 2020.

10.7. Emergency Response Center - CRE

Currently, the **STS08A** terminal has an Emergency Response Center – CRE equipped to carry out emergency preparedness and response services to occurrences and emergencies involving hydrocarbons and other hazardous chemicals.

The budget for the CRE was built based on the contracting carried out by CODESP through Electronic Trading No. 12/20, available in: <http://intranet.portodesantos.com.br/leiacesso/licitacoes.asp>, which had as subject: "Provision of Services of Preparedness and Response to occurrences and emergencies involving hydrocarbons and dangerous chemicals, in the Organized Port of Santos and Adjacencies".

The costs presented include the supply of the equipment and the maintenance of the CRE for a period of 12 months, as shown below.

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Estimated Annual Cost	R\$ 1.402.075,46
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Table 11: Annual cost for the Emergency Response Centre - CRE in **STS08A**.

Source: Own elaboration based on Electronic Trading No. 12/20 CODESP.

10.8. Use of PDO (Ocean Disposition Polygon) for Dredged Material

In view of the need for final disposal of the material to be dredged for the construction of the new pier, it will be necessary to use the Polygon of Oceanic Disposition (PDO) of the Port of Santos.

Conforme information provided by the Port Authority of Santos, the PDO has two areas for the disposal of dredged material, the SUC - Controlled Use Sector and sur - Restricted Use Sector. Differentiation occurs by the characteristics of the material to be deposited. The rate for disposition in SUC is R\$ 0.25/m³ and in SUR is R\$ 1.85/m³. It also established that, as it turns out that the disposal of sediments is compromising the quality and/or operability conditions of the PDO, impairing its use for the reception of material from the dredging necessary by the SPA, the entrepreneur will be responsible for obtaining studies and technical opinions that indicate appropriate measures for the recovery of the site, as well as the implementation of the actions necessary to the restitution of the appropriate conditions for its use. There is also the possibility of sediment not being accepted for disposal in the PDO, depending on the degree of sediment contamination. He also reported that the rates for using the PDO are in the process of being updated. If the rates are revised, the amount displayed may change.

In the present study, it is understood that the material to be dredged is in conditions of disposition in the SUC - Controlled Use Sector of the PDO.

Applying the rate for deposition in the SUC, of R\$ 0.25/m³, in 1.622.683.5m³ of material to be dredged, the total amount of R\$ 405,670.88 in fee is obtained.

Annex **F-1 shows** the details of the amounts considered in the project's cash flow, subdivided into environmental licensing costs, environmental programs, as well as costs for environmental management, as presented in this report.

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Annex F-1 - Environmental Costs

Description	1	2	3	4	5	6	7	8	9	10	11	12	13
	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Implementation - Instalation License and Operation- Operating License and studies	R\$ 693.839,12												
Prior Environmental Assessment Study	R\$ 45.383,43				R\$ 129.942,95					R\$ 96.964,07			
Deepening dredging program			R\$ 226.917,14										
SGA deployment- year 1	R\$ 144.636,90												
SGA deployment- year 2		R\$ 72.318,45											
Cost of disposition - dredged sediment disposition -PDO (Ocean Disposition)			R\$ 405.670,88										
Implementation - Program of Environmental Management and Environmental Control of		R\$ 226.917,14	R\$ 226.917,14	R\$ 226.917,14	R\$ 226.917,14								
Environmental compensation				R\$ 68.962,75									
Operation - Program of Environmental	R\$ 181.533,71	R\$ 181.533,71	R\$ 181.533,71	R\$ 181.533,71	R\$ 181.533,71	R\$ 181.533,71	R\$ 181.533,71	R\$ 181.533,71	R\$ 181.533,71	R\$ 181.533,71	R\$ 181.533,71	R\$ 181.533,71	R\$ 181.533,71
Sewage Treatment Plant - ETE	R\$ 134.880,00	R\$ 134.880,00	R\$ 134.880,00	R\$ 134.880,00	R\$ 134.880,00	R\$ 134.880,00	R\$ 134.880,00	R\$ 134.880,00	R\$ 134.880,00	R\$ 134.880,00	R\$ 134.880,00	R\$ 134.880,00	R\$ 134.880,00
Pest and Vector Control Program	R\$ 52.001,08	R\$ 52.001,08	R\$ 52.001,08	R\$ 52.001,08	R\$ 52.001,08	R\$ 52.001,08	R\$ 52.001,08	R\$ 52.001,08	R\$ 52.001,08	R\$ 52.001,08	R\$ 52.001,08	R\$ 52.001,08	R\$ 52.001,08
Individual Emergency Plan (PEI)	R\$ 43.477,85					R\$ 43.477,85							
Risk Management Program/Emergency Action Plan (PGR/PAE)	R\$ 65.216,77	R\$ 21.738,92	R\$ 21.738,92	R\$ 65.216,77	R\$ 21.738,92	R\$ 21.738,92	R\$ 65.216,77	R\$ 21.738,92	R\$ 21.738,92	R\$ 65.216,77	R\$ 21.738,92	R\$ 21.738,92	R\$ 65.216,77
Emergency Response Center	R\$ 1.402.075,46	R\$ 1.402.075,46	R\$ 1.402.075,46	R\$ 1.402.075,46	R\$ 1.402.075,46	R\$ 1.402.075,46	R\$ 1.402.075,46	R\$ 1.402.075,46	R\$ 1.402.075,46	R\$ 1.402.075,46	R\$ 1.402.075,46	R\$ 1.402.075,46	R\$ 1.402.075,46
CONAMA Audit 306/02				R\$ 34.013,80		R\$ 34.013,80					R\$ 34.013,80		R\$ 34.013,80
ISO 14001 Audit				R\$ 34.013,80			R\$ 34.013,80				R\$ 34.013,80		R\$ 34.013,80
OHSSAS Audit 18,001				R\$ 34.013,80			R\$ 34.013,80				R\$ 34.013,80		R\$ 34.013,80
TOTAL	R\$ 2.899.963,25	R\$ 2.091.464,76	R\$ 2.651.734,32	R\$ 2.233.628,30	R\$ 2.149.089,26	R\$ 1.869.720,82	R\$ 1.903.734,62	R\$ 1.826.242,97	R\$ 1.792.229,17	R\$ 2.034.712,49	R\$ 1.835.707,02	R\$ 1.826.242,97	R\$ 1.903.734,62

Description	14	15	16	17	18	19	20	21	22	23	24	25
	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
Implementation - Instalation License and Operation- Operating License and studies		R\$ 96.964,07										
Prior Environmental Assessment Study							R\$ 96.964,07					R\$ 96.964,07
Deepening dredging program												
SGA deployment- year 1												
SGA deployment- year 2												
Cost of disposition - dredged sediment disposition -PDO (Ocean Disposition)												
Implementation - Program of Environmental Management and Environmental Control of												
Environmental compensation												
Operation - Program of Environmental	R\$ 181.533,71	R\$ 181.533,71	R\$ 181.533,71	R\$ 181.533,71	R\$ 181.533,71	R\$ 181.533,71	R\$ 181.533,71	R\$ 181.533,71	R\$ 181.533,71	R\$ 181.533,71	R\$ 181.533,71	R\$ 181.533,71
Sewage Treatment Plant - ETE	R\$ 134.880,00	R\$ 134.880,00	R\$ 134.880,00	R\$ 134.880,00	R\$ 134.880,00	R\$ 134.880,00	R\$ 134.880,00	R\$ 134.880,00	R\$ 134.880,00	R\$ 134.880,00	R\$ 134.880,00	R\$ 134.880,00
Pest and Vector Control Program	R\$ 52.001,08	R\$ 52.001,08	R\$ 52.001,08	R\$ 52.001,08	R\$ 52.001,08	R\$ 52.001,08	R\$ 52.001,08	R\$ 52.001,08	R\$ 52.001,08	R\$ 52.001,08	R\$ 52.001,08	R\$ 52.001,08
Individual Emergency Plan (PEI)			R\$ 43.477,85									
Risk Management Program/Emergency Action Plan (PGR/PAE)	R\$ 21.738,92	R\$ 21.738,92	R\$ 65.216,77	R\$ 21.738,92	R\$ 21.738,92	R\$ 65.216,77	R\$ 21.738,92	R\$ 21.738,92	R\$ 65.216,77	R\$ 21.738,92	R\$ 21.738,92	R\$ 65.216,77
Emergency Response Center	R\$ 1.402.075,46	R\$ 1.402.075,46	R\$ 1.402.075,46	R\$ 1.402.075,46	R\$ 1.402.075,46	R\$ 1.402.075,46	R\$ 1.402.075,46	R\$ 1.402.075,46	R\$ 1.402.075,46	R\$ 1.402.075,46	R\$ 1.402.075,46	R\$ 1.402.075,46
CONAMA Audit 306/02	R\$ 34.013,80		R\$ 34.013,80		R\$ 34.013,80		R\$ 34.013,80				R\$ 34.013,80	
ISO 14001 Audit			R\$ 34.013,80			R\$ 34.013,80					R\$ 34.013,80	
OHSSAS Audit 18,001			R\$ 34.013,80			R\$ 34.013,80					R\$ 34.013,80	
TOTAL	R\$ 1.826.242,97	R\$ 1.889.193,25	R\$ 1.981.226,26	R\$ 1.792.229,17	R\$ 1.826.242,97	R\$ 1.903.734,62	R\$ 1.923.207,04	R\$ 1.835.707,02	R\$ 1.937.748,41	R\$ 1.792.229,17	R\$ 1.826.242,97	R\$ 2.000.698,69