METRO LÍNEA 1

PRIMERA LINEA DEL METRO DE BOGOTÁ

METRO BOGOTÁ

EXECUTIVE SUMMARY - PLAN DE MANEJO AMBIENTAL Y SOCIAL PARA LAS ACTIVIDADES TEMPRANAS (PATIO TALLER)

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1 INTRODUCTION

The Empresa Metro de Bogota (EMB by its Spanish acronym) and the concessionaire METRO LINEA 1 SAS (ML1) subscribed the Concession Contract N. 163 de 2019 for the construction, operation, and maintenance of The First Metro Line of Bogota (PMLB by its Spanish acronym), which Initiation Act was signed on October 20th, 2020.

The contract has as objective “The granting of a concession for, in accordance with the provisions, the concessionaire at its own risk and expense, carries out all the necessary activities for the funding, main studies, and detail designs, and other detail studies and designs, execution of the construction works, civil works in the previous phase, building works, and works for networks under the concessionaire´s responsibility, works for repair and conditioning of detours, works for special intersections, operation and maintenance of The Project, social and environmental management, partial reversion and reversion of the infrastructure corresponding to the PLMB, as well as the Financing, Design, Installation, Supply, Individual and Collective Joints, Certifications, Start-Up, Operation, Replacement, Maintenance, and Reversion of the Rolling Stock, and the Metro-Rail systems, and the provision of the public passenger rail transport service in Bogota, through the PLMB”.

The Concession contract is divided into three (3) stages, which are structured in phases, as follows:

- Pre-operation Stage: Divided into the following phases:
  - Preliminary phase (estimated duration: 810 days).
  - Construction phase (estimated duration: 1710 days).
  - Testing, Certification and Start-up Phase (Estimated duration: 180 days).
- Operation and Maintenance Stage: Starts with the subscription of the Act of Completion of the Testing, Certifications, and Start-Up Phase, and lasts until the date of completion of the Operation and Maintenance.
- Reversion Stage: Starts with the conclusion of the Operation and Maintenance stage and concludes with the subscription of the Reversion Act.

According to the provision of the Technical Appendix N. 17 – Chapter VII Milestones for the Implementation Plan, the Concessionaire will carry out the adaptation works of the Yard Field, in Bosa locality, according to the described activities in the project's Schedule of Activities.

The adaptation works and activities described in the EMP for the Workshop Yard comprise six (6) stages. The first stage corresponds to the implementation of the PMT, followed by the installation of camps, topography, adequacy of the access road, enclosure and signage work, and the transfer of networks areas (Stage 2), to thus begin the conformation of the work platform (Stage 3). Subsequently, the adaptation of areas destined for the construction of the foundations and installation of the concrete plants

and metallic structures will be carried out, either in the precast PHC or precast U-beams yard, which refer to stages 4 and 5, respectively.

At this point, stage 6 begins, which refers to the activities for the adaptation of an area for the storage of precast elements and others, which will correspond to a dynamic system that will ensure the optimal and strategic rotation of precast elements for the construction of the viaduct.

For its part, Technical Appendix 15, Environmental Management and Occupational Health and Safety, Chapter three (3) Numeral 3.1, establishes "Obligations during the Preliminary Phase: Letter (a) Adjustments, complementation, updating and implementation of the PLMB Environmental and Social Management Plan for Multilateral Entities and the PLMB Monitoring and Follow-up Plan for Multilateral Entities for all works to be executed during the Preliminary Phase".

In accordance with the above, this document contains the adjustments, complementation and updating of the Environmental and Social Management Plan - ESMP and the Monitoring and Follow-up Plan for the First Line of the Bogotá Subway, which the Concessionaire will implement in the development of the adaptation works of the Workshop Yard in the Preliminary Phase. Compliance with and application of this ESMP will be mandatory for all contractors and subcontractors of Metro Line 1, therefore, the Concessionaire has established contractual clauses within the contracts with its Contractors, Subcontractors and Suppliers that require compliance with the requirements of this ESMP, including its annexes.

This executive summary of the ESMP is structured as follows:

Table 1 – PMAS' General Structure

CHAPTER	NAME	DESCRIPTION
1	INTRODUCTION	It includes the Object of Contract 163 of 2019, the stages of the Project, the description of the works to be executed and the structuring of the Depot PMAS.
2	OBJECTIVE	Describes the main objective of the document
3	SCOPE	Describes the scope of the PMAS, the area and activities where it will be applied.
4	RESPONIBLE	Describes the main structure of the Concessionaire and the Contractor that will execute the Work.
5	REFERENCESS	Describes contractual references, national and international regulations and documents
6	BIOTIC AND ABIOTIC ENVIRONMENT	
6.1	Description and location of the Works to be	Describes the location of the Depot, the work activities to be carried out with technical and construction details, resources, impacted environmental

CHAPTER	NAME	DESCRIPTION
	executed during the preliminary phase	components and programs to be applied for the prevention, control, mitigation and compensation of environmental impacts.
6.2	Areas of influence	Describes the identification, delimitation and definition of the direct and indirect areas of influence and the methodology by which it was determined.
6.3	Characterization of the area of influence	Describes the characteristics of the biotic and abiotic components of the area of influence.
6.4	Demand, use and/or impact on natural resources	Describes the demand for resources to be used by the Depot preliminary phase construction project.
6.5	Identification and evaluation of environmental impacts and risks	It presents the matrix of environmental impacts and risks associated with each of the construction activities.
6.6	Environmental management programs	Describes the management programs for the abiotic and biotic components that will be implemented to prevent, control, mitigate and compensate the identified environmental impacts.
6.7	Environmental Monitoring and Follow-up Plan	Describes the monitoring programs that will ensure compliance with the implemented management measures
6.8	Occupational Health and Safety Management System	Describes the system designed by ML1 to manage health and safety risks for its employees and contractors.
6.9	Risk and Disaster Management Plan	Describes the analysis and assessment of risks derived from natural, anthropic, socio-natural and operational hazards related to the Depot activities.
7	SOCIO-ECONOMIC ENVIRONMENT	
7.1	Areas of Influence	Describes the identification, delimitation and definition of the areas of direct and indirect influence and the methodology by which it was determined.
7.2	Characterization	Describes the characteristics of the socioeconomic environment of the area of influence.

CHAPTER	NAME	DESCRIPTION
7.3	Impact Identification, Analysis and Evaluation	It presents the matrix of social impacts and risks associated with each of the construction activities.
7.4	Social Management Programs	Describes the management programs for the socioeconomic environment that will be implemented to prevent, control, mitigate and compensate for the identified social impacts.
7.5	Follow-up and Monitoring Plan	Describes the monitoring programs that will ensure compliance with the implemented management measures.
8	BIBLIOGRAPHY	Summarizes the bibliographic references from which the basic information was obtained.

2 OBJECTIVES

The general objective of the ESMP is to have an instrument for environmental, social and occupational health and safety management to prevent, mitigate, correct and/or compensate for risks and impacts, complying with contractual requirements (Technical Appendix No.15), applicable national regulations and the environmental, social and occupational health and safety safeguards of the Multilateral Entities for the works of the previous phase in the Workshop Yard.

- Present the location of the intervention areas taking into account the biotic, abiotic and socioeconomic environments.
- Describe the construction and adaptation activities to be developed in the Workshop Yard, corresponding to stages 1 to 6, in order to identify the aspects and evaluate the environmental impacts associated with these, likewise identify the hazards and determine and evaluate the occupational health and safety risks.
- Define and characterize the areas of influence according to the impacts generated by the construction and adaptation activities to be developed in the Workshop Yard, corresponding to stages 1 to 6 in the biotic, abiotic and socioeconomic environments.
- Evaluate the environmental and social impacts and risks that could arise from the implementation of the early activities of the Workshop Yard (Stage 1 to 6) and define the environmental and social management measures for the projects that allow compliance with the safeguard policies of the Multilateral Bank.
- Define management plans and programs to prevent, mitigate, correct and/or compensate for environmental impacts, which in turn will minimize occupational health and safety risks.
- Ensure compliance by the project, its contractors and suppliers, with applicable national regulations and Multilateral Bank safeguards policies.
- Define a schedule and budget that ensures the availability of resources necessary for the implementation of the ESMP in compliance with national regulations and the Multilateral Bank's safeguards policies.
- Inform the corresponding entities, the measures, procedures, programs, plans and other

tools to be implemented in the Project, to comply with applicable and current normative and regulatory requirements.

- Update stages 4 and 5, which correspond to the adaptation of areas for the construction of the foundations and installation of the concrete plants and metal structure of the precast PHC and U Beams yards, as well as the area for the storage of precast elements and others, corresponding to Stage 6.

3 SCOPE AND METHODOLOGY

3.1 SCOPE

This Environmental and Social Management Plan will be implemented for the area called Patio Taller, located in the El Corzo I and El Corzo II properties, to be more specific, in the Bosa district of the city of Bogotá. While its management measures are consistent with the activities of adequacy and early works, planned in 6 stages.

The coordinates of their scope are listed below:

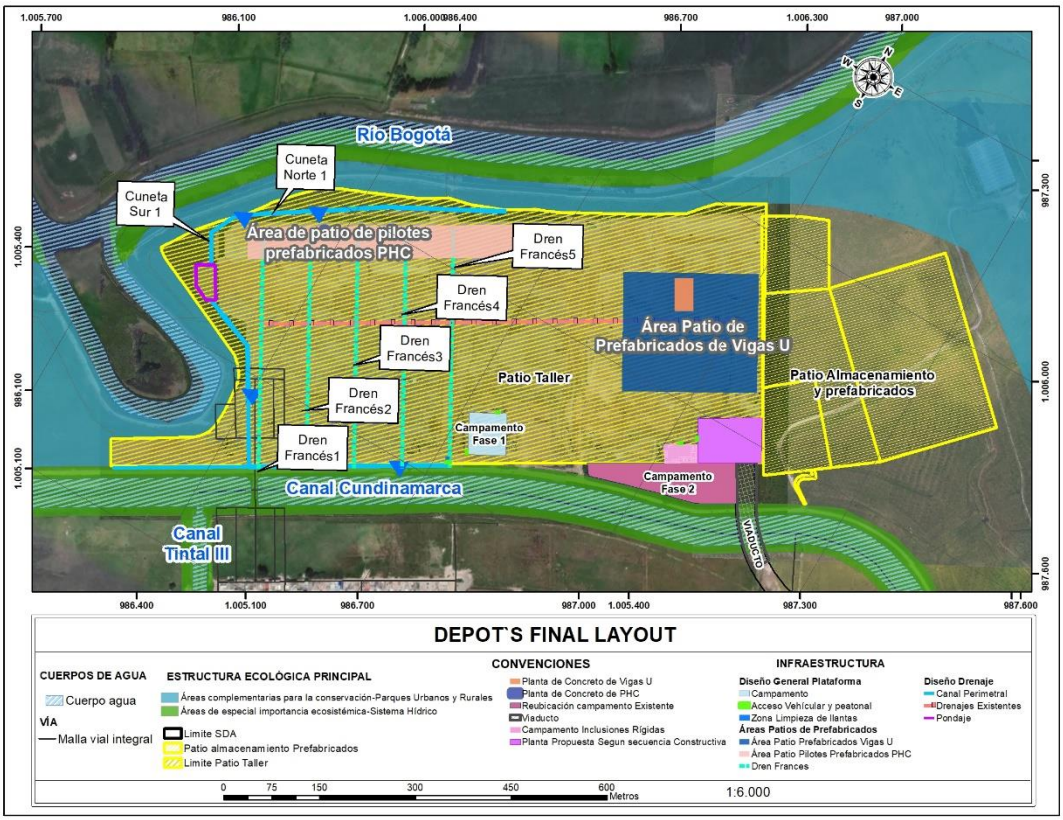

Figure 1 Depot localization

Source: Metro Linea 1 S.A.S., 2021

In stage 1 the PMT is implemented, continuing with stage 2 where topography, enclosure and signaling works are executed, installation of camps, transfer of aerial networks and the adequacy of the access road, in stage 3 the conformation of the work platform is carried out. In stage 1 the PMT is implemented, continuing with stage 2 where topography, enclosure and signaling works are executed, installation of camps, transfer of aerial networks and the adequacy of the access road, in stage 3 the conformation of the work platform is carried out. This update includes stages 4, 5 and 6, which correspond to the activities

for the adaptation of areas for the construction of the precast PHC (Stage 4) and U-beams (Stage 5) and precast and other storage areas (Stage 6).

Regarding stages 4 and 5, the foundations will be built, and the mobile concrete plants will be installed, followed by the metallic structure of the precast pile yards PHC and U-beams, whose implementation period will be equal to the current execution schedule, i.e. 17 months.

Regarding stage 6, the adaptation activities will have a duration of 335 days. These include the following stages: stripping (20 days); land leveling (15 days); shaping of the work platform and precision stakeout (40 days), followed by foundations for gantry cranes (90 days), shaping of bases for beam storage (90 days), shaping of fencing (40 days), and finally installation of machinery and equipment (40 days).

On the other hand, the PMAS must be implemented by each of the entities, whether Contractor, Subcontractor, Suppliers and other third parties that carry out activities within the framework of the works and activities for the adequacy of the Workshop Yard.

3.2 METHODOLOGY

The methodology for the preparation of the PMAS for early activities was established taking into account the structuring of the Concession Contract by stages and phases, in this case, for the first phase called Preliminary Phase, in which the activities of studies and designs are defined, and the beginning of works for the adaptation of the Depot land, according to TA 17 and was developed based on TA 15 corresponding to Environmental Management and Occupational Health and Safety, Annex 1, which describes the technical criteria for updating the Environmental and Social Management Plan and the PLMB Monitoring and Follow-up Plan for Multilateral Entities.

The characteristics of this concession contract mean that the ideal conditions for any project are not present, which consists of advancing the designs to 100% and thus initiating the environmental procedures and permits so that it can later be built and operated. The project is defined by phases that involve many simultaneous works, as happens in the previous phase, where work is done in parallel in the designs, procedures and permits, and then when the construction of the activities of the previous phase begins, in parallel with the designs, procedures and permits of the construction phase, which means that the PMAS is not presented with all the information at the level of detail that is required and it is necessary to update it after its No Objection.

The document's progression was defined based on the areas to be intervened, the activities to be carried out and the definition of the construction processes defined by the Design and Construction Departments. Subsequently, the definition of areas of influence, characterization of the abiotic, biotic and socioeconomic environments, demand, use, exploitation and/or impact of natural resources, evaluation of environmental and social impacts and risks were determined based on information from these works.

Then, the environmental and social management programs and the structuring of the Environmental and Social Follow-up and Monitoring Plan were developed, considering the Occupational Health and Safety Management Plan and the Disaster Risk Management Plan. Due to the applicable and current regulatory

references, as well as the safeguards policies and standards of the Multilateral Bank related to the project.

The areas of influence were defined with the cartographic overlapping generated for the abiotic, biotic and socioeconomic environments of the direct and indirect areas, looking for locations where the significant environmental impacts are manifested, their delimitation is linked not only to the environmental characterization, but also the identification and preliminary assessment of environmental and social impacts.

The abiotic and socioeconomic characterization was carried out based on secondary information from significant origins or sources such as the ESIA carried out for the feasibility stage; however, the Concessionaire initiated noise, air, and soil monitoring, which is currently undergoing data processing. The biotic characterization was carried out with primary information for fauna, epiphytic and forest flora.

In addition, an evaluation was made of the demand, use, exploitation and/or impact on natural resources, considering water consumption, spills, construction materials, solid waste, construction, and demolition waste (CDW), impact on green areas, landscaping, and trees.

Therefore, environmental, and social impacts and risks were identified and evaluated using the Vicente Conesa methodology, under two panoramas, Without Project and With Project.

and because of the analysis, environmental and social management programs were generated for environmental management, abiotic, biotic, and socioeconomic components. Finally, the Environmental and Social Follow-up and Monitoring Plan was prepared to evaluate the effectiveness of the management measures planned to address the environmental and social impacts of the activities in the previous phase of the project, to be able to adjust the measures defined in a timely manner.

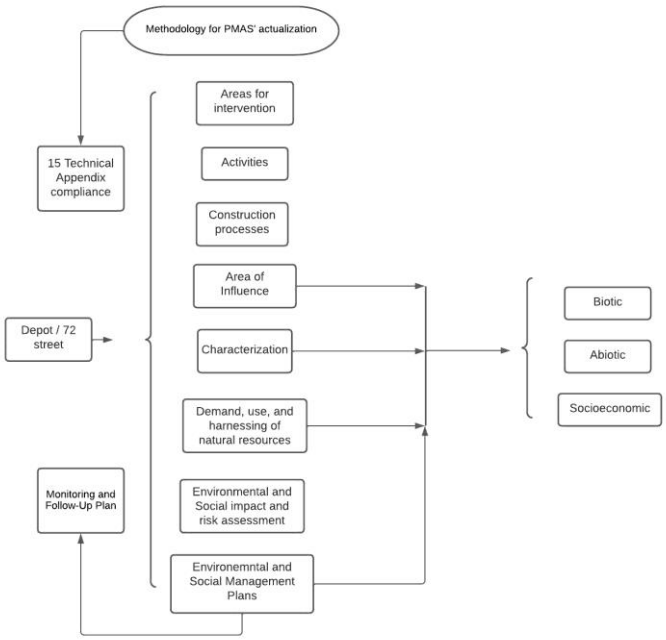

Figure 2 Methodology for PMAS actualization – Previous stage

Source: Metro Linea 1 S.A.S., 2022

In view of the foregoing, the applicable and current regulatory references, furthermore the safeguard policies and standards of the Multilateral Bank related to the project, different plans and programs were developed containing the necessary measures to prevent, mitigate, control, and compensate the impacts during the development of the works:

- Environmental and Social Management Programs
- Environmental and Social Monitoring and Follow-Up Plan
- Healthy and Occupational Health Management System
- Risk and Disaster Management Plan

In addition to these, there are the documents previously approved by national entities and authorities that contribute to risk and impact management, such as the Traffic Management Plan, the Demolition and Construction Waste Management Plan (RCD by its Spanish acronym), and the Integrated Waste Management Plan (PGIR by its Spanish acronym).

In order to guarantee operational flexibility and ensure compliance with the work schedules, whenever, for technical reasons of design changes arising in the detailed engineering or during the execution of the works, the need is identified to: (i) develop on-site activities that had not been identified in the current PMAS, or (ii) modify the scope, methodology or technology used in the planned activities, the Concessionaire may, with prior approval of the Auditing, use the provisions and mitigation measures

defined in the current PMAS, which the mitigation of impacts arising from such activities supplementing them if it is necessary, as long as the concessionaire justifies adequately that:

- The new activities identified are similar in nature and magnitude to the activities originally foreseen in the current PMAS.
- The analysis of environmental and social impacts and risks ensures that the new activities do not imply the appearance of significant impacts, nor determine significant consumption or demands of the Project that are not covered in the current PMAS.

In these cases, the impact of this adjustment on the document, the chapters to be adjusted, the required modifications or adjustments will be determined jointly with the Auditing's Office and will be presented as a new scope for PMAS validation, and the Auditing's Office would be responsible for sending and notifying the Bogota Metro Company, which in turn will notify the Multilateral Entities.

Once Empresa Metro de Bogotá announces receipt of the update, the Concessionaire could immediately proceed with the works or activities that were discussed and analyzed in the update version. The aforementioned needs activate the provisions of Chapter 3, numeral 3.1, literal a, (viii) of TA 15, the process indicated therein shall be carried out.

4 RESPONSIBLE

Consorcio Metro Línea 1 SAS, has an organizational structure that allows it to ensure compliance and implementation of Environmental, Social, Occupational Health and Safety Management activities, and in turn, complies with the Environmental and Safeguards Compliance Policy - OP.703 regarding the team of professionals responsible for the proper development of this type of studies.

Its structure is composed of two levels. The first level is made up of personnel hired directly by Metro Line 1, which leads the studies, management and processing of permits and licenses, as well as the implementation of management systems.

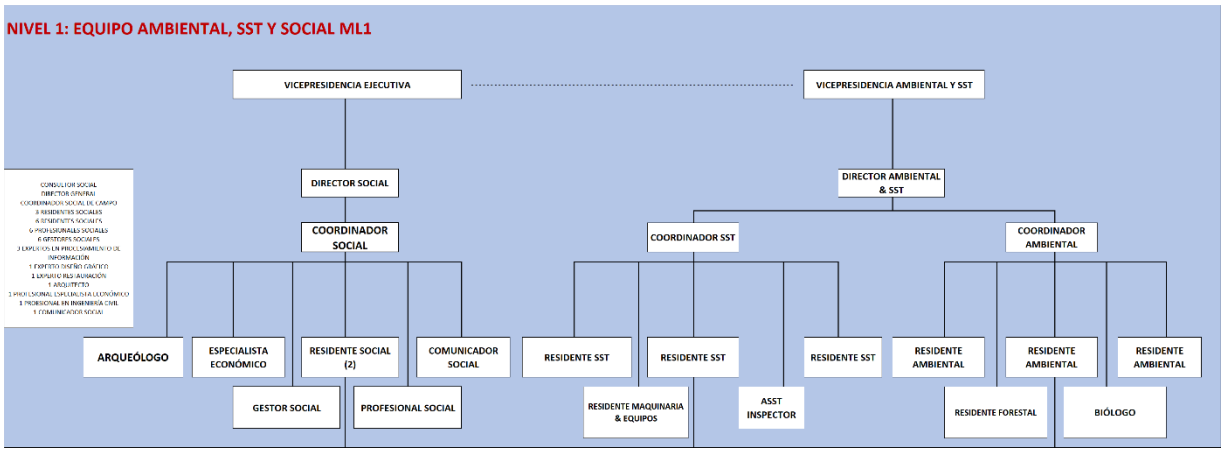

Figure 3 Environmental, social and SST Organizational Chart– ML1

Source: Metro Linea 1 S.A.S., 2021

The second level is the contractors' support, which carries out the implementation and execution of adaptation activities on the work fronts, environmental, social and occupational health and safety management, within the framework of the provisions of the Contractors' Manual (see ANNEX 1.3 - Environmental and OSH Contractors' Manual),

The Manual states that by definition of the contractual agreements, contractors and suppliers and other third parties must comply with this Environmental and Social Management Plan and with Metro Line 1's Environmental and OSH Contractor's Manual. On the other hand, it establishes that contractors must comply with national regulations and Multilateral Bank safeguards policies. This document includes requirements, responsibilities, obligations, performance evaluations and monitoring of compliance with the ESMP.

In accordance with the provisions of Technical Appendix 15 of the concession contract, the requirements established for environmental and occupational health and safety personnel are presented.

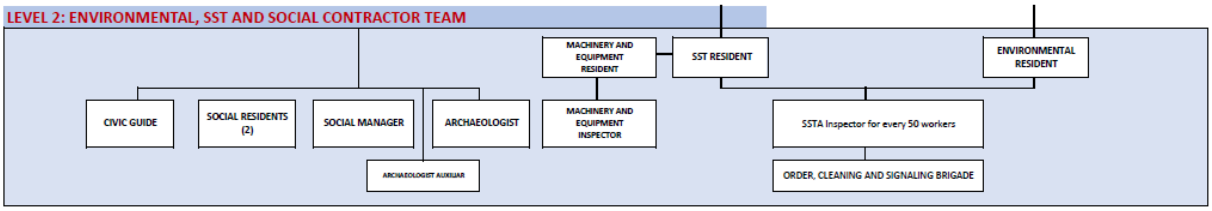

Figure 4 Contractor´s Environmental, social and SST team

Source: Metro Linea 1 S.A.S., 2021.

Position	Requeriments
Environmental resident	Environmental Engineer, Civil Engineer, Road Engineer, Environmental Administrator, or similar. With specialization in the environmental area, with six (6) years of general experience of which four (4) years must correspond to the environmental management of the construction of road infrastructure works. In those cases where required by the regulations, the general experience will be counted from the date of issuance of the professional license.
Forestal engineer	Forestry Engineer with six (6) years of general experience of which four (4) years must correspond to forest management of vegetation cover (forest inventories, silvicultural treatments, compensations, among others) in urban areas.
Biologist	Biologist with four (4) years of general experience, of which three (3) years must correspond to avifauna management.
Safety and Environmental Inspector	Technologist in Occupational Safety and Health (formerly Occupational Health program) with five (5) years of general experience of which three (3) years must correspond to specific experience in accompanying the implementation of Integral Management Systems of Occupational Safety and Health and Environmental Management in the construction of infrastructure works, management of high-risk activities (work at heights, lifting loads, work in confined spaces and work with hazardous energies). The general experience will be counted from the issuance of the license in Occupational Safety and Health, which must be in force. Additionally, the professional must have the following certificates in force: ► ► Certificate of approval of the mandatory virtual training course of fifty (50) hours and/or 20 hours. on SG SST. (Art 2.2.2.4.6.35 Decree 1072/ 15). ► ► Coordinator Work at Heights and training in Safe Work at Heights minimum 80 hours. ► Training as Brigadier: First Aid and fire control.
Safety Resident	Environmental Engineer, Civil Engineer, Industrial Engineer or related careers, with specialization or master's degree in the area of Occupational Safety and Health (formerly Occupational Health programs), with six (6) years of general experience and four (4) years of specific experience in the management of Occupational Safety and Health Management Systems (formerly Occupational Health program) in the construction of road infrastructure as OSH resident.

Position	Requeriments
	The specific experience will be counted from the issuance of the license in Occupational Health and Safety at Work (Occupational Health), which must be in force. Additionally, the professional must have the following certificates in force: ► Certificate of approval of the mandatory virtual training course of fifty (50) hours and/or 20 hours on OSH SG, (Art 2.2.4.6.35 Decree 1072/15). ► Coordinator Work at Heights minimum 80 hours.
Resident for machinery, equipment and vehicles	Mechanical Engineer with six (6) years of general experience and four (4) years of specific experience as resident of machinery, equipment and vehicles in road infrastructure construction projects. The general experience for each profession will be counted as determined in the Applicable Law.
Order, cleanliness and cleanliness brigade	An exclusive crew must be estimated for the management of each of the specific activities to be developed within the execution of the contract.

Source: Metro Linea 1 S.A.S., 2021

5 REFERENCES

5.1 CONTRACTUAL

The contractual references correspond to Contract No. 163 of 2019 PMLB between Empresa Metro de Bogotá S.A. and the Concessionaire Metro Linea 1 S.A.S. and the respective Technical Appendices, mainly Technical Appendix No 14 - Social Management and Technical Appendix No 15 - Environmental Management and Occupational Safety and Health and its Annex 1; the "MANUAL FOR ENVIRONMENTAL AND OCCUPATIONAL SAFETY AND HEALTH MONITORING AND CONTROL - SST" and the Environmental and Social Impact Study prepared by INGETEC, CONSORCIO METRO BOG and FDN in 2018.

5.2 REGULATIONS

The normative references presented in the document correspond to applicable social regulations, applicable local, regional, and national environmental regulations, permits, and authorizations required for Depot activities, the World Bank's triggered safeguards policies for the project, the Inter-American Development Bank's triggered safeguards policies for the project, and the European Investment Bank's triggered standards.

5.3 DOCUMENTARY

The documentary references are presented, such as guides and manuals, mainly from public agencies or authorities.

5.4 INSTITUTIONAL FRAME

The entities involved in the project related to the environmental and occupational health and safety components are listed.

6 BIOTIC AND ABIOTIC ENVIRONMENT

6.1 DESCRIPTION AND LOCATION OF THE WORKS DURING THE PRELIMINARY PHASE

6.1.1 LOCATION

The Depot area is in the southwestern part of the city, specifically in the area called "El Corzo" in the district of Bosa, between the Bogota River and the Cundinamarca Canal. The area that composes the Depot intervention boundary is 36.14 Ha, while the design area where the proposed works will be executed is about 34.45 Ha. It is bounded on the north by the Bogota River, which has a dyke to prevent flooding; on the south by the Cundinamarca Canal; on the east by Calle 54 Sur, and on the west by the Avenida Longitudinal de Occidente - ALO (Western Longitudinal Avenue).

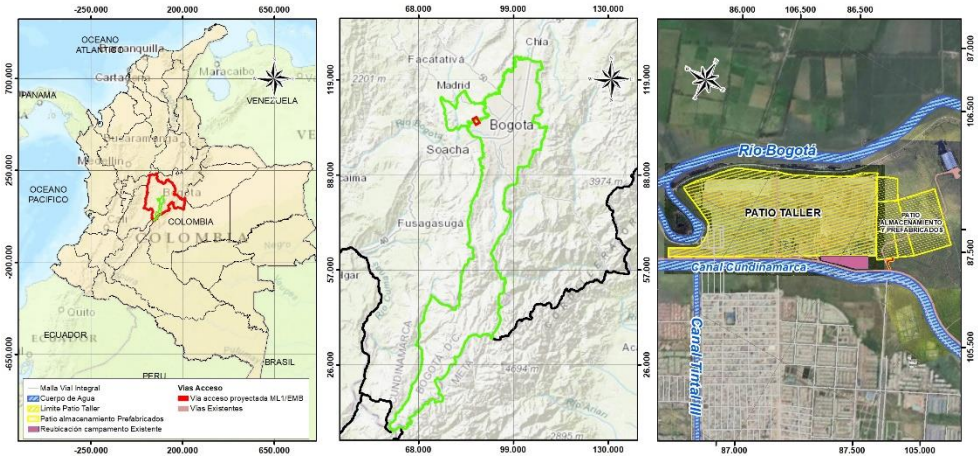

Figure 5 Depot georeferentiation

Source: Metro Linea 1 S.A.S., 2021

6.1.2 DESCRIPTION OF CIVIL WORKS IN THE DEPOT

The project foresees the creation of a work platform on which the construction of the definitive works planned can be carried out. Therefore, it refers to the adequacy works for ensure the circulation of equipment, the location of storage points for materials, and all the infrastructure that will allow the construction of the ground improvement solution and the definitive platform.

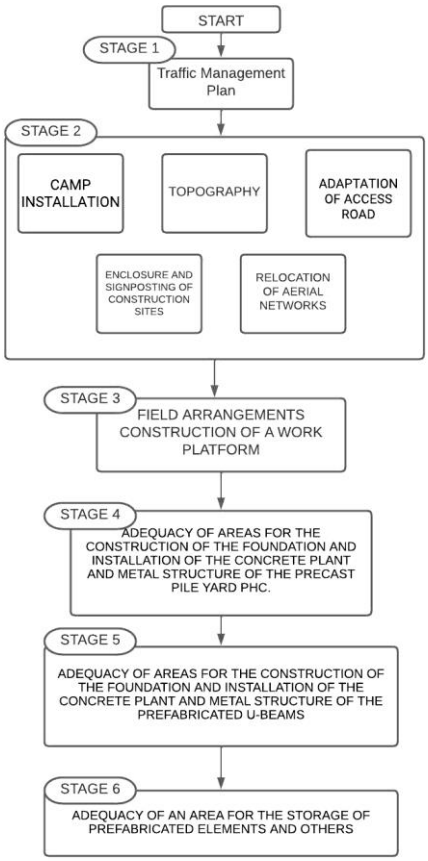

Figure 6 Previous-phase civil works – Depot

Source: Metro Linea 1 S.A.S., 2021

The main activities to be carried out in the Depot could be seen in Figure 6. It is important to highlighted that the PMAS formulation is ground on the foreseen activities.

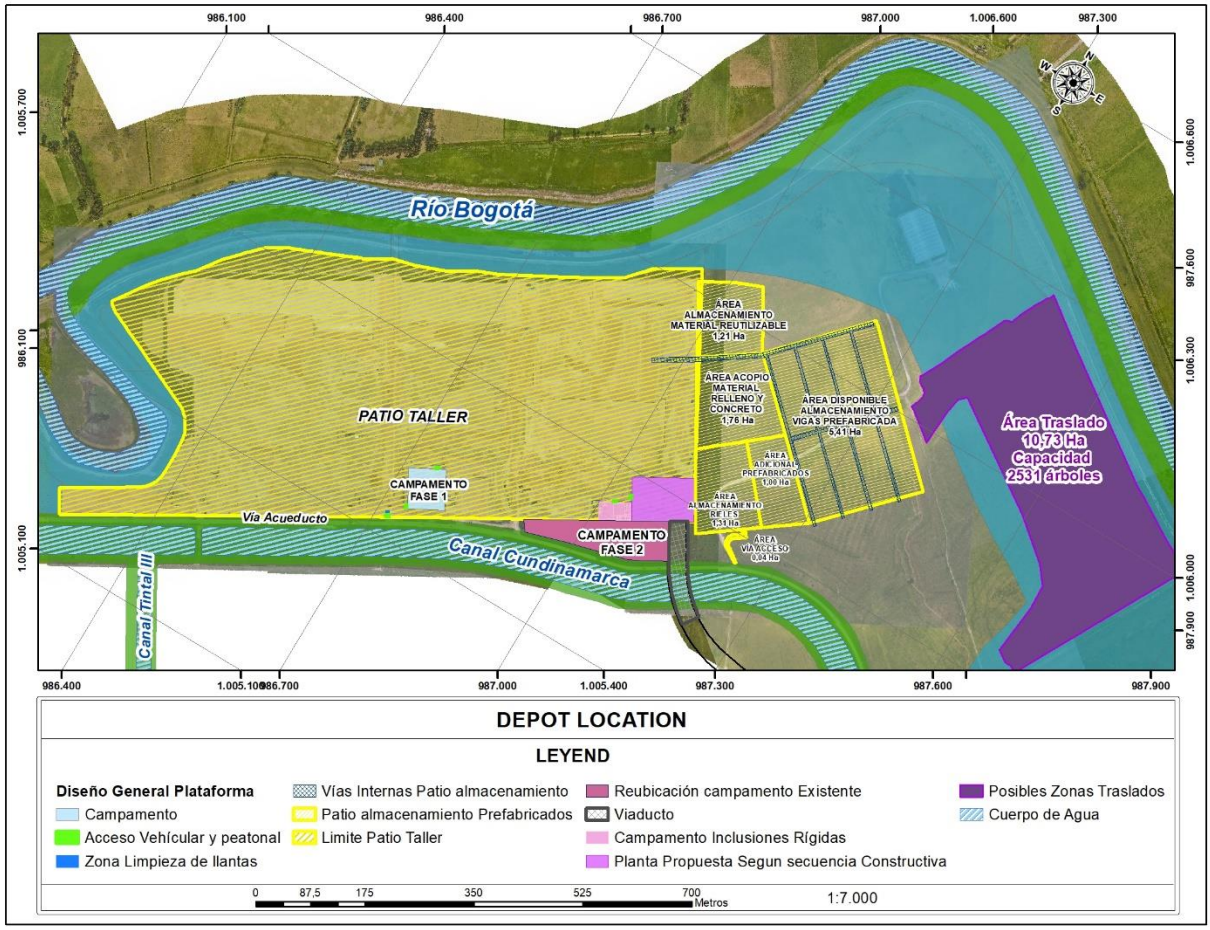

Figure 7 Final Depot's Layout

Source: Metro Linea 1 S.A.S., 2022

To date, 5 stages have been established for the Patio Taller activities. The first stage includes everything related to the implementation of the Traffic Management Plan. In the second stage, the topographic survey, the installation of camps, the adequacy of the access road, the enclosure and signaling of work and the transfer of aerial networks are carried out, the above activities can be implemented in parallel and are required to release the work area in the entire property. In stage 3, the activities corresponding to the conformation of the work platform, including the rigid inclusions, will be carried out. In stage 4, the construction of the foundations and installation of the metallic structure of the PHC prefabricated pile yard will be carried out. Finally, stage 5 includes the construction of the foundations and installation of the metal structure of the prefabricated U-beams yard. The above, according to the execution schedule of the Workshop Yard (See Annex 3.1).

6.2 AREA OF INFLUENCE

To identify, delimit and define the area of influence of the intervention zone, the provisions of section 5.1 of Annex 1 of TA 15 were used as guideline. Hence, the analysis departure from the abiotic, biotic, and socioeconomic characterization developed along the Definition of Areas of Influence.

The area of influence for the civil works in the Depot was determined considering the analysis of the direct and indirect areas of influence, the integration or overlapping of areas for each of the environments (abiotic, biotic, and socioeconomic). Therefore, the abiotic environment, geology, hydrogeology, landscape, land use, hydrology, atmosphere, and noise were studied either, the direct and the indirect areas. Although, Noise and Geosphere' components were taken as a unit of study.

In regard of the biotic environment, flora and fauna were the elements considered to define the area of direct and indirect influence, and the most significant negative impacts (minimum unit of analysis) were identified and quantified in each of the components.

Finally, for the socioeconomic environment, the demographic, cultural, spatial, political-administrative, and economic dimensions were pondered. The direct area has been demarcated by the immediately adjacent neighborhoods along the direct area and the indirect area, classified by the Zonal Planning Units which corresponds to the intervention area.

As support for the interdisciplinary work developed in this chapter, the PMAS cartography is attached for review in the Annex No. 8 - PMAS (cartographic annexes), where all the graphic information prepared for the entire document can be found.

Based on the provisions of section 5.1 of Annex 1 of Technical Appendix N. 15, the areas of direct and indirect influence were defined as follows:

- Area of Direct Influence: In the construction activities of the Depot, the areas of influence were defined for each of the environments (abiotic, biotic, and socioeconomic) considering the impacts generated by the construction activities vs. the associated infrastructure and the information available from the Design and Construction departments.
- Area of Indirect Influence: The area of indirect influence of the intervention areas of the Depot land development works of the Previous Phase was defined for each of the abiotic, biotic, and socioeconomic environments, in line with the impacts that transcend the physical space of the intervention areas and the available information, i.e., the external zone of the area of direct influence and extends to where environmental and social impacts are manifested. (See Figure 8).

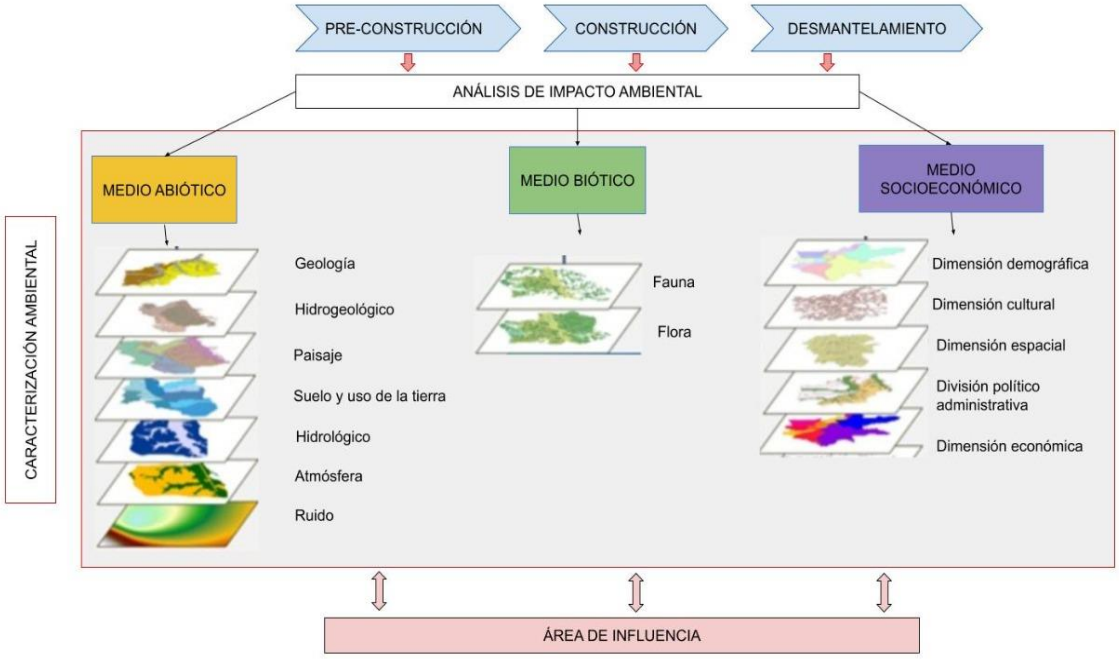

Figure 8 Determination of Area of Influence

Source: Metro Linea 1 S.A.S., 2021

6.3 CHARACTERIZATION

The characterization was made with regards to the abiotic environment where the geosphere component related to geology, structural geology, geomorphology, landscape and soils, hydrological component related to hydrology, water quality, hydrogeology, atmospheric component related to meteorology, identification of sources of emissions, air quality and noise and biotic environment taking into account strategic ecosystems, sensitive and/or protected areas, Main Ecological Structure, land ecosystems, land cover, vegetation and landscape, closed species, green areas, epiphytic flowers, floristic composition, silvicultural treatments, fauna, birds, mammals and herpetofauna.

6.4 DEMAND, USE AND/OR IMPACT ON NATURAL RESOURCES

The analysis considered surface and groundwater; drinking consumption; industrial water consumption; dumping; construction material; common and hazardous solid waste; forecasting of leftover material from excavation and demolition; atmospheric emissions, forestry harnessing, silvicultural treatment, impact on green areas, landscaping, trees, and compensation measures.

6.5 IDENTIFICATION AND EVALUATION OF IMPACTS

The environmental assessment was developed based on the proposed significance matrix by Vicente Conesa (2000), in which the existing impacts are identified in the study area in the scenario without project, as well as the identification of the environmental aspects of the activities and the quantification

of the generated impacts by the development of the project in each of the activities to be executed in the early works, with the purpose of build a scenario to compare the impacts and their character on the different components.

As defined by Metro Line 1, the applied methodology to carry out the Environmental and Social Impact Assessment is the Conesa Fernandez (2000). This methodology is design to evaluate the environmental impacts in the scenarios "Without Project" and "With Project" in the activities to be developed in the Depot.

Based on the Conesa Ad-Hoc methodology, some of its impact evaluation criteria were adapted for the project particularities, thus, it was not necessary for the evaluation team to follow the step-by-step for each of the criteria proposed in the original methodology. This modification will be implemented for the activities "Without Project" and "With Project" in the development of the previous phase that corresponds to Depot.

This adaptation of the methodology is supported by field verification of the intervention zones. The Bogota city is an area that has already been intervened, hence his composition is mainly composed by urban infrastructure. Therefore, the following criteria was defined (these have been adjusted according to the needs of the project) for the evaluation of each of the impacts to be generated in the "Without Project" and "With Project" scenarios:

Briefly, it consists in the identification and description of activities capable of impact the environment by varying or altering the environmental components' quality degree.

For the "Without Project - Depot" scenario, the activities that generate impacts and are developed along the area of influence are identified, at the time the environmental impact assessment methodology is developed, which are:

- Presence of urban settlements
- Operation of commercial infrastructure (broadcasting)
- Maintenance of public utility networks (electrical networks, telecommunications)
- Vehicular traffic
- Pedestrian traffic

For the activities to be carried out in the Depot, the environmental impacts were identified considering the environment, environmental components and associated impacts derived from the activities.

This methodology includes a rating system for each criterion, according to the qualitative characteristics determined for each of the impacts to be evaluated, as shown in the following table:

Table 2 – Criteria for impact assessment, Conesa Fernandez Methodology

Criteria		Definition	Label	Value
NA	Nature	The character of an impact is positive (+) when the result of the action on the environmental factor considered produces an improvement in its environmental quality. The impact is considered negative (-) when the result of an action produces a decrease in the environmental quality of the considered factor.	Positive	(+)
			Negative	(-)
IN	Intensity	Refers to the degree of impact of the activity or action on a given factor in the specific area in which it acts.	Low or minimum	1
			Medium	2
			High	4
			Very High	8
			Total	12
LE	Length	It reflects the fraction of the environment affected by the action of the Project. -Punctual: localized effect. -Partial: does not admit a precise location within the projected environment. -Broad or extensive: intermediate situations that are evaluated according to their degradation. -Total: does not admit a precise location within the projected environment, having a generalized influence on all of it. -Critical: when the impact occurs in a crucial or important place.	Isolated	1
			Partial	2
			Broad or extensive	4
			Total	8
			Critical	(+4)
TI	Timing	The impact manifestation period refers to the time that elapses between the appearance and onset of the effect on the environmental factor under consideration.	Long term	1
			Mid term	2
			Short term	3
			Immediately	4
			Critical	(+4)
PE	Persistence	It refers to the time that the effect remains since its appearance, and after which the affected factor would return to the initial conditions prior to the action.	Fleeting or ephemeral	1
			Momentaneous	1
			Temporary or transitory	2

Criteria		Definition	Label	Value
			Pertinacious or persistent	3
			Permanent and consistent	4
RV	Reversibility	This refers to the reconstruction of the factor affected by the project, i.e., the possibility of returning to the initial conditions prior to the action, by natural means, once the action on the environment has ceased.	Short term	1
			Mid term	2
			Long term	3
			Irreversible	4
RC	Recovery	This refers to the possibility of total or partial reconstruction of the affected factor because of the Project, that is, the possibility of returning to the initial conditions prior to the action, by means of human intervention, that is, through the application of corrective measures or management measures.	Short term	2
			Mid term	3
			Long term	4
			Mitigable, substitutable and compensable	4
			Unrecoverable	8
			Short term	2
SI	Sinergy	synergy exists if two effects are manifested together, and this is greater than their isolated manifestations.	No synergism (simple)	1
			Synergic	4
AC	Accumulation	The accumulation gives an idea of the progressive increase or not of the manifestation of the alteration on the evaluated variable(s), considering the continuous and repeated action that generates it in the area.	Simple	1
			Accumulative	4
EF	Effect	It refers to the cause-effect relationship, i.e., the manifestation of the effect on a socio-environmental variable because of an activity.	Indirect	1
			Direct	4
PR	Periodicity	Refers to the regularity of manifestation of the effect, whether cyclical or recurrent, unpredictable over time, or constant over time.	Irregular and discontinuous	1
			Regular	2
			Continuous	4

Source: Conesa Fernandez Vitora, (2000)

Considering the values given for each criterion and the following formula, the importance rating for each impact is obtained, where the lowest possible value is 13 and the highest value is 100.

I = (3IN + 2LE +TI+ PE+RV+ RC + SI + AC +EF+ PR)

The Table 3 shows the scale of valuation and qualification of the importance of negative (-) or detrimental and positive (+) or beneficial impacts.

This scale considers as significant impacts those whose absolute value of importance is greater than or equal to 25, evaluated as moderate, severe, and critical impacts, i.e., requiring the implementation of specific management measures and/or strategies to minimize the importance of the impact during the execution of the different phases of the Project. Non-significant impacts are those whose absolute value of importance is less than 25 and are evaluated as irrelevant or compatible with the environment. Hence, these impacts would not require remedial measures, or those implemented measures for moderate impacts could absorb such impacts.

Table 3 – Rating ranges and assessment of environmental significance

Rating scale	Negative Character Significance	Description of significance	Rating scale	Positive Character Significance	Description of significance
0 to -25	Not relevant	This result of importance that which has little or no significance for the environment (negative rating).	0 to 25	Not relevant	This result of importance that which has little or no significance for the environment (positive rating).
-25 to -50	Moderate	This result of importance corresponds to the activity whose recovery does not require intensive preventive or corrective measures and in which the achievement of the initial environmental conditions requires some time. (Negative rating)	25 to 50	Moderate	This result of importance corresponds to the activity whose recovery does not require intensive preventive or corrective measures and in which the achievement of the initial environmental conditions requires some time. (Positive rating)
-51 to - 75	Severe	This result of importance corresponds to the activity in which the recovery of environmental conditions requires preventive or corrective measures and in which, even with these measures, recovery requires a prolonged	51 to 75	Severe	This significant result corresponds to the activity in which the recovery of environmental conditions requires preventive or corrective measures and in which, even with these measures, recovery requires a prolonged period of time (Positive Rating).

Rating scale	Negative Character Significance	Description of significance	Rating scale	Positive Character Significance	Description of significance
		period of time (Negative Rating).			
-76 to -100	Critical	This result of significance corresponds to the activity whose magnitude is greater than the acceptable threshold, since it produces a permanent loss of the quality of environmental conditions, with no possible recovery even if protective or corrective measures are adopted. (Negative Rating)	76 to 100	Critical	This result of significance corresponds to the activity whose magnitude is greater than the acceptable threshold, since it produces a permanent loss of the quality of environmental conditions, with no possible recovery even if protective or corrective measures are adopted. (Positive rating)

Source: Conesa Fernandez Vitora, (2000)

6.5.1 CONESA METHODOLOGY ADAPTATION

The Conesa Ad-Hoc methodology adapted to the project was used, since it was not necessary for the evaluation team to follow the step-by-step for each of the criteria proposed in the original methodology. This modification will be implemented for the scenarios "Without Project" and "With Project" in the development of the Preliminary phase corresponding to 72 Street.

This adaptation of the methodology is supported by field verification of the intervention zones. The Bogota city is an area that has already been intervened, hence his composition is mainly composed by urban infrastructure. Therefore, the following criteria was defined (these have been adjusted according to the needs of the project) for the evaluation of each of the impacts to be generated in the "Without Project" and "With Project" scenarios:

Table 4 – Criteria for impact assessment, Conesa Fernandez Methodology (adapted)

Criteria		Definition	Label	Value
NA	Nature	The character of an impact is positive (+) when the result of the action on the environmental factor considered produces an improvement in its environmental quality. The impact is considered negative (-) when the result of an action produces a decrease in the environmental quality of the considered factor.	Positive	(+)
			Negative	(-)
P	Probability	Low: The probability is low when the activity is performed under safe conditions, and the impact occurs only in unusual cases.	Low	4
			Medium	8

Criteria		Definition	Label	Value
		Medium: The probability is medium when, when performing the task, circumstances such as: lack of training, training, experience, or absence of specific written procedures for the performance of the activity, etc., are present. High: The probability is high when under normal conditions and given the characteristics of the activity and/or process, the impact is certain to occur.	High	16
D	Duration	Brief: The duration is brief when the impact lasts for a very short period (does not remain in time) and there is no potential for risk to the environment. Temporary: The duration is temporary when the impact lasts for a moderate period of time and has a medium risk potential, producing limited changes to the environment. Permanent: The duration is permanent when the impact causes indefinite alterations in time and significant alterations on the environment. Interested parties expresses objections and demands.	Brief	4
			Temporary	8
			Permanent	16
M	Magnitude	Low: The magnitude is low when the impact causes minimal alteration to the environment. Medium: The magnitude is medium when the impact causes a moderate alteration to the environment. High: The magnitude is high when the impact is associated with destruction of the environment or its characteristics, bringing important future consequences.	Low	4
			Medium	8
			High	16
C	Coverage	Punctual: The area of influence is punctual when the impact is manifested only in the area where the activities of the process are carried out. Local: The area of influence is local when the impact is manifested in the local environment (affects a surface or subway watercourse, the atmosphere, the soil, generates a special waste, etc.). Regional: The area of influence is regional when the impact has regional consequences.	Punctual	4
			Local	8
			Regional	16
R	Recovery	Mitigable: Recoverability is mitigable when the impact can be eliminated through activities that allow the affected resources to be recovered. Recoverable: Recoverable is when the impact can be reduced by implementing control measures in the activities (recovery, reuse in the process) up to a certain standard. Irrecoverable: Irrecoverable when the affected natural resources cannot be returned to their original conditions.	Mitigable	4
			Recoverable:	8
			Irrecoverable	16

Criteria		Definition	Label	Value
IN	Intensity	Low: Intensity is low when it is possible to manage the environmental aspect by implementing operational controls in the activities. Medium: Intensity is medium when it is possible to adapt measures to comply and manage the environmental aspect. High: Intensity is high when high capital investments are required to manage the environmental aspect.	Low	4
			Medium	8
			High	16

Source: Metro Linea 1 – 2021

Considering the values given for each criterion and the following formula, the importance rating for each impact is obtained, where the lowest possible value is 24 and the highest value is 100.

I = (P+D+M+C+R+IN)

On the other hand, the Table 5 shows the scale of valuation and qualification of the importance of negative (-) or detrimental and positive (+) or beneficial impacts.

This scale considers as significant impacts those whose absolute value of importance is greater than or equal to 25, evaluated as moderate, severe, and critical impacts, i.e., requiring the implementation of specific management measures and/or strategies to minimize the importance of the impact during the execution of the different phases of the Project. While non-significant impacts are those whose absolute value of importance is less than 25 evaluated as irrelevant or compatible with the environment, since these present a greater assimilation of the environment after the cessation of activities and do not require corrective measures, or the measures implemented for moderate impacts can absorb such impacts.

The adapted methodology complies with the most relevant criteria according to the need for evaluation of the project and its calculation of importance is elaborated through the mathematical formula of the Conesa methodology, which was adapted to be able to have the weighting of each of the criteria and obtain the results as follows:

Table 5 – Rating ranges and assessment of environmental significance

Rating scale	Negative Character Significance	Description of significance	Rating scale	Importance for positive impacts	Description of significance
0 to -25	Not relevant	This result of importance that which has little or no significance for the environment (negative rating).	0 to 25	Not relevant	This result of importance that which has little or no significance for the environment (positive rating).
-25 to -50	Moderate	This result of importance corresponds to the activity whose recovery does not require intensive	25 to 50	Moderate	This result of importance corresponds to the activity whose recovery does not require intensive preventive

Rating scale	Negative Character Significance	Description of significance	Rating scale	Importance for positive impacts	Description of significance
		preventive or corrective measures and in which the achievement of the initial environmental conditions requires some time. (Negative rating)			or corrective measures and in which the achievement of the initial environmental conditions requires some time. (Positive rating)
-51 to - 75	Severe	This result of importance corresponds to the activity in which the recovery of environmental conditions requires preventive or corrective measures and in which, even with these measures, recovery requires a prolonged period of time (Negative Rating).	51 to 75	Severe	This significant result corresponds to the activity in which the recovery of environmental conditions requires preventive or corrective measures and in which, even with these measures, recovery requires a prolonged period of time (Positive Rating).
-76 to -100	Critical	This result of significance corresponds to the activity whose magnitude is greater than the acceptable threshold, since it produces a permanent loss of the quality of environmental conditions, with no possible recovery even if protective or corrective measures are adopted. (Negative Rating)	76 to 100	Critical	This result of significance corresponds to the activity whose magnitude is greater than the acceptable threshold, since it produces a permanent loss of the quality of environmental conditions, with no possible recovery even if protective or corrective measures are adopted. (Positive rating)

Source: Conesa Fernandez Vitora, (2000)

6.6 ENVIRONMENTAL MANAGEMENT PROGRAMS

The main objective of the environmental and social component programs during the execution of activities in the Depot is to define the management processes and measures for control, prevention, mitigation, compensation and correction of the impacts and risks identified in each project activity.

For the implementation of the Environmental Management Plan for the previous phase activities in the Depot, there is a team of professionals in compliance with the requirements of the Technical Appendix N. 15.

Table 6 – Environmental management plans of the PMAS

Environment	Environmental Management Plan	Sheet	Allocated Budget (COP)
ABIOTIC	Excavation waste material management and disposal program	PM_AB_01	$ 624.960.000
	Materials management program	PM_AB_02	$ 228.348.000
	Conventional solid waste management program.	PM_AB_03	$ 213.741.553
	Integrated hazardous waste management plan	PM_AB_04	$ 31.475.000
	Program for managing liquid fuel spills or leaks.	PM_AB_05	
	Used oil management program	PM_AB_06	
	Discharge management program	PM_AB_07	$ 115.517.000
	Environmental Liabilities Management Program: Contaminated Soils	PM_AB_08	$ 1.614.000.000
	Atmospheric emissions source management program: air quality	PM_AB_09	$ 455.604.100
	Greenhouse gas management program.	PM_AB_10	
	Noise management program	PM_AB_11	103.721.000
	Vibration and structural noise management program	PM_AB_12	540.000.000
	Program for the management of water protection zones, drainage systems and surface water bodies	PM_AB_13	85.350.000
	Temporary facilities management program	PM_AB_14	$ 1.049.840.000
	Efficient water uses and management	PM_AB_15	
	Main Ecological Structure management program	PM_AB_16	422.250.000
BIOTIC	Urban fauna management program	PM_B_01	1.350.000

Environment	Environmental Management Plan	Sheet	Allocated Budget (COP)
	Vegetative cover management and removal program	PM_B_02	1.350.000
	Forestry management program	PM_B_03	39.760.000
	Compensation management program for the biotic environment due to landscape visual quality impact.	PM_B_04	$ 35.000.000
	Compensation management program for the biotic environment due to landscape impact.	PM_B_05	$ 451.350.000

Source: Metro Linea 1 S.A.S., 2021

6.7 ENVIRONMENTAL MONITORING AND FOLLOW-UP PLAN

The Monitoring and Follow-up Plan is aimed at monitoring and verifying the behavior and effectiveness of the plans and programs of the PLMB's Environmental and Social Management Plan and identifying potential opportunities for improvement in the development of the project, for the activities of the previous phase of soil adequacy in the Depot, in accordance with the provisions of the current and applicable national and district environmental legislation, Technical Appendix No. 15 of Concession Contract 163 of 2019 and the environmental safeguards of the Multilateral Entities.

All the actions defined in each of the Programs of the Environmental and Social Management Plan and their applicability in each of the activities to be executed in the Depot, the project establishes indicators that will allow evidencing compliance and the set goals in each program.

It is important to mention that the verification, registration, and control activities will be carried out by the professionals hired for the development of the activities of the Environmental and Social Management Plan under the responsibility of Metro Line 1.

Table 7 – Environmental Monitoring and Tracking Plans

Environment	Environmental Management Plan	Monitoring and Follow-up Plan
ABIOTIC	PM_AB_01. Excavation waste material management and disposal program	PM_AB_01. Follow-up Plan Excavation waste material management and disposal program
	PM_AB_02. Materials management program	PM_AB_02. Follow-up Plan Materials management program

Environment	Environmental Management Plan	Monitoring and Follow-up Plan
	PM_AB_03. Conventional solid waste management program.	PM_AB_03. Follow-up Plan Conventional solid waste management program.
	PM_AB_04 Integrated hazardous waste management plan	PM_AB_04 Follow-up Plan Integrated hazardous waste management plan
	PM_AB_05. Program for managing liquid fuel spills or leaks.	PM_AB_05. Follow-up Plan Program for managing liquid fuel spills or leaks.
	PM_AB_06. Used oil management program	PM_AB_06 Follow-up Plan. Used oil management program
	PM_AB_07. Discharge management program	PM_AB_07 Follow-up Plan. Discharge management program
	PM_AB_08. Environmental Liabilities Management Program: Contaminated Soils	PM_AB_08. Follow-up Plan Environmental Liabilities Management Program: Contaminated Soils
	PM_AB_09. Atmospheric emissions source management program: air quality	PM_AB_09. Follow-up Plan Atmospheric emissions source management program: air quality
	PM_AB_10. Greenhouse gas management program.	PM_AB_10. Follow-up Plan Greenhouse gas management program.
	PM_AB_11. Noise management program	PM_AB_11 Follow-up Plan. Noise management program
	PM_AB_12. Vibration and structural noise management program	PM_AB_12 Follow-up Plan. Vibration and structural noise management program
	PM_AB_13. Program for the management of water protection zones, drainage systems and surface water bodies	PM_AB_13 Follow-up Plan. Program for the management of water protection zones, drainage systems and surface water bodies
	PM_AB_14. Temporary facilities management program	PM_AB_14 Follow-up Plan. Temporary facilities management program

Environment	Environmental Management Plan	Monitoring and Follow-up Plan
	PM_AB_15. Efficient water uses and management	PM_AB_15. Efficient water uses and management
	PM_AB_16. Main Ecological Structure management program	PM_AB_16. Follow-up Plan Main Ecological Structure management program
BIOTIC	PM_B_01. Urban fauna management program	PM_B_01 Follow-up Plan. Urban fauna management program
	PM_B_02. Vegetative cover management and removal program	PM_B_02. Follow-up Plan Vegetative cover management and removal program
	PM_B_03. Forestry management program	PM_B_03. Follow-up Plan Forestry management program
	PM_B_04. Compensation management program for the biotic environment due to landscape visual quality impact.	PM_B_04. Follow-up Plan Compensation management program for the biotic environment due to landscape visual quality impact.
	PM_B_05. Compensation management program for the biotic environment due to landscape impact.	PM_B_05. Follow-up Plan Compensation management program for the biotic environment due to landscape impact.

Source: Metro Linea 1 S.A.S., 2021

6.7.1 ACTION PLAN

In case of a non-compliance occurs, in another words a deviation with respect to the standards, practices, procedures, regulations, policies, PMAS guidelines, etc., that may be a direct or indirect cause of environmental damage, an Action Plan will be implemented that will allow, through various activities, to comply with the objectives proposed by the PMAS.

The Figure 9 shows the flowchart to be considered when there is repeated non-compliance that deviates from the objectives established in the PMAS.

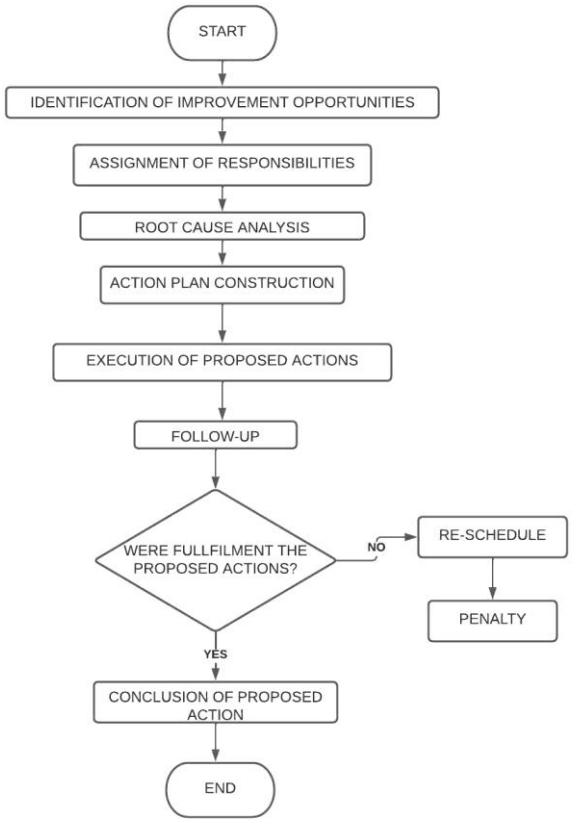

Figure 9 Action Plan Procedure Flowchart

Source: Metro Linea 1 S.A.S., 2021

6.8 OCCUPATIONAL SAFETY AND HEALTH MANAGEMENT SYSTEM

As part of the obligations for the start of early Depot activities and, it complies with the provisions of Technical Appendix No. 15.

The company METRO LINEA 1, in compliance with the provisions of Law 1562 of 2012, Decree 1072 of 2015 and Resolution 0312 of 2019 and other applicable regulations in force on safety and health at work; Metro Line 1 - ML1, has structured the OCCUPATIONAL SAFETY AND HEALTH MANAGEMENT SYSTEM, whose main objective is to control the hazards and risks present in the project, promote continuous improvement and prevent hazardous conditions that may affect the welfare of workers and productivity, with the commitment and responsibility of the senior management of the company METRO LINEA 1, extending the application and compliance to contractors, subcontractors, suppliers, visitors and third parties. (See Annex 11 - Occupational Health and Safety Management System SGSST).

The operation of the Management System is proposed through a method defined by stages whose principles are based on the PHVA cycle (Plan, Do, Check and Act) and which includes the following

elements: policies, organization, planning, implementation, evaluation, audit and improvement actions, the development of these elements will allow to comply with the purposes of the OSHMS.

The OSH Management System contemplates different stages, which are described in the Occupational Health and Safety System Manual ML1-SST-MN-2020-0001 (Version VGG).

In each of the stages (PLAN, DO, VERIFY AND ACT) defined in the Occupational Safety and Health Management System, the components established in the regulations are defined, according to the identification of risks, the different plans, policies, procedures, and standards necessary to carry out an adequate OSH management are established, guaranteeing the fulfillment of the objectives, indicators and goals established by the organization in terms of Occupational Safety and Health.

6.8.1 OBJECTIVES

- Promote the integral wellbeing of workers.
- Establish strategies to eliminate hazards and reduce risks in the execution of activities.
- Fulfilled legal and other requirements

6.8.2 ANNUAL OCCUPATIONAL HEALTH AND SAFETY WORK PLAN

In compliance with Colombian occupational health and safety legislation, the organization establishes an annual work plan to achieve the compliance of set objectives, milestones, and control of priority risks or threats.

The annual plan establishes goals, responsibilities, resources, and a schedule of activities, in accordance with the minimum standards of the mandatory quality assurance system of the General Occupational Hazards System; the annual plan is aligned with the Occupational Safety and Health policy, the matrix identifying hazards and risks with the respective measurement of compliance, coverage, and effectiveness indicators.

A monthly report will be made with the necessary supports on compliance with the annual work plan, verifying compliance with the indicators and goals, generating action and improvement plans in case of deviations or gaps in compliance with the plan.

6.9 RISK AND DISASTER MANAGEMENT PLAN

The Disaster Risk Management Plan is based on the written structuring of preventive actions, administrative, functional and operational preparation, before, during and after an emergency or contingency, which allows the construction project of the First Line of the Bogotá Metro PLMB (Pre-operational Stage - Preliminary Phase - Depot) to adapt to the conditions in which they work, acquire the knowledge and organizational attitudes necessary to act correctly in the prevention and control of emergencies.

The plan includes a specific risk analysis that considers possible effects of natural, socio-natural, technological, bio-sanitary, and unintentional human origin on the exposed infrastructure and those arising from damage to the infrastructure in its area of influence that could be affected by the project.

6.10 BIOSAFETY PROTOCOL

In compliance with the provisions of the current legal regulations where the general biosafety protocol is adopted to mitigate, control and carry out the proper management of the COVID-19 coronavirus pandemic to reduce the risk of exposure and contagion by acute respiratory infection caused by SARS 2 CoV-2 (COVID-19) of the Concessionaire's workers and their families in the different scenarios in which there is a greater risk of contagion by interpersonal contact such as: Mobility, entrance to the office, work fronts, work spaces where several people concur, dining areas, sanitary units, elevators and other areas and/or activities where proximity between people is required and apply the guidelines established therein.

The aforementioned aims to reactivate the activities of the previous phase, during the sanitary emergency, promoting measures and actions that guarantee the safety and integrity of all the concessionaire's personnel, contractors, subcontractors, suppliers and visitors.

7 SOCIOECONOMIC ENVIRONMENT

7.1 AREAS OF INFLUENCE

The socioeconomic environment's area of influence is considered in terms of the potential impacts that the development of the works may generate on the environment. In this sense, it is approached from the city's political-administrative division, starting from the larger scale at the level of districts, then the zonal planning units and finally the cadastral neighborhoods as a smaller unit of analysis. This is done because the information reported in the different census studies is at this level of detail, which facilitates the analysis of the social aspects of the territory, together with the information obtained from direct sources. The social, cultural, and economic factors and the impact analysis are also criteria for the formulation of the intervention strategies considered in this Environmental and Social Management Plan.

The indirect area of influence -AII considers the district of Bosa and within it, the zonal planning unit - UPZ 86 - El Porvenir[1]. This UPZ is considered an urban expansion zone with rural characteristics, whose reference point is the Cundinamarca canal that generates a dividing line with the constructed city.

The following image shows the area where the depot is located, its relationship with the constructed city and with the elements of the main ecological structure such as the Bogotá River and the Cundinamarca canal.

Photo 1 Panoramic view of the Depot site and the city's urban development

Source: ML1, 2021

For the definition of the direct area of influence, the immediate surroundings of the site where the depot will be built were analyzed, and it was found that there are no social or economic activities that are

[1] The Zonal Planning Unit (UPZ) is established as the area of direct influence due to its function as a territorial planning unit at the zonal level. The zonal planning units are a smaller area than the district, which brings together neighborhoods of similar conditions. At the level of official census and territorial characterization studies, the UPZs present reliable statistical information that allows determining the particular characteristics of the environment to understand the dynamics of a particular sector.

directly impacted by the works in the early phase of the site preparation works. However, there are construction activities that generate social impacts that, although they do not take place in the immediate area of the construction site, their occurrence could negatively alter the social and economic dynamics of the nearby community. These activities are associated with the Traffic Management Plan (PMT) and refer to the increased traffic of heavy or cargo vehicles on the avenues of the Bosa district and especially of the UPZ El Porvenir, of which 49th South Street is the nearest access road to the depot, identified and included in the Traffic Management Plan, as a primary access road.

Although the PMT states that this road is intended for the entrance to the depot through Bosa, the same plan considers that most of the heavy vehicles involved in the works will use an existing service road parallel to the Cundinamarca canal that is owned by Empresa de Acueducto de Bogotá. This road will be adapted by the concessionaire to facilitate traffic to Avenida Longitudinal de Occidente -ALO and from there to the material quarries and to the final storing place.

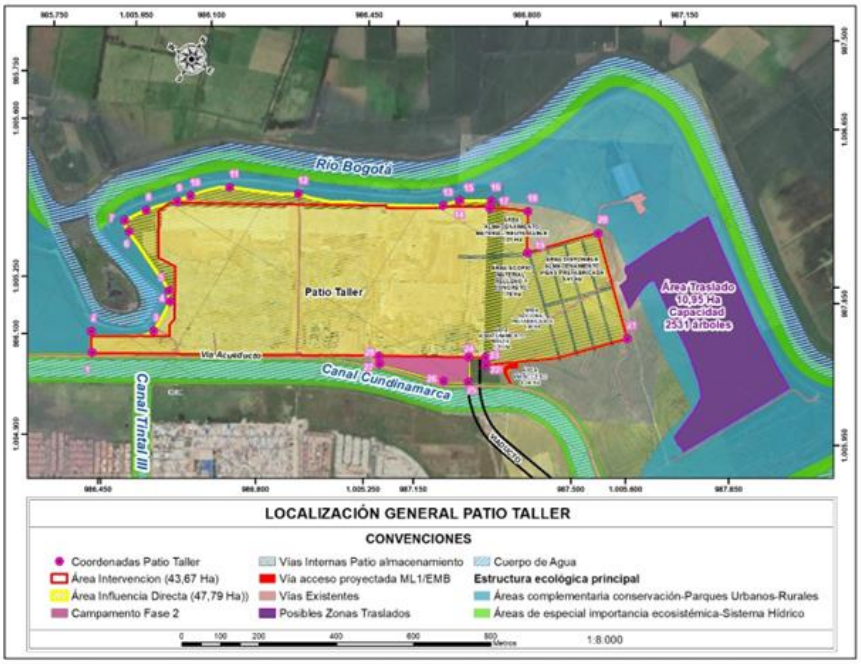

Figure 10 Socioeconomic Direct Area of Influence

Source: Metro Línea 1 S.A.S., 2021

7.2 CHARACTERIZATION

To address the socioeconomic environment, Annex 1 of Technical Appendix 15 describes the technical criteria for updating the Environmental and Social Management Plan and the PLMB's Monitoring and Follow-up Plan for multilateral entities; therefore, the methodological basis responds to this content.

The update of the socioeconomic environment for the depot site adaptation works was approached from four consultation exercises, as follows:

- Document consultation regarding the PLMB - structuring stage.
- Secondary information consultation, such as the survey results of the Departamento Nacional de Estadísticas (DANE), the household survey, the 2017 multipurpose survey and the 2018 population census and other city official sources, such as: (i) the economic development observatory, (ii) the city's health observatory, (iii) statistical reports from the secretariat of social integration and city planning, (iv) the Bogotá urban laboratory, (v) the document repositories of the local mayor's offices of Chapinero and Barrios Unidos, (vi) information from the Bogotá Chamber of Commerce, among others.
- Application of qualitative research techniques.

The qualitative research techniques that were implemented to obtain primary information are presented as follows:

- Participant observation exercises.

Two activities with specific objectives were carried out, as follows:

Table 8 – Identification tours performed

No.	OBJECTIVE	DATE
1	Identification tour of social and economic conditions and the conformation of the neighborhoods located on 49th South Street. The tours were conducted by 5 professionals from each area of expertise who walked around the sector near the construction site, so that, through their observation, they could identify the ways in which the categories of analysis are evidenced in the territory, especially in the depot area and along 49th South Street. Likewise, the UPZ was toured to identify other relevant urban elements such as the presence of institutions, commercial areas, areas of greater vehicular and pedestrian mobility, public safety conditions, identification of meeting places, and in general, the functional logic of each neighborhood. This exercise was carried out by 5 professionals from the social area who, with the information observed, drafted the contents of this diagnosis based on the categories defined for the observation exercise.	04/07/2021 - 05/07/2021
2	Photographic record and drone flight of the properties that make up the intervention area and the adjacent neighborhoods on 49th South Street.	15/07/2021

- Application of tools to obtain primary information

In the adjoining properties on 49th South Street, the concessionaire carried out 175 preventive neighborhood acts. [2]In addition, a meeting was held with the leaders of the sector with the objective of reaching an agreement on the location of the citizen attention office. The concessionaire had identified the Trébolis shopping center for its location, and it was submitted for the community's consensus through its leaders.

- Organization of the information according to analysis categories and dimensions to obtain the characterization of the area of influence.

The obtained information was analyzed considering the following dimensions: social, demographic, economic, environmental, political-administrative, spatial, and cultural. Then, they were compared with categories such as territoriality, social structure, interactions with the environment, the notion of space and time, urban structure, social imaginary, and sustainability conditions associated with the economic structure.

7.2.1 Criteria for defining the areas of influence

The criteria considered to define the socioeconomic direct and indirect areas of influence are based on the identification of the following conditions:

- Closer proximity to the physical area of the depot.
- 49th South Street dependance, (for residence, commerce, or mobility).
- Traffic Management Plan outline - PMT -
- Presence of social, health or educational institutions or entities in areas near the project.

These social criteria were analyzed in relation to environmental criteria that define the impacts from the abiotic and biotic components, in addition to the mobility factors, as follows:

- **Abiotic**: Air, particulate matter, and noise generation; soil, vibrations, and landscape (considering the permanent visual change that the PLMB will generate in all its stages).
- **Biotic:** Fauna, flora, and social and economic processes.
- **Mobility**: Another important aspect of the project that will modify daily practices is the change in mobility generated by the use of 49th South Street by cargo vehicles to enter the Depot area, which, according to traffic studies conducted for the PMT, may increase by 50% at its maximum peak. However, the Depot's PMT favors the use of the existing service road parallel to the Cundinamarca canal, which connects with the route of the ALO Avenue, leading to the material

[2] The neighborhood act is a document signed by the concessionaire and the owner or occupant of the property that contains a detailed description of each property as well as photographic and filmic records of the property. This allows for the identification of conditions and/or pathologies found in the foundations, finishes, roofs, public space, and any structure, as well as evidence of fissures, cracks, humidity, settlements, fractures, or any type of condition that the property may have before starting work activities.

and debris disposal areas. In this sense, 49th South Street will be an entrance and exit corridor for heavy and light vehicles heading to the Depot.

Based on the results of the above analyses, the direct and indirect areas of influence were defined and are described below.

7.2.2 Characterization of the indirect area of influence – All

El Porvenir UPZ is located in the western part of the seventh district of Bosa, bordered to the north by the Bogotá River and the municipality of Mosquera, to the east by Avenida Gibraltar and the district of Kennedy; to the south by Avenida El Tintal and UPZ 84 Occidental and to the west by Avenida San Bernardino and UPZ 87 Tintal. For the purposes of this study, it is the indirect area of influence of the early works to adapt the depot site.

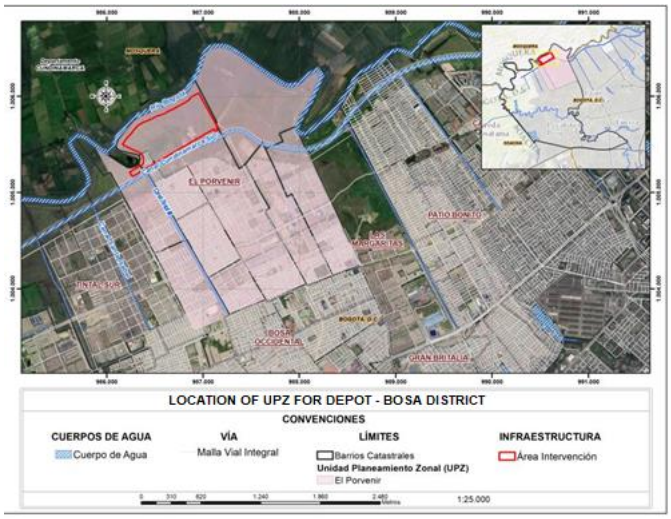

Figure 11 Map of the Indirect Area of Influence for the Socioeconomic Environment - Depot

Source: Elaborated by ML1, 2021

The immediate surroundings of the depot are made up of unbuilt land, whose most recent use was extensive cattle ranching by third parties, but not by the original owners. For more than 20 years, the City, through the Bogotá Water Company, has been purchasing these lands in order to avoid the risk of informal occupations and to protect the Bogotá River's water protection zone.

The closest urban development is Ciudadela El Porvenir de Bosa, which is one of the city's urban expansion areas, as determined in the Land Use Plan (POT) enacted in 2000 (decree 619 of 2000). This was developed through the implementation of partial plans, which consolidated a sector of high habitability and whose main characteristic is the prevalence of social interest and priority interest housing,

to meet the demand for low-cost housing aimed at marginalized populations of Bogotá.

Photo 2 Ciudadela El Porvenir panoramic picture

Source: ML1, 2021

7.2.2.1 Demographic dimension

- Population structure

The most recent data are the results of the Multipurpose Survey for Bogotá[3], which indicate that 9.1% of the population of Bogotá is in the district of Bosa. The economic development observatory of Bogota shows that Bosa is the district with the greatest increase in the number of inhabitants, with a growth rate of 16.6% and its distribution by gender is estimated at 50.4% women and 49.6% men.

The population pyramid shows wide bases from the first ages of life and decreases as the population reaches adulthood[4]. This shows the predominance of young families with working-age heads of household and dependent and school-age children. This condition of the population is related to the settlement processes of the district, which are rather recent compared to other districts.

According to the socioeconomic stratification, the predominant stratum in the district is stratum 2, with 89.1%, followed by stratum 1 with 7.2%, and stratum 3 with 3.7%. In total, between stratum 1 and 2, they consolidate 96.2% of the total households in the district[5]. Bosa is a district with a high concentration of

[3] SECRETARIA DISTRITAL DE PLANEACIÓN. Encuesta Multipropósito 2017. P 10

[4] Secretaría Distrital de Salud. Observatorio de Salud de Bogotá-SaluData. Disponible en https://saludata.saludcapital.gov.co/osb/index.php/datos-de-salud/demografia/piramidepoblacional/

[4] http://observatorio.desarrolloeconomico.gov.co/dinamica-economica/bosa-es-la-localidad-con-mayor-crecimiento-poblacional-de-la-ciudad-166

[5] http://observatorio.desarrolloeconomico.gov.co/dinamica-economica/bosa-es-la-localidad-con-mayor-crecimiento-poblacional-de-la-ciudad-166

children population and teenagers (representing 10.8%), maintaining a growth in the last 13 years (1% in 2017) with respect to the decreasing trend of the city (-0.61%).[6]

- Population with differential approach

Law 1448 of 2011 incorporates the principle of differential approach as a guideline for all processes, measures and actions developed to assist, attend, protect, and comprehensively repair victims. Through Resolution 758 of 2014, the Model of operation with differential and gender approach is built. The following are considered subjects of special constitutional protection: children and teenagers, women, people with non-hegemonic gender identities and sexual orientations, elderly people, people with disabilities, indigenous peoples, black, Afro-Colombian, Raizal and Palenquero communities, and the ROM people.

For the year 2018, 2.9% (17,996 people) of the population of the district of Bosa was considered to have some type of ethnic belonging, of which the Afro-Colombian population has the highest percentage with 59.1% of the total ethnic population of the district, followed by the indigenous population with 38.2%.

This territory is home to one of the two cabildos of the Muisca community, who generated the first human settlements in the area and are considered the owners of the ancestral territory. In fact, this community was the protagonist of the only prior consultation event carried out in urban areas which took place in the sector of El Edén - San Bernardino, where the Muisca community claimed ancestral rights to the City over the territory.

For their part, Afro communities have been organizing in the territory based on their status as victims of the armed conflict, who have found in the district opportunities for home ownership or leasing, reclaiming their traditional ancestral cultural practices.

Bosa is the district with the highest proportion of homosexuals and bisexuals (3.93%) in the city, followed by the districts of Candelaria and Chapinero (2.73% and 2.05% respectively). It is worth noting that 43.45% of homosexuals and bisexuals in the city reside in this district.

In relation to discrimination, heterosexual people perceive that there is greater discrimination based on race or ethnic origin (15.4%) followed by discrimination based on sexual orientation (14.2%), followed by other forms of discrimination such as weight or size or physical appearance (12.5%), religious beliefs (11.1%), being male or female (8.1%) or for being identified with a group such as metalheads or skinheads (6.2%).[7]

The above information allows to determine the population diversity present in the district, with whom mechanisms of inclusion and differential approach should be established to allow participation in the scenarios that the project enables, based on the notion of inclusive participation.

[6] Secretaría Distrital de Integración Social. Cálculos a partir de las proyecciones de población 2016 - 2020. Dirección de Estudios Macro - Secretaría Distrital de Planeación

[7] Línea Técnica Planeación Política Pública LGBTI. Alcaldía Local de Bosa Bogotá, 2017

- Unsatisfied basic needs – NBI

For the measurement of the unsatisfied basic needs indicator, five components are considered: 1) Persons in inadequate housing, 2) Persons in housing with inadequate services, 3) Persons in households with critical overcrowding, 4) Persons in households with school absenteeism, and 5) Persons in households with high economic dependency. According to the local planning entity, Secretaría Distrital de Planeación, 75% of the people in the city with Unsatisfied Basic Needs - NBI are concentrated in seven districts: Ciudad Bolivar, Kennedy, Bosa, Suba, Usme, Rafael Uribe Uribe and San Cristobal.[8]

The base diagnosis carried out in June 2020 for the 2020-2024 Local Development Plan shows that the district of Bosa, with 12.93%, concentrates the highest percentage of elderly people in poverty conditions. This is due to the lack of income, as well as in the capacity that households have for access to goods and services.

According to the data processed by the Laboratorio Urbano de Bogotá[9], the population located in the UPZ El Porvenir corresponds to 73,629 inhabitants, making it the second UPZ with the largest number of people, after Bosa Central. This population distribution is due to the processes of occupation and expansion of the district that began in the 1970s with accelerated processes of informal urban development, mainly in the lands that today make up the UPZ Bosa Central (former municipality of Bosa). More recently, the expansion area of the city was projected on what corresponds today to the UPZ El Porvenir and Bosa Occidental, consequently, the last two decades have seen the implementation of housing projects promoted by the city, primarily of social interest, mostly in apartment-type housing. This results in a greater number of people coming to live in the district.

7.2.2.2 Spatial dimension

- Quality and coverage of public and social services

Since 2011, access to household public services in Bogota is almost universal, a situation that is not alien to the district of Bosa and the UPZ under study, which today has 100% coverage in energy service and water supply, sewage, and garbage collection. Only in the natural gas service it is observed that coverage reached 98.2% of the population in 2017. In terms of access to fixed telephone and internet, the district of Bosa has a coverage close to 56%, which highlights the gap in information technologies.

The information reported for the different measurements in terms of public health and affiliation to the General Health and Social Security System shows that in the district of Bosa, the largest number of people belong to the subsidized regime or are not affiliated to the system. This condition is consistent

[8] Secretaría Distrital de Planeación - Alcaldía Mayor de Bogotá. Documento Técnico: Índice de Distribución de Recursos de los Fondos de Desarrollo Local (IDR-FDL) 2017-2020. P 3 y 4.

[9] Laboratorio Urbano de Bogotá. https://bogota-laburbano.opendatasoft.com/explore/dataset/poblacion-upz-bogota

with the poverty indexes identified and with the condition of employment of the people, which shows a high percentage of informality and low and unstable income.

In Bosa there are around 339 facilities which are mainly concentrated in education, welfare, and cultural infrastructure. In particular, the UPZ El Porvenir has facilities provided by the Secretaría Distrital de Integración Social for early childhood care (3 months to 5 years), with kindergartens and programs for pregnant mothers with high levels of vulnerability. These programs are concentrated, in most cases, in the Local Development Center - CDC -, which has a community dining room, library, job training programs, classrooms for artistic encounters, among others.

In terms of health, Bosa is part of the South-West Integrated Health Services Sub-Network (Subred Integrada de Servicios de Salud SurOccidente) and has 27 health facilities. Based on the location of the hospitals, it is evident that the UPZ El Provenir does not have health care centers that provide care to the subsidized regime population. There are no public or private health centers in the neighborhoods near the project site. For health care, people travel to the Pablo VI Hospital in Bosa, outside the El Porvenir UPZ.

The 2017 Multipurpose Survey presents results regarding the accessibility of the school-age population to educational centers in their districts. It is observed that for 2017, school attendance of the population in all age groups is lower in Bosa, compared to other districts.

In the influence area for the Depot sector, UPZ Porvenir and Ciudadela El Porvenir, there are five educational institutions and a branch of the Universidad Distrital. There are also city educational institutions such as Soledad Acosta de Samper, with a capacity for 4,495 students, the Institución Educativa Distrital Ciudadela Educativa de Bosa, with a capacity for 4,614 students and the Institución Educativa Distrital El Porvenir with a capacity for 4,911 students. The Universidad Distrital Francisco José de Caldas built the El Porvenir campus in compliance with the provisions of the partial plan to expand the educational offerings in coordination with the processes of basic and secondary education for technical, technological, and professional training.

In Bosa, households that own a housing unit correspond to 39.6%, according to the 2017 SISBEN data. Most of the population says that they live in rented housing and a smaller percentage says they have fully paid housing.

In the UPZ El Porvenir there is a consolidation of two commercial corridors: one, on Tintal Avenue (AK 89 B), from 49th South Street to 63rd South Street, and the other, on 56th F South Street, from Tintal Avenue (AK 89 B) to KR 100. Within the commercial use, it is important to identify the Metro department store (formerly Carrefour), located on Tintal Avenue (AK 89 B) and 61st South Street.

This residential densification sector in the UPZ is regulated under the parameters of Decree 589 of 1999, modified by Decree 525 of 2000 and Decree 395 of 2002 "By which the Partial Plan called Ciudadela El Porvenir, located in the district of Bosa, is adopted". The uses regulated in these decrees are consistent with those defined in the decree that regulates the UPZ El Porvenir and with those that have been built (especially housing).

Regarding the roads and their condition, the SIIPVIALES[10] indicator system showed that for the first half of 2019 (this being the most recent study) there are 579 km of existing lanes, compared to 13,967 km in Bogota. Of these, 193.15 km were in good condition in the first half of 2019.

Given the way in which most of the territory of Bosa was consolidated, the construction and adaptation of roads was carried out after the occupation, which is why the condition of the road network shows a high percentage of kilometers without intervention, especially in the secondary roads at the local and neighborhood levels. However, the City's investment in road improvement is closely linked to neighborhood legalization processes and the extension of the water and sewage network, among other factors. This is not the case for some planned development sectors, such as the UPZ El Porvenir, in the neighborhood of the same name since urban planning is guaranteed with each housing construction project.

According to the 2020 accountability report of the Bosa district, it has 28.31 km of trunk roads, 78.37 km of arterial roads, 149.35 km of intermediate roads, and 578.19 km of local roads, for a total of 834.22 km.

The most important road works in the district of Bosa are:

- Avenida Bosa, with an extension of 1.7 kilometers, runs from Carrera 80 (Avenida Agoberto Mejía) to Avenida Ciudad de Cali.
- The extension of Avenida Ciudad de Cali, from Avenida San Bernardino (limits with Soacha) to Avenida Bosa up to the roundabout.
- Guayacanes Avenue, currently under construction, crosses the districts of Bosa and Kennedy; being a parallel road to Ciudad de Cali Avenue that will connect with Bosa Avenue.

According to the 2019 Mobility Survey[11], the inhabitants of Bosa travel to their different destinations mainly on foot, the use of the Integrated Transport System (SITP) or conventional public transpor buses is the second option, followed by travel by Transmilenio, bicycle travel and motorcycle travel.

In fact, of the 886,000 daily trips made by the inhabitants of Bosa, 46.9% of them are made on foot. This is followed by SITP or traditional bus, which are present in 21.5% of trips, Transmilenio, which is used in 10.2%, bicycle trips are reported in 7.2% and motorcycles in 4.5% of trips.

For the population residing in the neighborhoods near the project, mobility conditions in terms of transportation services are not different from the dynamics of the rest of the district. The neighborhoods have SITP routes that allow them to reach the Transmilenio's South Portal and the Americas Portal, being this the most used mode of transportation by residents. Other common means of transportation are bicycles and motorcycles. In the urbanizations, there are parking lots for residents' private vehicles.

[10] IDU. Sistema de Indicadores Actualización a Julio 2019. [Disponible en https://www.idu.gov.co/page/contexto-indicadores

[11] https://www.movilidadbogota.gov.co/web/sites/default/files/Paginas/22-04-2020/20191216

Regarding access to the public transportation system, information from the 2019 Biennial Culture Survey indicates that, in Bosa, most women use Transmilenio, public buses and SITP buses (73.4%).

Regarding the ownership of bicycles, the 2017 EMP indicates that in 30.1% of the households in the district, at least one person in the household owns a bicycle. Finally, the Multipurpose Survey inquired about the used transportation modes and the travel times of the employed population when mobilizing to their places of work. It was found that, in the locality of Bosa, the most used means is the Transmilenio, declared by 36.8% of the employed people, followed in importance by SITP buses, used by 25.8%; and traditional buses used by 14.3%. The average time spent by people in the locality of Bosa to commute to work is 60.2 minutes, i.e., above the average of 41.6 minutes for Bogotá as a whole. Bosa is the second district with the second highest average commuting time for the employed population to their workplace.

7.2.2.3 Cultural dimension

In 1954, Bosa was annexed to the special district of Bogota and by means of Agreement 26 of 1972 it was consolidated as the seventh district of the city. In 2000, the Muisca Cabildo of Bosa was recognized after more than a century without legal existence, as stipulated by Law 89 of 1890[12].

- Intangible cultural heritage: social practices and aesthetic traditions.

The demonstrations of Intangible Cultural Heritage, as explained by the local institute of cultural heritage of Bogotá (Instituto Distrital de Patrimonio Cultural), are living, dynamic and collective traditions that have customary rules, symbolic value, and are also transformed and enriched by other cultural forms. In Bosa, the intangible heritage represents the identity and sense of belonging of its inhabitants as it comprises practices and knowledge transmitted from generation to generation, thus consolidating its cultural legacy as a district.

Currently the district rescues and preserves knowledge that shape various areas of their lives. Bosa maintains and carefully preserves not only its tangible heritage, but also its intangible heritage derived from the Muisca culture. This area is also known for its great cultural activity in different artistic manifestations such as theater, painting, dance, and carnivals.

In environmental matters, local leaders promote the construction of the district's social fabric through programs for technified community vegetable gardens. During the COVID-19 pandemic, interest in home vegetable gardens has increased and it is mainly women and community mothers who take care of the vegetable gardens in their home's gardens and terraces. The products are also sold in virtual markets[13]. Some of the neighborhoods where these programs are being developed are Santa Fe de Bosa, El

[12] Localidad #7: Bosa. Secretaria Distrital de Planeación En: 21 monografías de las localidades. Bogotá: 2011.

[13] La líder de las huertas urbanas en Bogotá. En: Revista Ecoguía. Bogotá: 2021

Regalo, San Bernardino, El Bosque and Betania, being a great potential for the sector of El Porvenir thanks to the possibilities of building terraces in the existing buildings.

- Presence of ethnic communities in influence area

There is no reported presence of ethnic communities in the area of influence according to Certification 0894 of August 29, 2017, issued by the Ministry of Interior. However, the presence of the Muisca Cabildo in the district and the people belonging to it should not be ruled out.

- Impact of the citizen culture policy guidelines.

The district has several initiatives that seek to prioritize cultural development as a necessary condition to improve people's quality of life and well-being. The administration seeks to recognize citizens for their good behavior and civic culture. Some of these strategies are:

  - IDIPRON inclusion and citizen culture campaigns.
  - Strategy from the local mayor's office "Yo cuido de Bosa".

7.2.2.4 Political-administrative dimensión

- Existing public institutions

According to the Comprehensive Diagnosis of Citizen Participation for the district of Bosa, 24 instances of participation were identified, these are: Local Environmental Commission; Local Mobility Commission; Community Health Participation Committee (COPACOS); Food and Nutritional Security Committee; Local Defense Committee, Protection and Promotion of Human Rights; Local Operative Committee for the Aging and of Old Age; Local Operative Committee for Ethnic Groups; Local Family Operative Committee; Local Youth Operative Committee; Local Operative Committee for Women and Gender (COLMYEG); Local LGBTI Operative Committee; Local Operative Committees for Children and Teenagers; Local advisory council on education policy; Council for children and teenagers; Local planning council; Local art, culture and heritage council; Local disability council; Local risk management and climate change council; Local social policy council; Local horizontal property council; Local council of wise men and women; Local women's safety council; Local councils of black, Afro-Colombian, Raizal and Palenquero communities; Good treatment network.

7.2.2.5 Economic dimension

- Labor market characteristics

The district of Bosa had an employment rate of 54.9% prior to the pandemic; therefore, more recent data will show an increase in unemployment rates. In the district of Bosa, of the 81.6% of the working age population, only 54.9% is employed[14].

The main indicators to measure the labor market are: the working age population (PET), defined as the population of 12 years and older in the urban area, which in the case of Bosa is 596,879 people. For the UPZ El Porvenir, there are no recent precise data on employability or labor indexes that allow an identification of the condition of this population.

- Productive and technological processes

According to data from the Chamber of Commerce of Bogota [15]for 2019, the district of Bosa reported 18,021 registered microenterprises, this being the highest number among the categories of companies. It is evident that in the category of Large Companies, only 6 are listed, this being one of the lowest indicators in the city which shows that the commercial, industrial, and business development of the district is marked by MSMEs, consolidated ventures and other forms of emerging or developing companies.

According to the business structure and the diversity of productive activities, in the district of Bosa, most of the activities are in the commerce sector (7,591 establishments) and services (6,719 activities), followed by the industrial sector (2,564 industries). The other sectors are not representative.

- Development poles interacting with the AID.

In the depot's adjacent area, made up of the residential units of Ciudadela El Porvenir, local development poles are identified around the shopping centers that provide financial, institutional, entertainment and commercial services for the population located in this sector of southwestern Bogota. This is a highly densified area due to the priority and social interest housing projects that have been built in the sector.

Similarly, there are small-scale businesses, mainly located in internal roads of the UPZ El Porvenir, closer to the project, in the Brisas del Tintal neighborhood, whose origin differs from the rest of the urban piece called Ciudadela El Porvenir.

- Development trends

The following is a list of programs and projects in the development and planning stage, which are closely related to the First Line of the Bogotá Metro and may generate cumulative impacts on the project.

- 2020-2024 City Development Plan (Plan de Desarrollo Distrital)

[14] SDE. http://observatorio.desarrolloeconomico.gov.co/sites/default/files/files_articles/boletin_bosa.pdf

[15] Cámara de Comercio de Bogotá. Perfil de las localidades de Bogotá, 2020. [consultado en: https://bibliotecadigital.ccb.org.co/

The 2020-2024 City Development Plan "A new social and environmental contract for the Bogotá of the 21st century" is the road map developed by the Mayor's Office of Bogotá to fulfill all the goals established for the city over the next four years. This plan is composed of 17 strategic programs and 57 general programs[16].

The following is a list of the programs of the development plan, articulated with the project of the First Line of the Bogotá Metro.

- Programs related to the World Bank's safeguards "Gender Equality in Development".

Program 4. Prevention of exclusion for ethnic, religious, social, political and sexual orientation reasons.

Program 5. Promotion of equality, capacity building and recognition of women.

- Program related to the World Bank's safeguard "Environmental and Social Framework"

Program 28. Bogota, protector of its natural resources.

- Program related to the European Investment Bank Safeguard and Activated Standards "Rights and Interests of Vulnerable Groups".

Program 31. Protection and valuation of tangible and intangible heritage in Bogota and the region.

- Programs related to the construction, operation, and maintenance of the First Line of the Bogotá Metro. (PLMB).

Program 32. Urban revitalization for competitiveness.

Program 33. More trees and more and better public space.

Program 36. Management and sanitation of water bodies.

Program 42. Citizen awareness and culture for security, coexistence, and trust building.

Program 44. Self-awareness, respect, and care in public spaces.

Program 45. Safer and collectively built public space.

Program 49. Safe, sustainable, and accessible mobility. Its objective is to improve the travel experience of people in the city, to improve the quality of life, considering the components of cost, time, and quality. To achieve this, priority is given to road safety, sustainability, and accessibility for all citizens, as well as improving the conditions and quality of urban-regional public transportation.

This program is directly related to the contractual object of the PLMB, in its construction and operation phases.

[16] Plan de Desarrollo Distrital 2020-2024. [sitio web]. Bogotá D.C; [Consultado: marzo 2021]. Disponible en: https://bogota.gov.co/sites/default/files/acuerdo-761-de-2020-pdd.pdf

Program 50. Subway Network. This program refers directly to the PLMB project. It establishes it as the structuring axis of passenger transportation in the city.

7.2.3 Characterization of the direct area of influence – AID

The direct area of influence for the socioeconomic environment for the early works of the depot was determined as the area near the worksite and the properties adjacent to 49th South Street, which is part of the Traffic Management Plan.

Figure 12. Location and characteristics of the environment

Source: ML1 Registry. July 2021

The lands that comprise the area for the construction of the depot were used for agricultural production, being this the purpose of the entire sector of what today makes up the UPZ El Porvenir. More recently, the Empresa de Acueducto de Bogotá acquired them for the protection of the Bogota River's water protection zone. Now, with the PLMB, they were given to the Metro Línea 1 concessionaire for the construction of the depot.

The boundary on the western side is the Bogotá River and the environmental protection zone. This sector lacks any type of anthropic activity associated with the river in the jurisdiction of Bogotá, (this is the boundary line with the municipality of Mosquera), which has land uses for grazing and raising dairy cattle. Consequently, these are properties that have vegetation cover of managed and natural pastures and stubble. On both sides of the river, grazing and cattle trampling were observed from previous agricultural practices.

As can be noted, there are no social or economic activities in the immediate surroundings that are directly impacted by the construction of the depot during the site´s early preparation phase. However, there are construction activities that generate social impacts that, although they do not take place in the immediate area of the construction site, their occurrence could negatively alter the social and economic dynamics of the community.

These activities are associated with the implementation of the Traffic Management Plan (PMT) and refer to the increase in the traffic of heavy vehicles or cargo vehicles whos planned entry and evacuation route is 49 South Street, which is the existing access road to the depot. Although the PMT states that this road is intended for the entrance to the depot through Bosa, the same plan considers that most of the heavy vehicles involved in the works will use an existing service road parallel to the Cundinamarca canal that is owned by Empresa de Acueducto de Bogotá. This road will be adapted by the concessionaire to facilitate traffic to Avenida Longitudinal de Occidente -ALO and from there to the material quarries and to the final storing place.

- Social characteristics of 49th South Street.

49th South Street is a corridor along which currently (without a project) the residents of the Ciudadela El Porvenir urbanizations move. On the south side there are urban developments such as Alameda El Porvenir, the Tekoa IV housing group, the El Porvenir - Trebolis shopping center, Indugas, Brisas del Tintal and the patio for the SITP Masivo Capital. On the north side, the road is on the edge of the future Gibraltar park, whose property is enclosed with chain-link mesh that prevents passersby and residents from passing through.

This is a secondary road, with a single lane in double track, and although it has sidewalks on both sides, the multiplicity of used transportation modes makes the road unsafe for pedestrians using non-motorized vehicles such as bicycles. Among the most common means of transportation are the four SITP routes and bike taxis, and there is also significant use of bicycles and motorcycles.

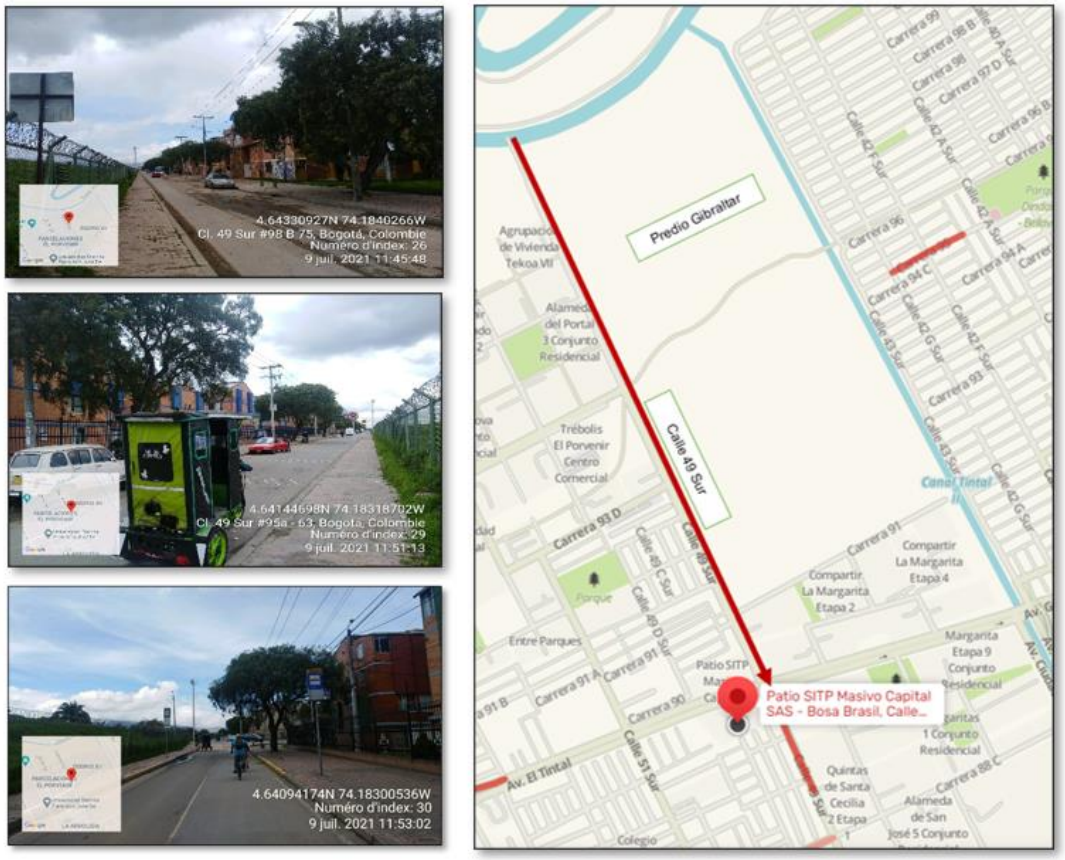

Figure 13 49th South Street characteristics

Source: ML1 registry. July 2021

Further east is the informal settlement "Brisas del Tintal", which originated in 2009, through the irregular occupation of block 31 of the Ciudadela El Porvenir Partial Plan.

According to the spatial distribution of this settlement, which is made up of 361 properties (improvements), approximately 753 families and 2,428 people, it is identified that the increase of cargo vehicular traffic on 49th South Street will directly affect 37 built properties, which fronts are on 49th South Street. It is important to note that most of these have active economic activity.

In addition to residential use, local-scale commerce was identified. This commercial activity is concentrated on the first floors of the properties and residential use on the upper floors, with the presence of street vendors who sell food, household items and various merchandise informally.

Photo 3 Panoramic view of 49th South Street and surrounding development.

Source: ML1 registry. July 2021

In total there are 175 lots on 49th South Street, including both sides of the road, involving the neighborhoods Las Margaritas, Brisas del Tintal, Conjunto residencial Alameda del Portal, Entreparques and Agrupación Tekoa VII. However, the highest population and occupational density of the properties is in Brisas del Tintal and Indugas, given its origin as an illegal settlement. This is because the constructions allowed commercial premises on the first floors, therefore, it is the sector of 49th South Street with the greatest presence of passersby, customers, and daily activity. The remaining properties are located within the enclosures of the residential complexes, including the single-family homes in the Las Margaritas sector, where some type of commercial activity is evident.

Photo 4 Contrast of the construction process on 49th Street South

Source: ML1 registry. July 2021

The informal settlement "Brisas del Tintal" has a layout of self-built local roads, which are unpaved with a dirt finish. Most of them are for vehicular use and their dimensions vary between 7.00 meters and 2.50 meters wide, which makes it difficult to contemplate additional road developments with the minimum characteristics established in the regulation. This contrasts with the surrounding neighborhoods which have developed within the framework of the partial plan and have planned, paved and marked roads. In this sense, the informal settlement presents a condition of habitability of lower quality for its occupants.

- Housing conditions

As a result of the land occupation process in the Brisas del Tintal settlement, the constructions differ from those of the surrounding neighborhoods. Particularly, along 49th South Street, it is evident that the constructability of these properties is diverse and responds to the economic capacity of the owners of the properties who have sought the development of constructions in durable, not provisional, materials.

The construction process is permanent, and responds, in first instance, to the need to solve the problem of habitability. As can be seen, most of the properties are residential housing built mostly in two and three floors. In a smaller proportion, there are properties with greater constructability, reaching up to five floors, particularly on 49th South Street, where economic activities are located. Although the main use is residential, it is combined with low-impact economic activities of local scope. It is also evident that the plots are used to generate income by renting parts of the house, rooms, and areas for independent apartments, renting of warehouse and / or premises

Confirming the above, and in the articulation exercise with the community, the time of residence and the ownership condition of these were inquired, finding that most of the occupants are the owners of the

properties, who generate rent as an income mechanism. Regarding the time of residence, they stated that they have lived in the property for more than 5 years, which coincides with the time when the informal urbanization process began.

According to the observation carried out in the territory, the following are identified as the main characteristics:

- The population living in the Brisas del Tintal sector is in the process of legalizing the neighborhood, which has generated organizational means to achieve development, such as the Community Action Board, the Brisas del Tintal Neighborhood Association, the Brisas del Tintal and Porvenir Merchants Association.
- Since a process of illegal occupation took place in the area, which was characterized by self-construction, it is evident that the construction standards were not considered, which is why there are 5-story buildings and provisional constructions of 1 or 2 floors.
- There are no sidewalks, storm sewage or rainwater services.

7.2.3.1 Demographic characteristics

The demographic information of the sector comes from information obtained from two sources: First is the occupancy rate data of the El Porvenir neighborhood, in which it is estimated that there are 30 thousand families, with an average of 5 people per family. Of these, about 3 thousand families reside in the buildings near 49th South Street. On the other hand, there is the settlement called Brisas del Tintal, whose information was obtained from primary sources, which were corroborated with the study conducted by the Empresa de Renovación y Desarrollo Urbano de Bogotá in 2019, as part of the process of land legalization that is being carried out with the Caja de Vivienda Popular.

Participant observation work identified the number of economic activities per block as follows: 19 economic activities in block 1, equivalent to 21% of the total; 13 economic activities in block 3, corresponding to 15% of the total; 9 economic activities in block 4, representing 10% of the total.

The type of economic activities are of neighborhood scale, with customers coming from the same neighborhood and, to a lesser extent, from the sector. The types of businesses identified are in the food, industry, hardware, automotive services, liquor, and miscellaneous stores segments. Likewise, economic activities related to the sale of fruits and vegetables and other items of the family basket are common.

Another income source is street vendors who are in the main road corridors such as 49th South Street, as well as at the entrance to the Trébolis and El Porvenir shopping centers. The products sold under this modality are fruits, vegetables, fast food, beverages, toiletries, clothing, kitchen utensils, candy, among others. This practice, according to what was observed, is mainly carried out by men and according to the location, the hours of occupation of public space are determined.

According to the information reported in the Monthly Bulletin of Security and Coexistence Indicators for the district of Bosa, as of June 2021 the UPZ El Porvenir presented a sustained increase between January and June 2021 in the rate of common crimes as follows: Homicides (25%), personal injuries

(57.8%); sexual crimes (2.4%); theft from people (29%); theft from residences (2.2%); cell phone theft (46.2%). Bicycle theft did not present an increase, as well as vehicles and motorcycle theft.

Table 9 – Summary of facilities in the direct area of influence

FACILITIES	DIRECT AREA OF INFLUENCE	
	DEPOT	49TH SOUTH STREET
Educational institutions	Not identified	Not identified
Health institutions	Not identified	Not identified
Neighborhood parks	Not identified	Not identified
Green zones	Not identified	Not identified
Bike route	Not identified	Not identified
Sidewalks - public space	Pedestrian walkways	Sidewalks on both sides of the road
Social facilities (churches, community centers, Community Action Boards headquarters).	Not identified	Not identified
Public transport stops	Not identified	SITP stop
Self-constructed housing	Six buildings on land in the process of being acquired	Barrios Indugas and Brisas del Tintal are self-constructed developments with housing made of durable materials.
Planned housing		Ciudadela El Porvenir, with 8 residential complexes in horizontal property and 2 in single-family housing.
Public transportation and private vehicles	Not identified	2 SITP routes Bike taxis, bicycle users Motorcyclists
Commercial and industrial activity	Not identified	Local neighborhood commerce in the Indugas and Brisas del Tintal neighborhoods (50)
Informal vendors	Not identified	Informal commerce in the Indugas and Brisas del Tintal neighborhoods. (20 stationary vendors)

7.2.3.2 Traffic conditions and Management Plan

By means of COI No.19 of May 13, 2021, the local mobility entity, Secretaría Distrital de Movilidad, authorized the Traffic Management Plan for the entry and exit of dump trucks from the depot premises of the Project, effective from May 17, 2021, to May 12, 2022.

In accordance with the technical concept for the traffic management plans for construction works of the Secretaría Distrital de Movilidad (SDM), the immediate area for entry and exit of dump trucks is established as the scope area. In this case, it corresponds to the intersection of AK 86, 49 south street

and the aqueduct road, which corresponds to a semi-private road where no private vehicles transit, only cargo vehicles.

According to the approved PMT, the traffic on 49th South Street will not generate road closures, only an increase in traffic of machinery and equipment transport vehicles and private vehicles, which is estimated at its highest peak at 20%. However, the effects generated on the community of 49th South Street, associated with environmental impacts such as increased noise, particulate matter in the air and vibrations, which materialize in the community in terms of alterations to human tranquility, risk of increased respiratory diseases, accidents, and changes in the daily dynamics of the resident population, passersby, bicycle users and pedestrians, should be considered as impacts derived from the activity.

The specific characteristics of these roads allow motorized and non-motorized traffic, while Avenida Longitudinal de Occidente (ALO) or Carrea 106 has a two-way vehicular roadway with one lane in each direction. The width of the roadway is approximately 12 meters, including berms; there are no bike lanes or public space for sidewalks. The road condition of the ALO is in optimal operating conditions with good pavement condition of the vehicular roadway. 63rd South Street has a vehicular roadway in bidirectional operation with one lane in each direction. The roadway width is approximately 9 meters. The public space is comprised of a bidirectional bicycle lane of approximately 2.4 meters and a pedestrian strip. The road is in optimal operating conditions with good pavement conditions on the vehicular roadway.

7.2.3.3 Preventive archaeology studies

Within the framework of the provisions of Law 1185 of 2008, which amend[17]s Law 397 of 1997 "Whereby Articles 70, 71 and 72 and other concordant Articles of the Political Constitution are developed and rules on cultural heritage, promotion and stimulus to culture are issued, and in Decree 763 of 2009 "By which Laws 814 of 2003 and 397 of 1997 are partially regulated, modified by Law 1185 of 2008, regarding the Cultural Heritage of the Nation of a material nature", and in compliance with the technical guidelines that these regulations require for preventive archaeology programs in the development of infrastructure works in urban contexts. For this, a preliminary zoning was carried out through an archaeological diagnosis for the formulation of the Archaeological Management Plan, which will be applied at the time of the execution of the work.

In this order, and to contextualize the process carried out in this component, the archaeological survey in the depot corresponded to the exercises included in the current regulations and the physical

[17]Articles 4 (Integration of the Nation's cultural heritage), Article 5 (National System of the Nation's Cultural Heritage), Article 6 (Archaeological Heritage), Article (National Council of Cultural Heritage), Article 8 (Procedure for the declaration of properties of cultural interest), Article 10 (Unattachability, imprescriptibility and inalienability), Article 11 (Special Regime for the Protection of Properties of Cultural Interest), Article 11-1 (Intangible Cultural Heritage), Article 14 (Inventory of Properties of Cultural Heritage and Registry of Properties of Cultural Interest), Article 15 (Offenses against the Nation's Cultural Heritage), Article 16 (Enforcement action on Properties of Cultural Interest), Article 56 (Stimulus to the Nation's Cultural Heritage).

characteristics of the terrain. Thus, the authorization granted by the Colombian Institute of Archaeology and History - ICANH - (ICANH RESOLUTION No. 479), contemplated the depot area and a part of the connecting viaduct (first 750 linear meters since the remaining "pass through the Gibraltar property, which was used as a garbage dump[18]".

7.3 IDENTIFICATION, ANALYSIS AND EVALUATION OF SOCIAL IMPACTS

7.3.1 Identification of construction activities that generate social impacts

- **Work description**

Table 10 – Stages and Main Works - Depot

STAGE	ACTIVITY	ASSOCIATED SOCIAL ACTIVITIES	INTERACTION MOMENT
Stage 1	PMT Implementation	Information to the community on site enclosure and signage.	- Kickoff meeting (August 11, 2021) - Social participation committees (every two months) - Construction work personnel training (weekly)
Stage 2	Camp installation Topography. Improvement of the access road. Site enclosure and signage. Aerial network relocation.	Information to the community through meetings and committees. Distribution of information pieces on 49th South Street. The relocation of aerial networks will be announced through visits to affected properties.	- Zonal participation committees (every two months). - In the territory with mobile attention points of through communication pieces (carried out in August and September 2021). Registry by means of a minute of the visit to the beneficiary property of the network.
Stage 3	Conformation of the work platform	Information to the community through the zonal participation committees.	- Zonal Participation Committees (October 2021)
Stage 4	Construction of the foundation and installation of the metal structure of the PHC precast yard.	Information to the community through meetings and committees. Extraordinary meetings at the request of citizens.	Zonal participation committees (every two months). - In the territory with mobile attention points with communication pieces.
Stage 5	Construction of the foundation and installation of the metal structure of the U-beam pre-cast yard.	Information to the community through meetings and committees. Extraordinary meetings at the request of citizens.	Zonal participation committees (every two months). - In the territory with mobile attention points with communication pieces.

Source: Metro Línea 1 S.A.S., 2021

[18] Oficio de aprobación ICANH 130 No. Rad.4085

7.3.2 Impact scoring criteria

The following table presents the impact qualification criteria that will allow the ponderation of each of them, to produce by summation, the final evaluation. The information contained in this table is the result of the analysis of environmental impact methodologies, particularly the "Methodological Guide for the evaluation of environmental impact", proposed by Vicente Conesa Fernández (1993), from which the qualification criteria that are useful for evaluating impacts on the socioeconomic environment are taken.

Unlike the evaluation of the environmental component, which establishes a direct relationship between the detailed construction activities and the environmental impacts where the identification of negative impacts takes precedence, for the social component, the cause-effect relationship must be approached from factors that impact the lifestyles of the population in the vicinity of the works. These do not always correspond to the construction activities identified for the environmental component, and the mitigation perspective does not imply a modification in the construction activity, but rather in the generation of mechanisms of another order, even external ones. An example of this is the impact derived from air pollution with particulate matter or the generation of noise in the surroundings of the works, which in themselves are environmental impacts and their mitigation measures are found in the works themselves. For the socioeconomic component however, it implies the modification of lifestyles, the generation of information mechanisms and the establishment of agreements with the people who receive the impact. Because of this, the valuation of the attributes must be approached from a different perspective associated with social practices and their relationship with the development of the construction process.

From another perspective, the impacts generated by the work can also be positive for the involved community, therefore, it is necessary to identify and evaluate these positive impacts to generate favorable enhancement measures for them and for the success of the project.

The results of this evaluation are the basis for the adoption of mitigation, compensation, and management measures, which constitute the objectives of the Social Management Plan. In this sense, the identified impacts are translated into a dialectal correlation, in which on one side are the potentials and fragilities of the involved population and, on the other, the Social Management Plan. As a result of this process, it is expected that there will be a positive change in the ways of dealing with the situation that generates the potential impact on the population.

7.3.3 Identified impacts

The diagnosis was the basis for the impact identification and analysis exercise, for which the results of the characterization were classified according to the dimension to which they refer, producing a positive, negative, or neutral evaluation for each characteristic, thus acquiring the condition of impact.

The systematization of the impact identification exercise is presented in the following table:

Table 11 – Impact analysis matrix

POTENTIAL EFFECTS ON THE ENVIRONMENT						
CATEGORIES	DIMENSIONS					
	SOCIAL / DEMOGRAPHIC	ECONOMIC	ENVIRONMENTAL	POLITICAL-ADMINISTRATIVE	SPATIAL	CULTURAL
TERRITORIALITY	- Generation of socio-cultural exclusion dynamics related to the possibility of connecting with the project.	- Modification in the sector's employability dynamics (job offer). -Expectations of improvement of the sector with the construction of the Bogotá Metro and the proximity to the depot.	- Transformation of environmental elements in relation to the Bogotá River and the Cundinamarca Canal. - Modification of citizen security patterns. - Risk of disease generation by repelling pests that move into surrounding neighborhoods.	- Modification of leadership styles and community processes. - Generation of scenarios for citizen participation and dialogue.	- Changes in the landscape. - Emergence of new services and commercial activities during construction and operation.	- Transformation of traditional cultural references. - Generation of new scenarios and socio-cultural references.
SOCIAL STRUCTURE	- Strengthening of social and community organizations. - Modification of social programs for street vendors.	- Alterations in the economic dynamics of the sector. - Potential employment and job creation at the worksite.	Creation or strengthening of social and environmental organizations.	- Strengthening of community management. - Modification of current power structures. - Changes in local governance.	No modifications were identified in this interaction.	- Loss of historical memory, neighborhoods and traditional activities.
INTERACTIONS WITH THE ENVIRONMENT	- Urban integration around the Metro concept for Bogotá.	Employment generation possibilities at the construction site.	- Transformations in the urban landscape due to the definitive introduction of a new element in the landscape.	- Generation of interest in urban environmental issues (trees, birds, air quality, noise, etc.). - Emergence or strengthening of environmental social organizations	- Reorganization of the territory in terms of uses and exploitation of public space. - Changes in mobility and accessibility schemes	- Sense of threat to the environmental values associated with the Bogotá River.

POTENTIAL EFFECTS ON THE ENVIRONMENT						
CATEGORIES	DIMENSIONS					
	SOCIAL / DEMOGRAPHIC	ECONOMIC	ENVIRONMENTAL	POLITICAL-ADMINISTRATIVE	SPATIAL	CULTURAL
SPACE TIME	- Generational conflict due to the perception of changes in the ways of living. - Modification of citizen behavior patterns	- Economic reactivation of the sector. - Change in the economic focus of some traditional sectors. - Emergence of investment opportunities and sources of employment.	- Noción de mayor oferta ambiental para la ciudad asociada a las obras del viaducto.	- Urban development expectations associated with the construction of the PLMB.	- Improvement of urban facilities. - Expectation of long-term valuation of the properties.	- Modification of cultural and historical references. - Emergence of a new identity model for the sector. - Alteration of traditional cultural patterns.
UEBAN STRUCTURE	- Articulation of existing urban elements and implementation of new ones and the consequent transformation of daily dynamics. - Transitory changes in mobility on secondary neighborhood roads (49th South Street).	- Expectation of land value appreciation with the construction of the Bogotá Metro. - Revitalization of the commercial and productive sector.	- Transformation of the landscape due to changes in the geographic boundaries – Appearance of environmental contamination vectors during construction works.	- Generation of scenarios for participation and dialogue with surrounding communities and social organizations. - Emergence and strengthening of social organizations. - Generation of social control actions.	- Emergence of integrating elements of the sector's identity.	- Expectation of new possibilities for occupying the depot's surroundings by generating public space for the development of cultural and sports activities.
SOCIAL IMAGINARY	- Modification of traditional cultural and geographic references. - Alteration of the beliefs, myths, truths, and other imaginaries spectrum surrounding the meaning of the Bogotá Metro and integrated mobility.	- Generation of economic development opportunities around the related and complementary activities derived from the depot works. - Expectations of increased sales, especially from food and grocery stores.	- Hope for improvement in the security conditions of the sector. - Expectation of an increase in recycling activities and sex work activities in the area of influence due to an increase in the number of people associated with the works.	- Conflicts of perception and interests between the communities, their leaders, and the city authorities. - Emergence of unconventional leadership. - Fear and insecurity regarding the effect of changes, in relation to people's idea of well-being.	- Alteration of traditional geographical references - Loss or transformation of urban signifiers.	- Loss of historical memory associated with ancestral practices related to the Bogotá River.

POTENTIAL EFFECTS ON THE ENVIRONMENT						
CATEGORIES	DIMENSIONS					
	SOCIAL / DEMOGRAPHIC	ECONOMIC	ENVIRONMENTAL	POLITICAL-ADMINISTRATIVE	SPATIAL	CULTURAL
SUSTAINABILITY (ECONOMIC STRUCTURE)	- Modification of residents' survival strategies. - Dynamization of social processes that change people's daily lives. - Generation of employment and jobs at the construction site.	- Labor demand and generation of job opportunities at all levels. - Expectation of an increase in food demand derived from the hiring of labor personnel.	- Alteration of the perception of physical security derived from vehicular traffic.	- Insertion of political-administrative elements useful for strengthening governance. - Opportunity to generate comprehensive strategies to control the influx of workers and gender segregation (labor influx).	- Job opportunities around construction sites (informal sales)	No modifications were identified in this interaction.

POSITIVE EFFECTS

NEGATIVE EFFECTS

In accordance with the presented methodology, the effects on the socioeconomic environment generated by the project were combined in the following analysis matrix, which includes all the observations and conclusions of the characterization exercise, from which the definitive identification of the impacts is derived.

It should be noted that in this exercise, positive alterations were identified that allowed for an evaluation of the expected positive impacts in the short, medium, and long term, which are shown in blue letters for a better understanding. Likewise, some conditions cited in the interactions are neutral or foreseen without it being possible to identify their qualification before the project.

The table below shows the impacts identified for the socioeconomic and cultural environment.

Table 12 – Impact identification matrix

COMPONENT	ASPECT	IMPACT
Environmental	Interaction with the surrounding environment and public health.	Illnesses generated by environmental impacts (noise and air)
Demographic	Interaction with the surrounding environment and public health.	Disease transmission by the generation of conditions that facilitate the transmission of Covid 19 and other infectious diseases.
Spatial	Territoriality	Disturbance of tranquility and safety due to changes in traffic. (Increase of vehicles, decrease of routes)
Spatial	Territoriality	Alteration of daily life, customs, and lifestyles.
Political	Social structure	Opposition of company's trade union movements or associated with public transportation or cargo vehicles.
Cultural	Social structure	Discrimination based on gender and gender identity, political affiliation, sex, ethnic origin, cultural, age, social status, religion, nationality.
Cultural	Social imaginary	Perception of the alteration in citizen security.
Economic	Sustainability	Generation of employment in the project
Spatial	Territoriality	Accidents involving workers, bystanders, and residents, and those resulting from structural accidents or vehicle overturns.
Spatial	Interaction with public services	Alteration in the provision of public utilities.

COMPONENT	ASPECT	IMPACT
Spatial	Territoriality	Impact on vehicular and pedestrian mobility, which can lead to accidents, changes in travel times, and increased transportation costs.
Economic	Sustainability (economic dynamics)	Changes in the productivity of economic and commercial activities on 49th South Street.
Political	Social structure	Fortalecimiento de escenarios de participación comunitaria, surgimiento de líderes comunitarios.
Political	Intervention in the political-organizational structure	Changes in management and organizational capacity, social control mechanisms.
Political	Social imaginary	Generation of expectations regarding the opportunities and impacts of the project.
Cultural	Intervention in patterns or infrastructure of cultural interest	Cultural transformations in the area of influence related to use and spatial and geographic references.
Archaeological/ heritage	Interaction with archaeological wealth / cultural heritage	Alteration of the nation's cultural and archaeological heritage.
Political	Social structure	Generation of conflicts of interest

7.3.4 Rating of impacts

According to the impact identification matrix, 16 impacts on the socioeconomic environment are expected to be generated during the previous phase. Once qualified, the consolidation was carried out according to the results of the importance value. The results obtained from the qualification, by impacted environment, are presented below:

Table 13 – Rating of the impacts identified for the socioeconomic environment

ASPECT	IMPACT	VALUE	RATING
Interaction with the surrounding environment and public health.	Illnesses generated by environmental impacts (noise and air)	15	COMPATIBLE
Interaction with the surrounding environment and public health.	Disease transmission by generating conditions that facilitate the transmission of Covid 19 and other infectious diseases.	14	COMPATIBLE

ASPECT	IMPACT	VALUE	RATING
Territoriality	Tranquility and safety disturbance due to changes in traffic. (Increase of vehicles, decrease of routes)	20	COMPATIBLE
Territoriality	Alteration of daily life, customs, and lifestyles.	21	COMPATIBLE
Social structure	Opposition of companies' trade union movements or associated with public transportation or cargo vehicles.	12	COMPATIBLE
Social structure	Discrimination based on gender and gender identity, political affiliation, sex, ethnic origin, cultural, age, social status, religion, nationality.	17	COMPATIBLE
Social imaginary	Perception of the alteration in citizen security.	26	MODERATE
Sustainability	Employment generation in the project	31	POSITIVE
Territoriality	Accidents involving workers, bystanders, and residents, and those resulting from structural accidents or vehicle overturns.	17	COMPATIBLE
Interaction with public services	Alteración en la prestación de los servicios públicos domiciliarios.	12	COMPATIBLE
Territoriality	Impact on vehicular and pedestrian mobility, which can lead to accidents, changes in travel times, and increased transportation costs.	21	COMPATIBLE
Sustainability (economic dynamics)	Changes in the productivity of commercial activities in the area and influence.	13	COMPATIBLE
Social structure	Strengthening of community participation scenarios, emergence of community leaders	26	POSITIVE
Intervention in the political-organizational structure	Changes in management and organizational capacity, social control mechanisms.	25	POSITIVE
Collective imaginary	Generation of expectations regarding the opportunities and impacts of the project.	30	POSITIVE
Intervention in patterns or infrastructure of cultural interest	Cultural transformations in the area of influence related to use and spatial and geographic references.	18	COMPATIBLE
Interaction with archaeological wealth / cultural heritage	Alteration of the nation's cultural and archaeological heritage.	29	MODERATE
Social structure	Generation of conflicts of interest	27	MODERATE

The classification of impacts is presented in consolidated form as follows:

Table 14 – Impact classification

No.	CLASSIFICATION	AMOUNT
1	COMPATIBLE	11
2	MODERATE	3
3	CRITICAL	0
4	SEVERE	0
5	POSITIVE	4

7.3.5 Impact analysis

The following table summarizes the socioeconomic impacts presented in the depot and for which the corresponding management measures will be adopted through Social Management Programs:

Table 15 – Impact analysis table

IMPACT GENERATORS	IDENTIFIED IMPACTS	INVOLVED POPULATION	MANAGEMENT MEASURES	ASSOCIATED PROGRAMS
. Implementation of the PMT that will use 49th South Street. . Transit of heavy vehicles emitting gases and pollution and generating noise and particles in the environment. . Increased traffic on the access road (49th South Street). . Movement of machinery for the conformation of the platform Excavations.	Risk of diseases generated by environmental impacts (noise and air).	. Population that uses or resides in the 171 properties afferent to 49th South Street. . Passers-by (pedestrians, bicycle users, motorcyclists). Workers linked to the project who work in the depot and occasional workers (200 people on average during the construction phase).	. Clear, accurate and timely information. . Articulation with the mobility, social integration and healtha and culture secretariats. . Socialization of the PMT. . Educational programs for safe mobility. . Timely and truthful attention to requests, complaints, and claims (PQRS) received regarding this impact.	Public information and communication program Metro escucha, Metro resuelve program Citizen participation program Inter-institutional articulation program for the construction of urban life of the PLMB
. Agglomeration of workers in the intervention area who are transmitters of diseases and in particular of Covid-19. . Contact of workers with people outside the worksite (family and community).	Risk of disease transmission due to the creation of conditions that facilitate the transmission of Covid and other infectious diseases.	. Workers linked to the project who work in the depot and occasional workers (200 people on average during the construction phase).	. Implementation of strict Covid-19 protection measures . Communication and disclosure of information regarding protection measures. . Generation of communication pieces to reinforce safe behaviors.	Public information and communication program Metro escucha, Metro resuelve program Citizen participation program Inter-institutional articulation program for the construction of urban life of the PLMB
. Announcement of commencement of work . Demand for unskilled labor for the depot works. . Demand for complementary services such as food and beverages in the vicinity of the construction site.	Generation of expectations for employment possibilities	Resident population of the areas of influence, unemployed, stationary vendors, etc..	. Generation and disclosure of the labor recruitment policy. . Control and verify compliance with the policy by contractors and the Concessionaire. . Generate a single channel for receiving job applications through the City's employability program.	Socio-labor inclusion program Labor Influence Management Program Public information and communication program Metro escucha, Metro resuelv eprogram

IMPACT GENERATORS	IDENTIFIED IMPACTS	INVOLVED POPULATION	MANAGEMENT MEASURES	ASSOCIATED PROGRAMS
. Implementation of the PMT that will use 49th South Street. . Transit of heavy vehicles emitting gases and pollution and generating noise and particles in the environment. . Increased traffic on the access road (49th South Street. . Movement of machinery . Excavations in the Depot.	Changes in the productivity of economic and commercial activities on 49th South Street.	. 50 merchants located on 49th South Street. . 20 informal stationary merchants	Socialize the PMT with merchants. . Permanently inform about reactivation and protection measures for formal and informal commerce in relation to environmental impacts that may affect their commercial activity. . Participation in the implementation of the PMT.	Management program for the economic sustainability of commerce Traffic management plan Sustainable mobility culture program Infrastructure and third-party asset protection program "Metro Good Neighbor". Public information and communication program Metro escucha, Metro resuelve program
. Start of work . Movement of machinery in the depot . Lack of pedestrian control in the depot. . Transit of machinery and cargo vehicles.	Generation of accident risk factors for workers, bystanders, and inhabitants and those derived from structural accidents or vehicle overturns.	. Population using or residing in the 171 properties afferent to 49th South Street. . Passers-by (pedestrians, bicycle users, motorcyclists). Workers linked to the project who work in the depot and occasional workers (200 people on average during the construction phase).	. Implementation of safety protocols in the workplace . . Ensure that workers are provided with the protective elements, tools and work equipment to carry out their work. . Generate pedagogical activities to reinforce behavior for depot workers. . Appropriately signalize the work site and the surroundings. . Develop pedagogical actions with pedestrians and bicycle users to avoid accidents.	Traffic management plan Public information and communication program Metro escucha, Metro resuelve program Transit management plan Sustainable mobility culture program
Enclosure and site signage . Conformation of the work platform . Transfer of trees	Changes in geographical references	. Residents of El Porvenir and the neighborhoods of Las Margaritas, Brisas del Tintal and Indugas.	. Clear, truthful, and timely information on the work to be carried out. . Generation of educational activities with specific population groups to generate appropriation of the work.	Public information and communication program Metro escucha, Metro resuelve program

IMPACT GENERATORS	IDENTIFIED IMPACTS	INVOLVED POPULATION	MANAGEMENT MEASURES	ASSOCIATED PROGRAMS
. Movement of the medium-voltage electric power network. . Increased heavy traffic which may disrupt or delay garbage collection service on 49th South Street.	Alteration in the provision of public utilities.	. Resident population in the El Porvenir neighborhood and in the Las Margaritas, Brisas del Tintal and Indugas neighborhoods (garbage collection service). . Neighborhoods dependent on the medium voltage network.	. Review the information and disclosure protocol that the contractor Enel Codensa has foreseen for the performance of the work. . Review the schedule for garbage collection on 49th South Street to avoid generating traffic problems in the area that would impede the provision of the service. . Implement communication activities in the AID to inform about the modifications in the provision of public services, especially garbage collection. . Socialize through announcements, the communication channels to raise PQRS, and the attention procedure.	Public information and communication program Metro escucha, Metro resuelve program Traffic management plan Sustainable mobility culture program
. Implementation of the PMT. . Increased traffic on 49th South Street.	Disruption to vehicular and pedestrian mobility	. Residents of El Porvenir and the neighborhoods of Las Margaritas, Brisas del Tintal and Indugas.	. Implementation of the communications plan . Socialization of the PMT prior to the start of the works. . Kick-off information meeting.	Public information and communication program Metro escucha, Metro resuelve program Traffic management plan Sustainable mobility culture program
. Announcement of commencement of work . Demand for unskilled labor for the Depot works. . Demand for complementary services . Vehicle traffic to and from the construction site	Generation of expectations regarding the opportunities and impacts of the project.	. Social Organizations of the UPZ El Porvenir . Residents of the neighborhoods of Ciudadela El Porvenir and the neighborhoods of Las Margaritas, Brisas del Tintal and Indugas.	. Implementation of the communications plan . Regular meetings with key stakeholders. . Socialize through announcements, the communication channels to raise PQRS, and the attention procedure.	Public information and communication program Metro escucha, Metro resuelve program Program for the construction of the urban fabric of PLMB Citizen empowerment program for the construction of urban life for PLMB

IMPACT GENERATORS	IDENTIFIED IMPACTS	INVOLVED POPULATION	MANAGEMENT MEASURES	ASSOCIATED PROGRAMS
. Announcement of commencement of work . Demand for unskilled labor for the Depot works. . Demand for complementary services. . Vehicle traffic to and from the construction site. . Implementation of the participation strategy	Increase in conflicts of interest	. Social Organizations of the UPZ El Porvenir . Residents of the neighborhoods of Ciudadela El Porvenir and the neighborhoods of Las Margaritas, Brisas del Tintal and Indugas.	. Implementation of the communications plan .Regular meetings with key stakeholders. . Socialize through announcements, the communication channels to raise PQRS, and the attention procedure.	Public information and communication program Metro escucha, Metro resuelve program Infrastructure and property protection program for third parties "Metro buen vecino" (Metro as a good neighbor). Citizen empowerment program for the construction of urban life for the PLMB
. Implementation of the PMT. . Increased traffic along 49th South Street. . Vehicle circulation to and from the construction site.	Disturbance of human tranquility due to increased traffic on 49th South Street	Residents of the 171 properties adjacent to 49th South Street.	. To inform the community about the implementation of the PMT. . Generate communication pieces with preventive information to take control measures . Periodic meetings with key social actors such as merchants. . Socialize throug announcements, the communication channels to raise PQRS, and the attention procedure.	Public information and communication program Metro escucha, Metro resuelve program Traffic management plan Sustainable mobility culture program
. Implementation of the PMT. . Increased traffic along 49th South Street. . Vehicle circulation to and from the construction site.	Alteration of daily life, customs and lifestyles.	. Residents of the 171 properties adjacent to 49th South Street. . Residents of the neighborhoods of Ciudadela El Porvenir and the neighborhoods of Las Margaritas, Brisas del Tintal and Indugas.	. To inform the community about the implementation of the PMT. . Generate communication pieces with preventive information to take control measures . Periodic meetings with key social actors such as merchants or by blocks with residents. . Socialize through announcements, the communication channels to raise PQRS, and the attention procedure.	Public information and communication program Metro escucha, Metro resuelve program Traffic management plan Sustainable mobility culture program

IMPACT GENERATORS	IDENTIFIED IMPACTS	INVOLVED POPULATION	MANAGEMENT MEASURES	ASSOCIATED PROGRAMS
. Increased traffic on 49th South Street. . Installation of enclosures and signage. . Conformation of the work platform	Disturbance to public safety	. Population using or residing in the 171 properties adjacent to 49th South Street. . Passers-by (pedestrians, bicyclists, motorcyclists) who walk along the paths and sidewalks inside the property. . Workers linked to the project who work in the Depot and occasional workers (200 people on average during the construction stage).	. Generate security fronts with the help of the local police. . To duly inform about aspects of theft, harassment, or abuse prevention. . Generate preventive signage in the depot for pedestrians and bicycle users. . Establish inter-institutional agreements with the local police and the government secretariat to implement the program of coexistence managers and constant patrols by the police.	Public information and communication program Metro escucha, Metro resuelve program Traffic management plan Sustainable mobility culture program
. Hiring of workforce . Notice of commencement of work .	Risk of discrimination based on gender and gender identity, political affiliation, sex, ethnic origin, cultural, age, social status, religion, nationality, etc..	. LGTBI community population . Conglomerates of foreigners residing in the AID. . Women . Vulnerable population. . Raizales residing in the AID. . Indigenous people from the Muisca reservation with presence in the district of Bosa. . Organized communities	. Socialize the code of conduct and follow up on its strict compliance. . Develop employability protocols that consider the differential approach and the inclusion of people in vulnerable conditions. . Guarantee compliance with the 10% hiring of female personnel. . Guarantee compliance with the hiring of 20% of unskilled labor residing in the AID. . Generate spaces for dialogue with organized communities regarding differential conditions. . Reach integration and participation agreements with these social groups. . Negotiate with the corresponding entities to support the actions of the differential groups.	Public information and communication program Metro escucha, Metro resuelve program Sustainable mobility culture program Program for the construction of the urban fabric of PLMB Citizen strengthening program for the construction of urban life for PLMB

IMPACT GENERATORS	IDENTIFIED IMPACTS	INVOLVED POPULATION	MANAGEMENT MEASURES	ASSOCIATED PROGRAMS
. Announcement of commencement of work . Increased traffic along 49th South Street. . Implementation of the PMT.	Changes in citizen participation processes	. Social Organizations of the UPZ El Porvenir . Residents of the neighborhoods of El Porvenir and the neighborhoods of Las Margaritas, Brisas del Tintal and Indugas. . Citizen overseers	. Generate spaces for dialogue and consultation with grassroots organizations with a presence in the territory. . Form the Zonal Participation Committee . Identify local grassroots organizations. . Promote citizen participation. . Encourage the creation of citizen oversight organizations.	Program for the construction of the urban fabric of PLMB Public information and communication program Metro escucha, Metro resuelve program Citizen empowerment program for the construction of urban life for PLMB
. Start of construction . Excavations Vibrations	Alteration of the nation's cultural and archaeological heritage.	Civil society organizations Institutions of the environment	. Clear, truthful and timely information on the work to be carried out. . Generation of educational activities with specific population groups to generate appropriation of the work.	Public information and communication program Metro listens, Metro solves. Program for the construction of the urban fabric of PLMB. Citizen strengthening program for the construction of urban life for PLMB.
. Working conditions . Notice of commencement of work. . Opening of bids for vehicle contracting. . Compensation plan and benefits associated with the contracting process.	Opposition of compaies' trade union movements or associated with public transport or cargo vehicles.	Dealership workers Vehicle company workers Associated and unionized public transportation drivers	. Multilateral banking safeguards training and education. . Code of Conduct Training and Implementation. . Enforcement of traffic regulations. . Socialization of PMAS social programs.	Sustainable mobility culture program Traffic management plan Public information and communication program Metro escucha, Metro resuelveprogram

7.4 SOCIAL MANAGEMENT PLAN PROGRAMS

The objective of the social programs during the execution of the activities in the depot is to define the management processes and preventive, corrective and mitigation measures for the impacts and risks identified in each activity of the project.

The Social Management Programs are as follows:

Table 16 – Social Management Programs

Environment	Social Management Plan	Code
SOCIOECONOMIC	Public information and communication program	PM_SE_01
	Metro escucha, Metro resuelveprogram	PM_SE_02
	Citizen participation program	PM_SE_03
	Citizen empowerment program for the construction of urban life of the first Metro line	PM_SE_04
	Inter-institutional articulation program for the construction of urban life of the First Metro Line of Bogotá	PM_SE_05
	Sustainable mobility culture program	PM_SE_06
	Program for the protection of infrastructure and third-party assets "Metro Buen Vecino"	PM_SE_07
	Social and labor inclusion program	PM_SE_08
	Program for the construction of the urban fabric of the First Line of the Bogotá Subway.	PM_SE_09
	Traffic management program	PM_SE_010
	Labor Influence Management Program	PM_SE_011

7.5 FOLLOW-UP AND MONITORING PROGRAM

The monitoring and follow-up plan will be used to evaluate the effectiveness of the management measures planned to address the social impacts generated by the works to adapt the land for the Depot works. This will be done to monitor the strategies adopted in each of the programs and determine in a timely manner the adjustments required for the planned management, in accordance with the obtained results.

7.5.1 Methodology

For each of the programs, specific follow-up indicators were established to measure management in each case, which are monitored with a unified system for measuring indicators, which are included in a follow-up and monitoring matrix where all programs and their activities are listed to facilitate periodic follow-up of each program.

The following table presents the indicators for the evaluation of the programs, these indicators will be implemented according to the particularities of each program:

Table 17 – Social Management Plan Programs

INDEX	VARIABLES	INDICATOR	INDICATOR INTERPRETATION
COMPLIACE	AE = Executed activities AP = Planned activities	$\frac{AE}{AP}X100$	At the planned time With the expected people At the expected place With the budgeted resources
	TPP = Total participants TPC = Total persons summoned	$\frac{TPP}{TPC}X100$	
	FE = Execution dates FP = Scheduled date	$\frac{FE}{FP}X100$	
QUALITY	CE = Expected content SC = Satisfaction with content	$\frac{SC}{CE}X100$	Accuracy, clarity and relevance of the content. Impact of results (survey results).
	NCE= Number of sent communications MP= Published communications	$\frac{NCE}{MP}X100$	Evidence of whether the sent information was published by the stipulated means.
SATISFACTION	PS = Satisfied persons PP = Participating persons.	$\frac{PS}{PP}X100$	Based on perceived need Scope of functional objectives
COVERAGE	TOP = Total Participating Organizations TOI = Total Identified Organizations	$\frac{TOP}{TOI}X100$	Increased impact on target population
	TASPT = Total Social Actors Participating by Segment TASIT = Total Social Actors Identified by Segment	$\frac{TASPT}{TASIT}X100$	
	TPI= Total number of persons impacted (by readership or listeners) PAID= AID population	$\frac{TPI}{PAID}X100$	
	NIE= Number of Forms Delivered NIP= Number of Planned Printouts	$\frac{NIE}{NIP}X100$	

INDEX	VARIABLES	INDICATOR	INDICATOR INTERPRETATION
	NI = Number of interactions NV= Number of Views	$\frac{NI}{NV}X100$	

The following mechanisms have been established to coordinate follow-up and monitoring activities:

- Weekly meetings to follow up on construction and consulting contracts to monitor the social component.
- Weekly comprehensive meetings with the participation of all social teams to review goals and adjust procedures.
- Meetings to address special topics.
- Management control and follow-up through weekly, monthly and semi-annual monitoring reports.
- Delegation of a specialized professional from the concessionaire to exercise control and follow-up of each component according to its specialty, in all contracts and work fronts.

The concessionaire submits monthly progress reports on the execution activities of this Social Management Plan, which is structured according to the developed activities that make up each of the programs. These periodic reports are submitted to the interventoría, who will forward them to Empresa Metro de Bogotá to be socialized with the Multilateral Bank, according to the agreements.

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