

INTER-AMERICAN DEVELOPMENT BANK



ARGENTINA

***TRENES DE BUENOS AIRES
AR-0226***

ENVIRONMENTAL AND SOCIAL IMPACT REPORT

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1.0 INTRODUCTION

- 1.1 Until 1992, a state-owned company operated the railroad system in the Buenos Aires metropolitan area. The lack of funds for investments led to insufficient maintenance, aging of the fleet, inefficient management, poor quality service and unsafe operations. In order to address this situation, the Government of Argentina (GOA) decided to privatize the state-owned railway system.
- 1.2 Trenes de Buenos Aires (TBA), formed by Cometrans S.A. (an Argentine bus company), Morrison Knudsen Railroad Corp., Inc. (a U.S. manufacturer of rolling stock) and Burlington Northern Railroad Co. (a U.S. railway company), was awarded the concession for the Sarmiento and Mitre lines, which serve the western and northern portions of the Buenos Aires metropolitan and provincial areas. The concession was awarded for 10 years, beginning July 1995, with the option of extending the period for an additional 10 years. TBA's major obligations are: (i) to provide the committed equity (TBA has already paid in the total committed amount of US\$ 18 million); (ii) assume the commercial risk of the project; (iii) to operate the Sarmiento and Mitre lines with improved service quality; and (iv) to satisfactorily complete the investment program based on a minimum requirement pre-defined by GOA.
- 1.3 The project consists of the rehabilitation, improvement and operation of the Sarmiento and Mitre commuter lines. The Sarmiento line has one electrified line (36.4 km) and two diesel lines (129.2 km). It links downtown Buenos Aires with western and southwestern Greater Buenos Aires. The Mitre line, with three electrified lines (67.5 km) and two diesel lines (126.8 km), passes through the highly populated northeastern area of Greater Buenos Aires. (See attached map)
- 1.4 The urban and suburban railroad system in Buenos Aires is mainly utilized by the low and middle-income population. In order to maintain the tariffs at an affordable level for low-income users, while simultaneously improving the condition of the equipment and facilities, the GOA decided to subsidize operations during the initial years. The GOA will also reimburse the cost of the mandatory investments defined in the concession contract. Throughout the project period, the GOA maintains ownership of railway system assets.
- 1.5 TBA has requested that the IDB provide support to an accelerated investment program through a partial risk guarantee on a Note Discount Facility with a value of up to US\$ 75 million.

2.0 PROJECT DESCRIPTION

2.1 Overview

- 2.1 The project consists of the rehabilitation, improvement and operation of the Sarmiento and Mitre commuter lines. The Sarmiento line has one electrified line (36.4 km) and two diesel lines (129.2 km). It links downtown Buenos Aires with western and southwestern Greater Buenos Aires. The Mitre line, with three electrified lines (67.5 km) and two diesel lines (126.8 km), passes through the highly populated northeastern area of Greater Buenos Aires. (See attached map)
- 2.2 Mitre System. The length of the electric track, which has 37 stations, is 53 km. The line is served by 168 electric coaches. During the third year of concession operation, 1997/98, the Mitre electric line transported 77 million passengers. The 127 km diesel track includes 20 stations. There are 11 diesel locomotives in service with 30 standard coaches. During 1997/98, the Mitre diesel line transported 8 million passengers.
- 2.3 Sarmiento System. The 36 km of electric tracks encompasses 17 stations. The line is serviced by 252 coaches. During the third year of concession operation (1997/98), the Sarmiento electric line transported 105 million passengers. The 131 km diesel track includes 24 stations. Nine locomotives, twenty-two standard coaches, and fourteen motor coaches serve the line. In 1997/98, the Sarmiento diesel line transported 7 million passengers.
- 2.4 While the total length of the Mitre Railway (180 km) is slightly greater than that of the Sarmiento line (167 km), the potential population to be served is substantially higher along the Sarmiento (approximately 4.8 million inhabitants) when compared with the Mitre system (approximately 2.8 million inhabitants). In total, the TBA network serves an area inhabited by 70% of the population of the Buenos Aires Metropolitan Area. Like other commuter lines in Buenos Aires, the number of passengers on the Sarmiento and Mitre lines has declined during recent decades, from about 200 million per year in the mid-70s to 100 million in 1994.
- 2.5 The districts along both lines within the city boundaries are, in general, consolidated urban areas, with relatively well-established construction and middle to upper class residents. The same conditions prevail in the suburbs, as with the Mitre line to Tigre and in parts of the Sarmiento line to Moreno, both of which are electrified lines. The crossings of the Sarmiento lines in the city of Buenos Aires are located in highly urbanized and populated neighborhoods, resulting in numerous accidents involving personal injuries and material losses.
- 2.6 The existing operations include four principal maintenance facilities for the repair and cleaning of trains and rolling stock, two for the Sarmiento line and two for the Mitre line. These operations typically include: rolling stock washing area, repair and maintenance

areas, rolling stock parking areas, material storage areas, waste storage areas, and offices. TBA presently only needs and utilizes a portion of the total areas and is discussing the management of the remaining areas with the GOA.

2.2 Investments

- 2.7 There are two types of investments planned by TBA: (i) Mandatory investments, which are defined under the concession contract; and (ii) Discretionary investments, additional investments that TBA may implement at its discretion in order to further improve the efficiency of the lines.

2.2.1 Mandatory Investments

- 2.8 Regarding the mandatory investments, the GOA is obligated to reimburse TBA for the total cost of each work (excluding financial costs) after it is completed and accepted under a pre-defined payment schedule. The program consists of 74 components, which include electrical works, track works, civil works, and mechanical works.
- 2.9 The main components of the electrical works are signaling updating, cable renewal, sub-station installation and telecommunication equipment. On average, the electricity transformer sub-stations used in these lines are 20 to 30 years old. The wiring also needs to be reinforced to improve the performance rate and reduce the number of failures. In addition, the Sarmiento line currently has many different signaling systems working simultaneously. TBA plans to homogenize the signaling equipment, centralize commands from both lines in one site, and improve communication systems that are imperative for safety operations.
- 2.10 The track work consists of major track renewal and heavy bridge refurbishment, which will allow an increase in the operational speed and the frequency of service. Furthermore, it will contribute to improved comfort by reducing noise and vibration.
- 2.11 The civil works involve the refurbishment of the major stations and the construction of underpasses and pedestrian crossings. Since only a few underpasses have been built over the last 50 years, severe traffic congestion exists and many accidents have occurred at the crossings. As a part of the investment program, 16 underpasses will be built along both lines in order to mitigate these problems.
- 2.12 The major scope of the mechanical works is the fleet refurbishment and the purchase of new locomotives. TBA's electrical fleet has an average age of 35 years and there is also a shortage of locomotives, leading to insufficient and unreliable service.
- 2.13 Although the GOA payment schedule for the mandatory investments was fixed at the time of the bidding process, TBA has committed to accelerate the completion of certain works

and is willing to accelerate further beyond the committed schedule. This will bring sizable benefits for passengers earlier than the original GOA schedule.

2.2.2 *Discretionary Investments*

- 2.14 In addition to the mandatory investment program, TBA may carry out additional investments at its discretion to further improve the efficiency of the lines.
- 2.15 Three important components of the discretionary investment plan are the 265 automatic magnetic card ticket vending machines, 480 turnstiles and one network software system. The supplier of these machines is Indra, a Spanish manufacture. These automatic ticket machines will enable the system to handle an increasing number of passengers, facilitate more accurate statistical and auditing information, reduce the evasion rate and improve efficiency while lowering operating costs. The installation of the magnetic ticket machines should be completed by the end of this year and is expected to increase the number of passengers (i.e. tickets actually paid) by approximately 3.5 million passenger/year by reducing evasion.
- 2.16 Another major portion of the discretionary investment is the heavy repairs of the rolling stock. TBA owns an active fleet of 362 electric coaches for the Sarmiento and Mitre lines and has to conduct heavy repairs every 750,000 km of operation. The repairs up to the 5th operational year are included in the scope of mandatory investment program; most of the fleet will undergo complete reconstruction during this period. After the 6th year, any repairs required will be carried out as discretionary investments.
- 2.17 Other discretionary investments include pre-takeover expenses, minor hardware purchases, minor daily purchases (ex. desks, PCs, software and minor tools), and improvements in the communication system.

2.3 **Cost and Schedule**

- 2.18 The estimated cost of the mandatory investment program, which will be reimbursed by GOA, is about US\$ 406 million. The total amount of this discretionary investment, which will be mainly financed from the cash flow of the company, is estimated at US\$ 132 million (excluding financial cost). The discretionary investments consist of US\$ 27.6 million for the automatic magnetic card ticket vending system, US\$ 82.7 million for heavy repairs of the rolling stock, and US\$ 21.3 million for pre-takeover expenses, minor hardware purchases, minor daily purchases (ex. desks, PCs, software and minor tools), and improvements in the communication system
- 2.19 Since operations started in 1995, TBA has concentrated its efforts especially on improving its marketing plan, such as personnel training, advertising, safety, on-time performance, measures to reduce evasion, and the introduction of ticket machines. As a result, management efficiency, revenue and productivity have improved considerably. The number of users (i.e. ticket payers) increased from about 100 million in 1994 to 135

million in 1995, and ticket sales also increased by 55% during the first year of operation. In addition, during the last two years, the estimated evasion rate has been reduced from 40% to 13% and on time service rate has increased from 40% to 96%. As a result, TBA achieved a total revenue of US\$ 152.0 million and net income of about US\$ 7.4 million in 1996. However, since the amount of the operational subsidy will gradually decline and from year seven on TBA has to pay an increasing cannon, TBA needs to continue its efforts to further improve its efficiency and profitability.

- 2.20 From the third year of operation, TBA will begin to focus on the accelerated mandatory investment program that will increase substantially in the following years according to the investment schedule. So far, TBA and its subcontractors have financed most of the investments. However, from year three, the financing for the accelerated mandatory investment will be very difficult without additional sources of financing because of its size and the GOA's reimbursement schedule.

2.4 Project Alternative Analysis

- 2.21 The Project does not include the construction of any new train lines, only the rehabilitation of existing lines and stations and the construction of under-passes for some roadways. Thus, the main project alternative is the selection of roads/streets where underpasses will be constructed. A more global indirect alternative relates to the general project of re-constructing the urban portion of the train line in a trench-like system (i.e., lower the level or grade of the train line below that of the surrounding land).
- 2.20 In the 1920's, the English administration of the then Ferrocarril del Oeste had considered remodeling the Sarmiento line through the continuation of the trench existing between the Terminal at Once and Caballito. There was a complete project for this purpose at the time the GOA expropriated the British railway interests in Argentina. While the proposal of re-constructing the line in a trench has been considered several times, none have ever been successful due to insufficient financial return. While there are present complete estimates regarding the cost for the depression of the train line, there is no doubt that its cost and other negative impacts are much greater than those associated with the construction of several underpasses.
- 2.21 The selection of the underpass locations (i.e., which roads) was based upon coordination among various government entities (federal, provincial, municipal) using several criteria (e.g., traffic, accidents, social issues, etc.). All of under-passes are located in highly populated sections of the city of Buenos Aires and the neighboring communities of adjacent province of Buenos Aires, which will lead to a significant reduction of traffic congestion and train-related accidents.

3.0 LEGAL AND INSTITUTIONAL FRAMEWORK

3.1 Institutional

3.1.1 Applicable Sector

- 3.1 The *Secretaría de Transporte* (Secretariat of Transport) is the main authority at the national level related to transportation. For railway transportation the main authority is the *Comisión Nacional de Regulación de Transporte (CNRT)*, the National Commission in charge of Transport Regulation. The Commission, created through Article 40 of Decree N° 660/96 and regulated by Decree N° 1388/96, is a decentralized institution dependent on the Ministry of Economy. Among the objectives of CNRT are controlling railway transport activities by enforcing existing legislation, executing concession contracts, and monitoring and controlling transport operators' activities.

3.1.2 Environment

- 3.2 The highest environmental authority at the national level is the *Secretaría de Recursos Naturales y Desarrollo Sustentable* (Secretariat on Natural Resources and Sustainable Development) which controls natural resource quality, hazardous waste (generation, transport and disposal), liquid effluents, and gaseous emissions (both mobile or non-mobile sources).
- 3.3 At the provincial level, the *Secretaría de Política Ambiental (SPA)* or Secretariat of Environmental Policy of the Province of Buenos Aires, constitutes the maximum environmental authority. The Secretariat controls the installation and operation of all activities, provincial natural resources, gaseous emissions, noise, and hazardous waste. The control of liquid effluents is shared between the SPA and the *Administración General de Obras Sanitarias de la Provincia de Buenos Aires (AGOSBA)*, the provincial entity currently being privatized that is in charge of water supply and sewage collection and disposal.
- 3.4 In the City of Buenos Aires, the highest environmental authority is the *Subsecretaría de Medio Ambiente* (Under-Secretariat of the Environment) dependent on the Secretariat of Urban Planning and the Environment

3.1.3 Health and Safety

- 3.5 The *Ministerio de Trabajo y Seguridad Social* (Ministry of Labor and Social Security) is responsible for health and safety issues in all of Argentina

3.2 Legal

3.6 A listing of the principal federal, provincial and municipal environmental, health and safety legislation that could apply to the Project is presented in Table 3.1. Listed below are the most important or relevant regulations.

- Wastewater discharges: National Decree 776/92 (Liquid Effluents) which regulates the prevention and penalization of water pollution due to wastewater within national jurisdiction (allowable limits for wastewater to water bodies and storm water); National Decree 999/92 which regulates the concession of water supply and sewage services (includes allowable limits for wastewater discharged in sewers); Provincial Law N° 5965/58 and Regulatory Decrees which regulate liquid waste disposal, regardless of origin within the provincial jurisdiction, stipulates the type and level of treatment, and the allowable wastewater limits (Resolution AGOSBA 287/90)
- Noise: Provincial Resolution SPA N° 159/96, related to noises that affect the surroundings, states that IRAM Standard N° 4.062 should be used within the provincial jurisdiction and City of Buenos Aires Environmental Pollution Prevention Code (Ordinance 39.025/83 MCBA) which defines criteria and maximum levels for noise and vibrations for non-mobile sources.
- Air emissions and ambient air quality: National Law 284/73 which contains Standards for the Preservation of Air Resources for all sources capable of generating atmospheric pollution located within federal jurisdiction (note this law as not yet been regulated); and City of Buenos Aires Environmental Pollution Prevention Code (Ordinance 39.025/83 MCBA) which defines admissible ambient air pollutant concentrations.
- Solid waste: Provincial Law 11.459/93 and Regulatory Decree N° 1.741/96 which regulates industrial activities and waste disposal (permit requirement); and City of Buenos Aires Environmental Pollution Prevention Code (Ordinance 39.025/83 MCBA) which stipulates that non-hazardous wastes should be disposed exclusively at CEAMSE's (a partnership between the City of Buenos Aires and the Province of Buenos Aires) sites, either directly or through the corresponding collection system.
- Health and Safety: Law 19.587/72 (Security, Hygiene and Health Benefits) which provides requirements related to protection and preservation of workers' safety, accidents, and risks; Decree N° 351/79 which contains dispositions regarding the worker environments and risks; and Law 24.028/91 (workplace accidents) which regulates employers' responsibility and obligations, compensations to be paid in case of death or permanent injury, medical and pharmaceutical assistance, and standards to protect workers' credit.
- Handicapped Access: National Laws 22.431 and 24.314, both aimed at granting access facilities to handicapped people, with Law 24.314 directly applicable to facilities in public spaces and modes of transportation.

3.7 In terms of potential environmental related regulatory permits or authorizations, the following is a summary of potential applicable requirements related to individual components of the TBA operations:

- Environmental authorization, according to Provincial Law 11.723, to be issued by the SPA (Secretaría de Política Ambiental);
- Municipal authorization, according to Provincial Decree-Law 6.769/58, to be issued by each municipality;
- Water intake permit, according to Provincial Law 10.106/83, to be issued by the Dirección Provincial de Hidráulica (DPH);
- Water supply authorization (contract) if the site receives water from a private company (Aguas Argentinas in this case);
- Wastewater discharge permit in the Province of Buenos Aires, according to Provincial Law 5.965/58 and OSBA Resolution N° 287/90, under the authority of SPA;
- Wastewater discharge permit if the discharge goes to a sewer under operation by Aguas Argentinas, per Federal Decrees 674/68 and 776/92, under the authority of the Instituto del Agua y del Ambiente (INA, depending from SRNDS) who issues the corresponding permit;
- Air emissions permit for discharges in the Province of Buenos Aires, according to Provincial Law 5.965/58 and its Regulatory Decree 3.395/96, to be issued by SPA;
- Air emissions permit for discharges within the jurisdiction of the City of Buenos Aires, according to the Environmental Pollution Prevention Code (Ordinance N° 39.025/83), to be issued by municipal Secretariat of the Environment;
- Noise and vibration compliance with IRAM Standard 4.062, controlled by the SPA in the case of the Province of Buenos Aires and Secretariat of the Environment in that of the City of Buenos Aires;
- Hazardous waste generator registration, according to Federal Law 24.051/92, to be issued by SRNyDS; and
- Waste permit, according to Provincial Law 11.720, to be registered at the provincial Register.

3.3 Compliance Status

- 3.8 An Environmental Impact Assessment (EIA) of all TBA operations and expansions was prepared in 1995 by Prime Engenharia, a consulting firm contracted by TBA. The study was performed at the specific request of the IDB according to terms of reference provided by the IDB, and included a project description, legal and institutional framework, environmental and social setting, evaluation of impacts and risks, analysis of alternatives, mitigation and control measures, and a monitoring plan. The EIA was provided to the government of Argentina, but since there was no specific regulatory requirement for the preparation or approval of an EIA by TBA, the government never issued any comments or specific approval. The EIA was made available to the public in May and July 1998.
- 3.9 During the period when all public services were provided by public enterprises that were part of either the federal or provincial government, no environmental, health or safety authorizations or permits were ever obtained. Although there was no written law establishing this premise, the principle was that the government was a single entity and wouldn't charge itself for a service it was supplying. The same principle was applied to the situations between the federal and the

provincial governments. This condition was also applied to environmental control activities (e.g., inspections, compliance audits ,etc.), in that no surveillance and control was ever enforced among public enterprises.

3.10 Thus, when TBA assumed control as concessionaire there were no existing environmental, health or safety permits or authorizations. Presently TBA is requesting legal clarification from the government about applicable legislation, responsibility (since the concession contract clearly establishes that the GOA maintains certain rights and responsibilities), and necessary permits (including who must obtain them). In addition, TBA is presently undertaking environmental audits at the principal operational facilities (e.g., maintenance yards) in order to identify potential environmental problems and non-compliance (see section 6 for details). Based upon preliminary information, the most important/relevant permits/authorizations are:

- Environmental authorization from the Province of Buenos Aires SPA (Secretaría de Política Ambiental),
- Municipal authorization,
- Water intake and wastewater discharge permits by Province of Buenos Aires DPH (Dirección Provincial de Hidráulica),
- Wastewater control by Province of Buenos Aires SPA and by federal INA,
- Hazardous wastes generation permits (batteries, drums),
- Air emissions control by Province of Buenos Aires SPA and City of Buenos Aires Secretariat of the Environment, and
- Noise control by both jurisdictions through the application of IRAM Standard 4062.

3.11 Prior to this concession, there was no special consideration for handicapped people when designing the Argentine railway system. The TBA facilities on the Sarmiento and Mitre lines, along the Puerto Madero stretch, and even in the Rosario - Buenos Aires stretch of F.C. Mitre, generally do not comply with National Laws 22.431 and 24.314, aimed at granting access facilities to handicapped people. TBA has developed several measures to be gradually incorporated into the project to ensure adequate and functional access for the handicapped.

4.0 ENVIRONMENTAL AND SOCIAL CONDITIONS

- 4.1 To describe the environmental and social conditions associated with the Project, an area of influence was defined as a band of several kilometers wide along the TBA railway lines. The Project's area of influence includes some of the most important residential and destination locations for users of the transportation system in the north, west and center of the city of Buenos Aires, 10 municipalities of the Metropolitan Area, and another 11 municipalities in the Province of Buenos Aires. This constitutes the most extensive urban complex in Argentina, covering an area of 3.000 km² area and a population of 11 millions in habitants, and comprises the largest portion of commercial, industrial, administrative and service activities in the country.

4.1 Environment

- 4.2 Both the Mitre and Sarmiento railway lines pass through, several areas/sections. From downtown to the periphery, they consist of: (i) a heavily populated first section in the City of Buenos Aires and the first "crown" of the Metropolitan Area; (ii) a second section where urbanization prevails over rural, green and vacant spaces; (iii) a third "semi-urban" section where urban centers appear clearly defined from surrounding rural exploitations; and (iv) a final section, where rural activities prevail. As for natural resources quality, the City of Buenos Aires is not different from its Metropolitan Area (AMBA). In general terms, the railway tracks are located over a typical flat topography, called "*llanura pampeana*" or "*pampasia*", defined almost totally by the basins of the Luján and Reconquista rivers.
- 4.3 Weather is temperate and damp, with frosts in winter and springtime. The median annual temperature is 16.9°C, with a definite seasonal variation ranging from 23.9°C in January, to 10.4°C in July. Rainfall occurs all year long, averaging 1047 mm per year, with a height of 118 mm in March and a minimum of 60 mm/month in wintertime. As a consequence of meteorological conditions, several specific zones in the area may be periodically flooded, due to heavy rainfall and/or to the "sudestada" (southeast wind condition). Such situation affects all sections of the railway lines under study, with the exception of the Tigre section.
- 4.4 Noise in the project area, mostly from vehicular traffic, is quite significant in the urbanized areas. A study performed by the Instituto Pro Buenos Aires showed that noise levels exceeded World Health Organization (WHO) standards in almost all 46 districts of the city. Another survey performed by the Instituto de Seguridad y Educación Vial (ISEV) and Xilix S.A. concluded that most of the noise contamination came from buses and trucks circulation. Measurements performed at four different locations by PRIME Ingenharía as part of the TBA Environmental Assessment showed the following results:
- *Low density residential area with low levels both of traffic and activity (La Lucila at night):* The incidence of train circulation is slightly higher than that of vehicular traffic in the same area, while noise levels from the train, at a distance of 150 m from the tracks would be acceptable by international standards.

- *High density and traffic. Residential-commercial area (Caballito at day time):* The train circulation is masked by the bottom noise of vehicular traffic 150 m away from the trench; in addition, the impact produced by the train is lower than that of the vehicular traffic at a short distance from the tracks, becoming imperceptible 100 m away from them.
- *Medium density of activities and traffic congestion. Residential-commercial district (Ramos Mejía - Haedo):* Noise generated by the passage of the electric train is slightly higher than that of normal to high vehicular circulation. Diesel trains produced higher noise impacts due to the high speed of their passage and the blowing of the horns, which constituted the major element of nuisance. The noise levels recorded in the area substantially exceed typical international criteria/levels.
- *Urban commercial area, medium density, high level of traffic, terminal station of a suburban stretch (José León Suárez):* The horn impact is high in the areas near the tracks up to a distance of 200 m. The noise levels of the diesel trains are lower than noises from horns, and similar to the bottom noise of heavy vehicular traffic.

- 4.5 Air pollution is a major problem throughout the metropolitan area of Buenos Aires, becoming particularly severe in downtown Buenos Aires. The main source of atmospheric contamination is the motor vehicle circulation in the AMBA. An important part of this situation is the result of poor maintenance and high degree of obsolescence of many motor vehicles in the area. A positive prospect seems to be the increasing utilization of NCG and the substitution of lead tetraethyl in gasoline. While the air pollution situation is mitigated by a favorable wind regime in the area, air quality conditions are often poor in the narrow streets of the city during working hours, when traffic is heavy and toxic gases accumulate at unhealthy levels. Air pollution as a consequence of industrial activity is only relevant around a few specific establishments, especially in those sectors dealing with metallurgic, concrete, petrochemicals, and oil activities. Regarding the energy sector, both the SE and the ENRE established severe emission standards according to the environmental policies started in 1991, and the power plants have had to adapt themselves and install monitoring equipment for this purpose.
- 4.6 There is no complete and continuous air quality monitoring network in the specific area. However, from the measurements available it appears that the CO concentrations constantly exceed the recommended daily levels (76% of measurements exceeded the limits set by WHO and the Clean Air Act of the United States for a period of 8 hours). There is insufficient information regarding NO_x, SO₂ or particulate materials. Regarding the high lead content in gasoline, specific measurements downtown confirm values of 3.9 Tg/m³, which exceeds the recommended limits of the U.S. EPA (1.5 Tg/m³).
- 4.7 The principal surface water in the area is the Riode la Plata, which receives approximately 2.3 million m³/day of untreated wastewater and 1.9 million m³/day of industrial discharges, as a result of poor treatment infrastructure and only partial collection of wastewater. Thus, the Río de la Plata shows a certain degree of pollution along its southern coast with parameters exceeding the standards set as guidelines for the De La

Plata Basin water uses. Other more minor streams and rivers are also present in the project area.

4.2 Social-Economic

4.2.1 *Land Use and Population Centers*

- 4.8 The land occupation process that took place historically around the City of Buenos Aires involved two different trends: a vector trend of occupation along the main access roads and the railway tracks, and a consolidation of the settlements through the occupation of spaces left vacant, in a succession of concentric rings. At present, there are three distinct population/density zones within the AMBA (Metropolitan Area of Buenos Aires). All three differ according to their land use and spatial structure as follows:
- The City of Buenos Aires, where almost 30% of the AMBA population is concentrated on 5% of its territory, making a density of 150 inhabitants/hectare;
 - The municipalities surrounding the city capital, with 40% of the population on 25% of the territory, and a corresponding density of 48 inhabitants/hectare; and
 - The rest of the Metropolitan Area, where 30% of the population resides over 70% of the territory, making a density of 13 inhabitants/hectare.
- 4.9 The main transport corridors that have accompanied the trends of occupation along the main roads consist of: the northern corridor, along the border of Buenos Aires with Tigre, where it ends abruptly due to the presence of the Paraná Delta, then continues westbound to the NW; the southern corridor, along the border of Buenos Aires with La Plata, which separates itself from the coast due to similar reasons (basically, periodical floods); and the western corridor, linking the city core with Luján. Three principal rings link these corridors: General Paz Ave., formerly a park avenue in the city limits which has converted itself into a belt transport corridor; the Beltway, Provincial Route N° 4, also a belt transport corridor; and the Provincial Route N° 6, connecting the AMBA to the MERCOSUR countries and Mesopotamia through the Zárate-Brazo Largo system of bridges.
- 4.10 A summary of the specific land use along the Sarmiento Lines and the Mitre Lines are provided in Tables 4.1 and 4.2, respectively.
- ### 4.2.2 *Population profile in TBA area of influence*
- 4.11 There are different and changing population characteristics associated with the different land uses along the length of the different TBA lines. According to the last estimates of the INDEC (National Office of Census and Statistics), 19.5% of the population in the area of influence of F.C. Sarmiento should be defined as “poor”, while only 13.7% of the population in the F.C. Mitre’s influence would receive the same definition. The definition aims at singling out the number of families with unsatisfied basic needs (NBI, in Spanish).
- 4.12 Among the poorer districts served by TBA are La Matanza, Merlo and Morón, on the Sarmiento line, and Tigre and Gral. San Martín, on the Mitre lines. In comparison,

Vicente López and San Isidro (F.C. Mitre), and the city of Buenos Aires (portion shared by the two lines), are among the highest ranked in terms of socioeconomic levels.

- 4.13 According to a SOFRES/IBOPE survey prepared in May 1995 for TBA, 90% of the passengers were customary users, who would travel regularly on working days to their destination. In adopting this decision, they probably had to compare first the quality, cost and dependability of the services provided by other means of transportation, including their own private car, with those supplied by TBA. The remaining 10% of non-customary users choose TBA's services based on an instant personal decision. It depends on "market" conditions, which are in turn subject to many and unpredictable variables, such as weather conditions, parking facilities at destinations, change of fares, events taking place on that specific day and on that specific destination, etc.
- 4.14 The level of unemployment has been decreasing recently in Argentina, although it is still high in the Metropolitan Area, especially in the southwestern suburbs. At present it is estimated at 6% in the City of Buenos Aires, 7.5% in the area served by the F.C. Sarmiento, and 6.1% in the area served by the F.C. Mitre. In comparison, southwest of Greater Buenos Aires, unemployment reached up to 15% recently.

4.2.2.1 Profile of users of F.C. Sarmiento

- 4.15 At present, the low fares charged by TBA compare favorably with those of all other means of transportation, and travel time is generally shorter, if compared with public transportation. This is particularly true in the Plaza Once – Moreno stretch of the Sarmiento trunk line. In longer routes, express buses may take less time.
- 4.16 The recent opening of the Highway of the West, from Luján to Buenos Aires, will have some effect in defining the users' profile of this line. The lowering of time consumption may attract a small proportion of the customary users, especially when using private cars or express buses on long distances. Most of the present users will continue to use the railway, provided that the cost differential keeps favoring this means.
- 4.17 The users of the Sarmiento lines have access to their train station of origin via buses (57.7%), on foot (38.4%), or through other means (3.9%). Only 0.8% of the users took advantage of some park and ride facility, and only 4,400 passengers were registered, on average, on the diesel branches. Regarding the completion of their trip, 42% of users proceed by walking, and approximately 40% use buses and 18% use subway. Around 37% of all Sarmiento users have to use 3 or more means of transportation to complete their trip.

4.2.2.2 Profile of users of F.C. Mitre

- 4.18 The Tigre line of the F.C. Mitre system may compete favorably with the Panamerican Highway or Ave. del Libertador for the access to Buenos Aires via private car, and also competes favorably against all other public transportation. But on a longer distance, such as Zárate or Campana to Buenos Aires, the express bus would likely be preferred to the railway. As with the Sarmiento line, the crossing of overcrowded urban areas is easier and faster via a railway system than using most other public means of transportation.
- 4.19 The users of the Mitre lines access their station of origin on public buses (30.4%), on foot (63%), or through other means (6.6%). About 3.7% of the users utilize the park and ride facilities. The diesel train line delivers 2,400 passengers a day, considerably less than in the Sarmiento case. Regarding the completion of their trip, 44% of the Mitre proceed on foot, whereas the number of those who take buses or the subway is almost equivalent.

4.2.3 TBA Company Employment

- 4.20 TBA has a present total payroll of approximately 3,367 employees (as of September 1998). The number of women employees is low (73 or 2.17%), however according to TBA policies, approximately 69 percent of the positions can't be performed by women due to physical nature and requirements of these positions, including: safety (15% of total number of TBA positions), traffic, except conduction personnel (21.8%), infrastructure (signals, tracks, electrical feeding) (15.4 %), cleaning (workshops, stations and grass along the tracks) (7%), rolling stock maintenance (8.4%), and communications (installations and maintenance) (1%).

4.2.4 Accidents

- 4.21 A summary of the accidents that occurred associated with the TBA operations from November 1997 to May 1998 is presented in Table 4.3. The statistics indicate that more accidents (56.5%) occurred on the Sarmiento line, with a shorter total length of line/track. The statistics also suggest that some could have possibly been avoided by prevention measures or educational programs and the construction of underpasses (see section 6 for description of actions being taken by TBA).

5.0 ENVIRONMENTAL AND SOCIAL IMPACTS

- 5.1 This section presents a summary of the potential environmental and social impacts and risks of this project as identified in the overall project Environment Impact Assessment and review of other information sources.

5.1 Existing Operations

- 5.2 TBA took charge of operating the Mitre and Sarmiento Lines at the end of May 1995. At that time, the operations were significantly impaired due to the practically total lack of investments during the previous 25 years. This resulted in a considerable lack of maintenance of both facilities and rolling material, a very scarce technological updating, a large degree of evasion of ticket's payment on behalf of the users, and very deficient service in terms of transportation supply and quality.
- 5.3 TBA performed various initial inspections and inventories of the facilities and operations during the first year of operations and continues to perform various routine inspections. TBA is presently performing environmental audits at all of the maintenance facilities in order to identify potential environmental problems and/or non-compliance issues. Associated with the audits, an environmental correction action plan will be developed and implemented (see section 6 for details). An independent environmental consultant is performing the audits.
- 5.4 Based upon the preliminary information, the principal environmental problems related to the existing operations are:
- significant traffic problems (e.g., delays, congestion, etc.) at train crossings;
 - accidents associated with trains and vehicles and pedestrians;
 - inadequate wastewater disposal systems at the maintenance facilities;
 - inadequate solid and petroleum waste management;
 - minor areas of soil contamination at the maintenance facilities;
 - noise and vibrations in surrounding buildings; and
 - minor leakage of liquids from trains and rolling stock.
- 5.5 The operation of the diesel trains, which are located only outside of the Buenos Aires Metropolitan Area, have very limited emissions, and basically no impact on ambient air quality. TBA has stated that there are no PCB-containing fluids in any facility-related transformers and no relevant quantities of asbestos containing materials are present in facility buildings.

5.2 New Projects

5.2.1 Construction Phase

- 5.6 The potential environmental impacts during construction related activities, which is primarily construction of road under-passes, are all moderate or low magnitude and temporary and include:
- dust emissions;
 - gaseous emissions from the engines and equipment;
 - generation of noise and vibration from the engines and equipment;

- soil erosion and storm water runoff;
- potential spills of liquid materials and wastes;
- waste management, including ballast, debris, scrap iron and other materials with hydrocarbons, solid wastes, lubricant oils and other wastes;
- indirect impacts associated with quarries used to supply materials.

5.7 The principal social impact associated with construction related activities is the lack of acceptance, in some limited cases, to the proposed construction of under-passes to eliminate train and street crossings. While this construction clearly results in decreased accidents and traffic problems, some local residents have expressed concerns related to loss of land, loss of access to their properties and businesses, loss of economic opportunity, crime risks (e.g., related to pedestrian walking the under-pass at night), and potential changes in daily lifestyle habits.

5.8 The potential secondary social impacts associated with construction are:

- nuisances and damages to the neighborhood, such as cracking of walls in neighboring buildings, obstructions or restraints in the access to particular parking, temporary under-valuation of neighboring properties;
- risk of work-related accidents;
- risk of accidents for pedestrians and population located in the immediate environment of the works;
- impacts on train service, such as delays, etc;
- temporary nuisances to station's users;
- interference with local traffic;
- temporary possible economical impact to commercial activities at the site; and
- potential interference with other services ducts like water, gas, energy, telephone, sewage, storm water, etc..

5.2.2 *Operation Phase*

5.9 The main potential environmental impacts related to the operation phase include:

- increase of localized noise due to the higher frequency in railway schedules (note: this increase will be off-set by the implementation of railway maintenance and a rolling stock program, while in urban areas existing noise levels are high and will not be significantly affected by the increase in trains);
- disposal of wastewater from maintenance areas;
- solid waste management, including temporary storage and disposal of non-hazardous and hazardous wastes (e.g., batteries, hydrocarbons, etc.);
- increase of gaseous emissions at the some street crossings as a result of the increased waiting times derived from the increased frequencies in railway schedules;
- increase of gaseous emissions in certain areas due to the increase of diesel engines;

- pressure on green areas located in the vicinity of train stations and risk of their impairment as a consequence of informal commercial trade and the eventual installation of commuter bus stations; and
- potential spills of petroleum products.

5.10 The main potential direct social impacts during operation are:

- increase of street barrier closing times for some streets (i.e., those without underpasses) and increased number of vehicles affected and waiting times;
- traffic problems on roads parallel to the railway line as a result of the increase of vehicle queues;
- impairment of traffic conditions in local centers near the railway stations;
- increase of pedestrian circulation in the vicinity of railway stations;
- potential increase in the risk of accidents due to the increase of train schedule frequencies (note: this increase will be offset by reduction in road crossings and enhancement of safety measures and education at the remaining crossings).

5.11 Potential indirect social impacts associated with the operations are:

- greater pressure on transfer areas that are currently insufficient;
- generation of unbalanced opinions about greater security vs. uncomfortable conditions at the rails crossings due to the substitution of pedestrian level crossings by footbridges
- Visual intrusion of the crossings and footbridges in the local landscape;
- impact on the resident population in the vicinity of the railway stations;
- greater demand on urban management, realignment of bus lines, bus stops and terminals, traffic, informal commerce, etc., particularly in the vicinity of railway stations;
- eventual additional zoning and territorial management demands related to eventual increased access to surrounding perimeter areas.

5.3 Positive Impacts/Benefits

5.12 The principal environmental benefits of the Project are the following:

- reduction of noise produced by trains as a result of the restoration or replacement of rails and the updating of railway cars;
- improvements in landscape along right-of-way of train lines, especially in urban areas; and
- reduction of a certain degree of gaseous emissions from motor vehicles and buses due to switch in transportation to electric trains.

5.13 The principal social benefits derived from the Project are the following:

- better train service (e.g., improved on-time performance, frequency and schedules, etc);
- reduction of vehicles and pedestrian accidents at the street crossings;
- cleaner and better-maintained trains;
- considerable decrease in crime;
- increase in employment opportunities during construction works;
- increase in the supply of transport service to the population;
- relative reduction of the general conditions of circulation on those road axis parallel or transverse to the lines benefited by the crossings at different levels;
- better accessibility at stations, especially for handicapped;
- potential induction of population growth in distant areas; and
- increase of commercial activity and informal commerce in the vicinity of the railway stations.

6.0 ENVIRONMENTAL AND SOCIAL MANAGEMENT

- 6.1 The overall environmental and social management system for the TBA operations consists of the following principal components:
- Environmental and Social Management Plan to ensure proper mitigation and control of environmental and social issues associated with the TBA operations (see section 6.1 for details);
 - Environmental audits of the company's maintenance facilities in order to identify potential problems and to develop and implement the necessary corrective actions (see section 6.2 for details);
 - Emergency and accident prevention and response programs (see section 6.3 for details); and
 - Health and safety programs (see section 6.4 for details).
- 6.2 The estimated costs, schedules and responsibilities related to the various plans, programs and actions are presented in section 6.4.

6.1 Environmental and Social Management Plan

- 6.3 The principal objective of the Environmental and Social Management Plan (ESMP) for the Project is to provide the tools and mechanisms to ensure proper environmental and social management. The plan is presently being finalized and consists of various individual programs, which are described below. In addition, the environmental audits (section 6.2), emergency and accident contingency plans (section 6.3), and health and safety (section 6.4) are also considered part of the overall environmental and social management system (or plan).
- 6.4 **Air Emissions Management and Control Program.** This program will verify the performance and the potential emissions from diesel engines, and will include, as a minimum, periodical control (annual minimum) of diesel engines emissions and fuel quality control, maintenance of adequate conditions (e.g. performance standards) with regard to motor performance; and monitoring of ambient air quality to confirm no ambient impacts.
- 6.5 **Noise and Vibrations Control Program.** This program will include, at a minimum, the following: implementation of measures and works to control and reduce noise emissions and vibrations, noise monitoring in the area of direct railway influence, implementation of operation criteria to reduce the use of horns, and implementation of forestation programs to lessen the noise derived from the passing trains.
- 6.6 **Wastewater Management and Control Program.** This program will manage and control the wastewater discharges from TBA facilities, in particular the maintenance shops/yards. The program includes actions to periodically characterize (monitor) the wastewater effluents from the maintenance facilities, control the wastewater systems (e.g., settling tanks), and implement, as necessary, wastewater controls or treatment to ensure wastewater discharges comply with

applicable regulatory requirements. TBA has contracted an independent engineering company to perform a waste management assessment, specifically dealing with wastewater discharges, at the TBA maintenance facilities in order to define the existing conditions and to develop recommended practices and corrective actions (if necessary).

- 6.7 **Solid and Hazardous Wastes Management and Control Program.** This program will provide the appropriate waste management (e.g., collection, temporary storage, and disposal) practices for solid wastes and hazardous wastes (e.g., waste petroleum products, batteries, etc). These practices will be finalized based upon the results from the environmental audits of existing operations.
- 6.8 **Mitigation Measures for Underpass Construction.** Associated with the construction of the various street underpasses, TBA is developing a standardized set of mitigation measures to be implemented for all underpass projects. Table 6.1 provides a general description of these mitigation measures.
- 6.9 **Quality Control Program.** The program will involve the development of a handbook of procedures that ensures the adequacy of: (1) rolling stock: cleaning; general maintenance of the internal conditions of each coach (seats, doors, ventilators, windows, painting, etc.), general maintenance of the mechanical equipment (wheels, suspension and softening devices, etc.); (2) support equipment: running rails, third running rail with particular emphasis on its cover and signals, gravel bed (ballast), etc.; (3) stations: cleaning, general maintenance, ticket expenditure, waiting rooms, circulation during rush hours, performance of exit means, sanitation services, sanitary equipment for emergencies, etc.; and (4) level crossings: general maintenance of the automatic barrier system, general maintenance of the pavement, etc.
- 6.10 **Training Program.** The objectives of this program are to inform and train personnel on environmental problems, their control and the specific roles and responsibilities of all employees related to environment, health and safety, and emergency/contingency response. The program will include activities for new employees (both to the company or to a new position) and on an on-going or continuous basis.
- 6.11 **Environmental Education Program.** The objectives of this program are to create a general consciousness of the treatment of local and regional problems, inform and create consciousness in the population on the individual and community responsibilities, and increase the interaction between environmental and educational management. In order to fulfill these objectives the program will implement measures related to both formal and non-formal education. For example, TBA has developed and implemented an Education Program directed exclusively to schoolchildren.
- 6.12 **Public Consultation Program.** The objectives of this program are to provide adequate transmission to the community involved of the characteristics of the Project, establish systematic conditions of communication between the Concessionaire and the diverse segments

of the community involved, and establish a system for the appropriate reception of the community's expectancies and concerns from the Concessionaire. The Program comprises two different components: social communication (disclosure of information) and public consultation/participation. The program will specifically address the measures required related to the underpass projects, including a procedure or approach to public meetings which includes objective, the nature of the procedure, the type and quality of the participants, methods of notification of meeting, the performance of the participants, the relaying of information concerning procedures, authorities, development of the public hearing, and conclusions and recording of the proceedings.

- 6.13 **Environmental Inspection/Audit Program.** This program will define specific actions (routine inspections, annual audits, etc.) to be implemented to provide routine confirmation of proper implementation of components of the environmental and social management system.
- 6.14 **Inter-institutional Coordination Program.** This program will consist of establishing and maintaining contact with the various applicable environmental, health and safety government agencies involved in the different jurisdictions. The intent is to establish an understanding of potential issues and concerns and to help define TBA's requirements and responsibilities.

6.2 Environmental Audits

- 6.15 TBA is presently performing environmental audits at all of the maintenance facilities in order to identify potential environmental problems and/or non-compliance issues and to develop a correction action plan. An independent environmental consultant is performing the audits. The environmental audit specifically includes the areas of solid and hazardous waste, wastewater effluents, surface and ground water pollution, and soil contamination. The audit will provide recommendations regarding procedures and practices that should be implemented to prevent problems, specific actions to correct existing problems, and any potential addition studies required.

6.3 Accident and Contingency Program

- 6.16 **Reduction of Accidents Program.** The objective of this program is to reduce the number of accidents associated with the operation of the TBA system. The program will, include, as a minimum, the following: implement awareness and prevention actions at train stations; implement awareness and prevention actions at street crossings; provide information ads at the stations in the trains (rolling stock); provide training programs on risk of accidents identify the personnel directly involved in stations, level crossings and rolling stock handling (surveillance); and program to review and implement necessary actions concerning accidents (e.g., accident cause specification, development of the accident, end of the event, economic and operative costs). TBA has implemented a school education program related to accident prevention based upon the U.S. "Operation Lifesaver Program". The program started in November 1996 with the schools located near the railway stations, mostly in schools located along the Sarmiento lines where the most accidents have occurred in the past. The construction

of sixteen vehicular underpasses and various pedestrian passages (over-passes) along both the Sarmiento and Mitre lines will significantly improve safety conditions in the future.

- 6.17 **Contingency Program.** This program is structured according to the actions performed and the responsibilities of each of the various TBA entities, including Operations Office, Emergency response, Administrative response, Surveillance Service, Medical Service, and Worker response. Appropriate measures for the following risks, at a minimum, will be included: spills, fire, explosion, accidents, access blockade, energy failures, and civil disturbances. The Program will include the necessary training measures for the personnel (this is to be coordinated with the Training).

6.4 Health and Safety Program

- 6.18 The TBA health and safety program will consist of the following components

- Handbook of Procedures to Respond to Operational Emergencies (consists of various written procedures);
- Handbook on Operative Techniques. Hygiene and Safety Department. The handbook includes the following specific operation standards/procedures related to health and safety: extinguishers; signaling procedures for works performed in public streets; safety cleaning products; cleaning and disinfecting methods for water tanks; security colors; treatment and disinfecting of water wells for human supply; hygiene and safety standards for contractors; storage of diverse materials, work procedures in roofs; illumination; pedestrian circulation along and across rails; safety belts; repairing and maintenance procedures; methods for handling locomotives third rail, etc.; procedures for the transport of oil, grease, fuel and solvents drums; procedures to be followed during fires; safe procedures to work in public streets; elevation devices and elements; scaffolds and platforms; and ropes and chains;
- TBA Industrial Safety Policy;
- Basic Industrial Hygiene and Safety Standards Handbook; and
- Health and safety procedures associated with environmental topics (e.g., waste disposal, fuel and oil spills, etc.).

6.5 Cost, Schedule and Responsibilities

- 6.19 Since the takeover of the concession, TBA has spent approximately US\$ 14.5 million related to environment, health and safety, including approximately \$10.4 million related to road crossing safety measures, \$2.4 million for health and safety measures, \$141,000 for accident reduction education and training, \$31,000 for training. The estimated cost expenditures for similar areas over the next 10 years are approximately US\$ 33 million, including approximately \$22 million related to road crossing safety measures, \$6.0 million for health and safety measures, \$360,000 for accident reduction education and training, \$120,000 for training. In addition TBA is presently spending approximately \$60,000 to develop the environmental and social management plan and perform the environmental

audits.

- 6.20 In terms of schedule, TBA plans to complete by the end of 1998 the development and initiated implementation of the Environmental and Social Management Plan (ESMP), environmental audits, contingency program, and health and safety program (as presented in sections 6.1 to 6.4, respectively). The measures corresponding to the construction activities (e.g., underpasses) will be implemented in conjunction with the project development and implementation.
- 6.21 TBA is responsible for developing and implementing the environmental and social management system. The Concession Contract stipulates that all pre-existing environmental conditions are the responsibility of the Federal Government. The contract also states that the responsibility for the damages and nuisances to the environment resulting from the use of equipment and other assets affected to the service will be assumed by the Federal Government, provided they are not the consequence of the Concessionaire's guilt, negligence or fraud. Regardless of the designation of responsibilities, TBA will comply with the implementation of the ESMP and the requirements established by the Bank as part of the Guarantee Agreement.
- 6.22 Presently, the institutional responsibilities within TBA related to the environment, health and safety are separated among various departments and individuals. In terms of environmental aspects, TBA has not identified and assigned all of the necessary responsibilities.

7.0 PUBLIC CONSULTATION

- 7.1 The Environmental Impact Assessment for the overall TBA operations, prepared at the request of the IDB, was made available to the public in May and July 1998. The EIA included a project description, legal and institutional framework, environmental and social setting, evaluation of impacts and risks, analysis of alternatives, mitigation and control measures, and a monitoring plan.
- 7.2 TBA has implemented the following public consultation actions:
- Information is provided to the public on a routine basis describing the TBA Investment Plan, which has taken into account suggestions provided by the public.
 - Related to remodeling of the railway stations, TBA is displaying a model of the proposed project enhancements/modifications in every station to be remodeled, in order to make the population aware of the scope and outcome of the project and to receive any comments on the proposed project.
 - Related to the street underpasses, TBA's staff hold meetings with the affected population in the area of each underpass to inform them of the proposed project and receive their ideas and concerns, and then respond and modify the project, as feasible. TBA has hired an outside consulting firm to specifically assist with these meetings.
 - TBA prepared and distributed to the public a document consisting of a list of warnings

and/or notices to the population in general on different service conditions.

- 7.3 As part of the TBA environmental and social management system, a Public Consultation Program is being developed in order to provide adequate transmission to the community involved of the characteristics of the Project, establish systematic conditions of communication between the Concessionaire and the diverse segments of the community involved, and establish a system for the appropriate reception of the community's expectancies and worries by the Concessionaire. The Program comprises both social communication (disclosure of information) and public consultation/participation.
- 7.4 TBA has established and maintained an open dialogue with municipalities and affected parties related to station work and expansions. This has included various meetings and the development and public display of proposed station design enhancements in order to receive public comments and ideas. TBA is committed to working with municipalities in terms of how station modification and system operation may affect short-term and long-term local and regional development and planning.
- 7.5 A specific mitigation measure to be implemented for each street underpass is public consultation. The measures should include providing appropriate information to the community involved with the following characteristics: information properly in advance, precautions to be taken against accidents that may be caused by the underpasses under construction, warnings on disruptions or diversion of traffic, breakage of streets and roads, possibility of interception of ducts belonging to different kind of public or private services. In addition, a procedure or approach will be developed regarding public meetings which includes objective, the nature of the procedure, the type and quality of the participants, methods of notification of meeting, the performance of the participants, the relaying of information concerning procedures, authorities, development of the public hearing, and conclusions and recording of the proceedings.

8.0 RECOMMENDATIONS

- 8.1 The IDB will require, as part of the Guarantee Program Agreement, that Trenes de Buenos Aires (TBA) comply with the following: (i) all applicable environmental, health and safety Argentine regulatory requirements; (ii) all requirements associated with any environmental, health and safety related permits, authorizations or licenses that apply to the Project; (iii) all components of the TBA Environment and Social Management System as described in the IDB Environmental and Social Impact Report (ESIR) dated September 1998, including without limitation, environment and social management plan, environmental audits, accident and contingency program, and health and safety; (iv) implementation of a Corrective Action Plan for those deficiencies identified as part of the Environmental Audits performed on the TBA facilities; (v) all necessary environmental and social mitigation measures and monitoring programs for all project underpasses, as developed in the TBA Environment and Social Management Plan - mitigation measures

for underpass construction; (vi) implementation of any mitigation measures and monitoring programs identified in any project related environmental, health and safety document (e.g., environmental impact assessments, etc.); (vii) all aspects of the environment and social management system as described in the IDB Environmental and Social Impact Report (ESIR) dated September 1998; and (viii) the applicable environmental and social IDB policies and guidelines, being guidance on environmental impact assessments, resettlement policy, and disclosure of information policy.

8.2 Prior to project financial closure, the following conditions are required to be fulfilled by TBA:

1. Provide the final Environment and Social Management Plan, subject to IDB approval, which includes as a minimum all aspects (plans, programs, components, etc) of the TBA environment and social management system as described in the IDB Environmental and Social Impact Report (ESIR) dated September 1998.
2. Provide written clarification related to the exact responsibilities and obligations of TBA to comply with all applicable Argentine environmental and health and safety legislation, including specifically permits and authorizations, and in the case that TBA stated they are not required to comply, then written confirmation from the government of Argentina confirming no need to comply.
3. Provide the IDB written certification that the existing TBA facilities, equipment and property do not and will not contain any asbestos-containing materials or fluids containing poly-chlorinated biphenols compounds (PCBs).
4. Propose a Project Supervision Plan, subject to IDB approval, which will include the specific methods (e.g., use of independent environmental consultants, environmental health and safety audits and inspections, etc.) to be implemented to ensure all environmental and social measures and programs for the Project are completely and properly implemented by all responsible parties.

8.3 Prior to first guarantee issuance, TBA must:

1. Propose a Corrective Action Plan, subject to IDB approval, to implement all actions required to correct problems or deficiencies identified in the environmental audits of existing operations, including without limitation, wastewater discharges, non-hazardous and hazardous wastes (including petroleum wastes), and soil contamination. The plan must include a brief description of and the required action and for each action, the estimated cost, time schedule (start and completion), and responsibility for implementation.
2. Present to IDB the finalized Accident Reduction Program and initiate the implementation of this plan.

8.4 During the term of the guarantee program, TBA must prepare and submit an Annual Environmental and Social Compliance Report, which will be due 60 days after the close of each Fiscal Year. The report must include, as a minimum, the following:

1. Certification that the Company is complying with all environmental and social requirements of the guarantee;
2. Description of any material non-compliance with any environmental and social guarantee requirement which occurred and a description of measures taken to correct the non-compliance.
3. Description of any changes in the company's operations which may have a material environmental or social effect, the reasons for such changes and any actions taken to mitigate their impact.
4. Description of any material environmental or social problem (accident, unplanned event, etc.) and a description of the actions taken to resolve the problem and the measures taken to prevent the event from occurring in the future.
5. Description of any contact by a third party (including governmental agency, public, non-governmental organization, company employee, etc.) regarding environmental, social or health and safety issues.
6. Description of planned environmental and social related activities to be performed during the next year, including estimated cost, schedule, and responsibility, including any environmental impact assessment to be developed.
7. Copy of any environmental and social document or report written to comply with any governmental regulatory requirements.
8. Description of any known environmental and social liability, including without limitation environmental claim, or material compliant, or unforeseen environmental, health or safety impact or risk.

8.5 During the term of the loan, TBA must comply with the following requirements:

1. Consult with the Bank before implementing any action that will have a material environmental or social impact.
2. Provide written notification, within 30 days after the Company becomes aware, of any material non-compliance with environmental and social loan requirements, environmental health or safety material affect, environmental claim, or material complaint related to environment health or safety related to the Project or Properties, including a description of the situation (extent, magnitude, impact, etc.), the cause, proposed corrective or remedial actions, actions taken, and a proposed schedule for future actions.
3. Ensure compliance by construction contractors with the all environmental and social requirements.
4. Develop and implement project-specific mitigation measures related to each individual project underpass construction.
5. Establish by no later than financial closure and maintain a full-time staff person specifically dedicated and responsible for environmental aspects of TBA operations.
6. Implement specific measures to provide functional and safe conditions for the access and circulation of handicapped people in railway facilities, especially at the stations and the pedestrian level crossings, these measures must, at a minimum, comply with

applicable Argentine legislation (e.g., Law N° 24.314, Decree 914/97).

7. Implement necessary actions to ensure equal employment opportunities for women in the company.
8. If any resettlement actions are required associated with TBA activity, then the required actions will fully comply with the Bank's Policy on Involuntary Resettlement (dated August 1998).
9. TBA will comply with all environmental and social requirements established herein regardless of assignment of responsibilities between TBA and the government.

TABLE 3.1: Summary of the principal environmental, health and safety federal, provincial and municipal legislation.

ENVIRONMENT

National Constitution (judicial framework)

The environmental topic is explicitly incorporated in Argentina's National Constitution (1994 Amendment) through its Article N° 41. On the other hand, the Article N° 43 establishes, among other things, the "right of defense" in case environmental protection rights are violated.

Constitution of the Province of Buenos Aires (1994 Amendment) (judicial framework)

Through its Article N° 28, it grants the inhabitants of the province the right to enjoy a safe and sound environment and establishes that each of them is responsible for its protection and conservation, not only in the pursuit of their own personal profit, but also for that of future generations. It must be highlighted, finally, that this Constitution's Article N° 30 establishes that every public or private undertaking whose impact on the environment may acquire a certain relevance must be subjected to a Environmental Impact Assessment at its project stage and discussed at a Public Hearing.

Constitution of the City of Buenos Aires (judicial framework)

It highlights that the "environment" belongs to the whole community and that every person has the right to enjoy of a safe and sound environment, as well as the obligation to preserve it and defend it in pursuit of present and future generations' profit. This Constitution also states that every activity that implies an actual or imminent damage for the environment must cease, and that the "environmental damage" implies the obligation of restoration. According to the document under analysis, any person has the right to be freely informed, by simple request, on the impact that any public or private activity may have on the environment. It also stipulates that the City must develop an urban planning and environmental management policy that integrates itself within the corresponding economical, social and cultural development policies, all of them taking into account the City's insertion within Buenos Aires Metropolitan Area. That implies the instrumentation of a permanent and participative territorial and environmental planning process that promotes, among other topics: (1) preservation and restoration of the natural, urbanistic and architectonic patrimony and urban landscape; (2) preservation and increase of green spaces, forested areas, natural parks and areas of special ecological interest, and preservation of their biodiversity; (3) regulation of land use, activities' location and inhabitancy and security conditions of the whole urban space, either public or private; (4) supply of community equipment and utilities according to social equity criteria; (5) vial and pedestrian security, air quality and energy efficiency in transport and traffic; (6) minimization of volumes and dangerousness in wastes generation, transport, treatment and disposal; and (6) environmental education at all levels and in any modality.

It must be highlighted, finally, that this Constitution's Article N° 30 establishes that every public or private undertaking whose impact on the environment may acquire a certain relevance must be subjected to a Environmental Impact Assessment at its project stage and discussed at a Public Hearing.

Applicable articles from the Civil Code

As it constitutes a basic legislation, the Civil Code is applicable all along the territory of the Argentine Republic. It provides a certain environmental tutorship, although not a specific and autonomous environmental defense, through its Articles N°s 1113, 2499, 2618, 2621 y 2625.

Applicable articles from the Penal Code

This Code, first issued in 1921, contains a number of dispositions that typify certain environmental aspects. At the time it was being written, the environmental concept was closer to that of “public health” or that of “common security” rather than to the idea we now have of the term “environment”. Nevertheless, its Articles Nº 182 y 200 establish certain restrictions that can be qualified as “environmental”.

Applicable national legislation

Law N° 24.051/92 and its Regulatory Decree N° 831/93 (Hazardous Wastes): stipulates both the private and public sector competencies regarding hazardous wastes within the national jurisdiction. It contains such a wide definition of hazardous wastes that practically every industrial waste, be it liquid, solid or semisolid, falls into one of the established categories (permits and allowable limits)

Law N° 20.284/73 (air quality) not regimented yet: Its purpose is the preservation of the air as a natural resource, avoiding atmospheric pollution and tending to keep untouched the part corresponding to the biosphere. Although this law was never regimented, it is always taken into account because its text contains "Standards for the Preservation de Air Resources" for all sources capable of generating atmospheric pollution located within federal jurisdiction

Decree N° 776/92 (Liquid Effluents): regulates the prevention and penalization of water pollution due to wastewater within national jurisdiction (allowable limits for wastewater to water bodies and storm water).

Decree N° 999/92: regulates the different aspects related to the concession of water supply and sewage services that passed from the national entity Obras Sanitarias de la Nación to the private company Aguas Argentinas S.A (allowable limits for wastewater discharged in sewers)

Law N° 22.428/81 (soil conservation): It declares of general interest any private or public action tending to attain soil's conservation and productive recovery. It also states that both the federal and provincial governments must promote private activities in the aforementioned field. **The Province of Buenos Aires adhered to this law through Provincial Law N° 9.867/82,**

Resolution Ministry of Labor and Social Security (MTSS) N° 369/95: It establishes ways and proceedings to securely use, handle and dispose PCB's and its wastes (Health and Safety regulations)

Resolution MTSS N° 877/91: It establishes ways and proceedings to securely use, handle and dispose asbestos and its wastes.

Several Dispositions from the National Direction of Health and Laboral Safety referred to hazardous wastes handling: N° 1/95 DNSST: updating of the list of carcinogenic substances; N° 2/95 DNSST: creation of a PCB's Register; N° 8/95 DNSST: creation of a National Register for the Prevention of Major Industrial Accidents; N° 9/95 DNSST: creation of a National Commission in charge of the follow-up of Dispositions N° 1/95, 2/95 y 8/95 DNSST.

Law N° 24.065/92: It regulates the generation, transport and distribution of electric power. It also creates the Ente Nacional Regulador de la Electricidad (ENRE), among whose tasks we find those related to the regulation of all dispositions to which every actor in the electrical market should adjust, particularly in the field of security and environment. The ENRE takes over the environmental control of the transforming substations through the performance of Environmental Audits (creation of the electrical regulation authority).

Applicable provincial legislation

Law N° 11.723/95 (Environment and Natural Resources): Although it has not been regimented yet, it constitutes the legal environmental framework within which the general environmental policy guidelines at the provincial level are being stipulated (permit requirement).

Law N° 11.459/93 and Regulatory Decree N° 1.741/96: It regulates industrial activity, its environmental aptitude, its waste disposal regulatory framework, etc. within the provincial jurisdiction (permit requirement).

Resolution SPA N° 159/96 - Noises that affects surroundings: It states that IRAM Standard N° 4.062 on this matter should be used within the provincial jurisdiction and encourages all the Municipalities to apply it.(noise regulation)

Law N° 11.737/95: It creates the Secretaría de Política Ambiental (SPA) which is “in charge of formulating, planning, controlling and executing the environmental policy as well as that one related to natural resources preservation all through the provincial jurisdiction ”.(creation of the environmental regulation authority).

Law N° 5965/58 and Regulatory Decrees: It regulates wastes disposal (liquid effluents, gaseous emissions, and solid wastes), wherever the source may originate, within provincial jurisdiction. It stipulates that all discharges have to be made once they are subjected to appropriate treatment that renders them innocuous or inoffensive to human health, deterring all polluting or adverse effects and obstructions in the sources or water bodies. The allowable limits are established through: (1)**Decree N° 3.395/96**, which establishes the guidelines to be followed by all generators of gaseous emissions from non mobile sources, excluding the mobile ones, and sets air quality standards for basic contaminants and guidelines for specific ones; and (2)**Resolution AGOSBA N° 287/90**, It sets wastewater standards.

Law N° 11.720/95 (Hazardous Wastes) and Reglamentary Decree N° 806/97: It regulates hazardous wastes generation, handling, on-site storage, transport, treatment and disposal within the territory of the Province of Buenos Aires.(permits required and conditions to be complied)

Law-Decree N° 6769/58 - Municipalities Organic Law: It regulates the location, habilitation and performance of commercial and industrial activities within municipal jurisdiction in the Province of Buenos Aires. According to this law, municipalities are in charge of the environmental pollution prevention of water bodies as well as of assuring natural resources conservation within its boundaries.

Law N° 9.867/82: It adheres to National Law N° 22.428 (Soil Conservation).

Applicable legislation issued by the Government of the City of Buenos Aires

The City of Buenos Aires applies since 1983 the **Environmental Pollution Prevention Code (Ordinance N° 39.025/83 MCBA)** that establishes the guidelines to be followed in the environmental field within its jurisdiction: as regards **air pollution**, it defines admissible concentrations of several pollutants at ground level; as far as **liquid effluents** are concerned, it submits its control to the SRNyDS who exerts its authority through **Decree N° 776/92**; In the field of **solid wastes**, it stipulates that non hazardous wastes should be disposed exclusively at CEAMSE's (a partnership between the City of Buenos Aires and the Province of Buenos Aires) sites, either directly or through the corresponding collection system; and with regard to **noise and vibrations**, it sets basic criteria and maximum transcendence standards for vibrations derived from non mobile sources.

HEALTH AND SAFETY

Law N° 19.587/72 (Security, Hygiene and Health Benefits): It is applied in the whole territory of the Argentine Republic. It aims essentially at the protection and preservation of workers' integrity, as well as the prevention and decrease of job related accidents and diseases, neutralizing or isolating risks and its most determinant factors.

Regimented through Decree N° 351/79, it contains dispositions regarding the "*sanitation of the labor environment*" that protect workers against risks inherent to their specific tasks.

Law N° 24.028/91 (*Laboral accidents*): It regulates employers' responsibility and obligations, compensations to be paid in case of death or permanent injury, as well as medical and pharmaceutical assistance to be provided in this latter case. It sets standards to protect workers' credit and, foreseeing a possible insolvency of employers and insurers, organizes an independent Fund.

TABLE 4.1: Specific land use along the Sarmiento Lines.

Terminal is located in the City of Buenos Aires, at Plaza Once, a heavily congested commercial district at the crossing of Avenues Pueyrredón – Jujuy and Rivadavia, where urban and interurban bus lines, the subway and the railway itself converge, creating an important though disorderly Intermodal Center of Transfer. The urban tissue is compact and consolidated, whereas land uses are predominantly commercial and industrial (small workshops) at the lower level of the buildings, with high and middle high densities of residential uses in the upper levels, occupied by middle class residents.

The first stretch of the Sarmiento line, between Plaza Once and Caballito, is through a tunnel followed by an open trench, allowing in both cases the surface street crossing without interference. Along this stretch, socioeconomic levels gradually increase, and there are high rise residential buildings of good standing, specially around the Rivadavia Park.

Along the Av. Rivadavia a continuous row of commercial shops is observed up to Flores station, a former village incorporated by the city, where high density residential buildings stand for the middle and middle-high classes.

From Flores towards the west and up to the city limits at Liniers, the residential districts continue, with lower quality and density. On the border of Av. Gral. Paz, Liniers is again an important commercial and traffic transfer center. Connecting through transversal bus lines several provincial subcenters.

It should be noticed that at Caballito station, the railway tracks are at surface level, creating from there on difficult conditions for the crossing of transversal traffic in the more populated areas, specially at the 10 crossing points that have been selected as a priority for the construction of vehicle underpasses.

Within the area of influence of the FC. Sarmiento in the city of Buenos Aires there are important football stadiums; Ferrocarril Oeste, in Caballito, and Vélez Sarfield, in Liniers. In both locations, there are adjacent railway facilities, for storage and maneuvering in Caballito, and an important workshop in Liniers, occupying large tracks of land susceptible to future urban renewal programs.

The Perito Moreno urban highway crosses on a viaduct above the railway tracks and connects the city to the Highway of the West, recently open to circulation up to the city of Luján, thus converting the western transport corridor into a major 3 way corridor similar to the Av. General Paz, with Av. Rivadavia, FC. Sarmiento and the Highway of the West.

Urban conditions in the Province remain similar to those of Liniers, but with a poorer standard of construction: A strip of commercial shops along Av. Rivadavia and middle class housing, mixed with some factories, and several elements of urban equipment, such as cemeteries (Israelita at La Tablada), hospitals, education centers (Colegio Ward and Don Bosco), and very few green spaces.

At Ramos Mejía station, a former summer residence village, there is an important commercial district surrounded by some good quality residential areas. The best residential areas are the result of the subdivision of land pertaining to former summer houses (quintas), with quite a few trees left over that enhance the urban scenario.

After this station, the residential districts reduce in density and become scattered and of lower standing, with the exceptions of the commercial centers around the stations of Haedo, Morón, Castelar and Ituzaingó.

Several industrial plants are located within the area of influence of FC. Sarmiento, usually mixed with other land uses (commercial or even residential).

Merlo and San Antonio de Padua continue with the same urban pattern, mixing different land uses. At Merlo station, which is an important intermodal traffic exchange center, the Sarmiento diesel line makes a starting point to the southwest, reaching Mariano Acosta, where the metropolitan conurbation comes to an end. From there on, a rural environment is to be seen up to Las Heras and Lobos, this latter being the terminal station of the branch.

The main electrified line continues from Merlo up to Moreno, a secondary commercial center and also a traffic transfer center, where again a diesel line replaces it on the way into General Rodríguez, Luján and Mercedes. In this direction, conurbation continues up to Gral. Rodríguez, an active commercial center, where poultry farms and intensive agriculture reveals the entrance to a rural environment.

Luján, a religious pilgrimage and commercial center, constitutes again an urban enclave amidst the rural environment that prevails up to the trunk line terminal at Mercedes.

TABLE 4.2: Specific land use along the Mitre Lines.

Starts at Retiro station, the most important Traffic Exchange Center of the AMBA, where many urban and interurban bus lines converge, as does subway line “C”, which links the railway stations of Retiro (north and northwest) and Constitución (to the south), crossing under the business center of town. The vicinity of the Port of Buenos Aires adds to the congestion of the site, where a still missing traffic master plan could ensure the separation of traffic loads from passenger transportation.

Mitre lines face one of the best residential districts of the city on their way to the parks of Palermo, where they cross over important avenues (Libertador and Figueroa Alcorta) by means of steel bridges, and split into two branches, near the Gimnasia y Esgrima Club.

The first one, to Tigre, crosses by the side of the horse racecourse, several sporting facilities and parks, the Metropolitan airport and, starting at Belgrano “C” station, comes closer in touch with the urban tissue. A pleasant residential district, Belgrano, another former village incorporated a century ago by the urban expansion of Buenos Aires, reveals the wealth of its residents who live on top of the “barranca” in high rise de luxe buildings.

Towards the north, this Mitre line crosses residential and commercial districts, mixed with sporting facilities, up to the border of Rivadavia station, on the limits of the city. From there on, the line continues parallel to the river, through Vicente López, Olivos, San Isidro and San Fernando, up to its final point at Tigre station.

These are pleasant residential neighborhoods, of middle density and high or middle socioeconomic level, spotted with commercial subcenters, educational equipment, and many sporting facilities.

The terminal city of Tigre constitutes the gate way to the Paraná Delta, and for that reason, it constitutes a center of mini-tourism. For years, it was the summer residence of wealthy Buenos Aires families, but with the improvement of communications, particularly after the completion of the Panamerican Highway, it developed into a permanent residential center. The presence of a picturesque and active port and trading products from the close islands, adds to the character of this city and to its capacity as an Intermodal Transfer Traffic Center.

With Victoria station, a new bifurcation of the main line goes as a diesel branch to the west, with its final destination in Capilla del Señor, a small city in a rural environment. The initial areas crossed by this line are lowlands of the Reconquista watershed, where several industrial plants settled, along with low level housing (shanty towns).

The intermediate stations of El Talar de Pacheco and Garín are active commercial and industrial centers that experienced an important growth of population in recent times. High standing summer residences, organized in Country Clubs and private clusters, can be seen appear from El Talar towards the north, to the cities of Pilar and Belén de Escobar, this latter located on the diesel prolongation of the second Mitre trunk line. Some of these residences are being increasingly converted into permanent housing, as the corresponding demand for equipment is being built (commercial centers, schools, health centers, etc.).

The second trunk line of FC. Mitre splits at Coghlan, within the city of Buenos Aires, into two branches of different length. The short one draws a curve towards the river through middle density residential districts, ending at Bartolomé Mitre station, in the province, near the Presidential Residence of Olivos on Ave. Maipú. From there a transfer is possible, at a walking distance, to the “Tren de la Costa”, which uses old coastal railway tracks to make a touristic ride to Tigre.

The longer line starting at Coghlan goes west through low and middle density residential districts of Villa Urquiza and Villa Pueyrredón, and penetrates the province at San Martín, an important industrial settlement. From there, this electrified line continues through Malaver and Villa Ballester up to José León Suárez, where the line becomes

diesel. These locations are important commercial and intermodal Traffic Exchange centers, although disorderly organized on the narrow surfaces left over by the process of urbanization.

Residential settlements are often mixed with commercial and industrial uses, even with golf courses and military facilities.

Starting at José León Suárez, a diesel Mitre line makes its way through Gral. Pacheco, Benavídez, Maschwitz, Belén de Escobar and Campana, coming to an end at Zárate. These locations experienced an intense growth of population in recent times, embracing the socioeconomic spectrum, that is, spontaneous settlements of low quality on one side, and high standing summer residences clustered around Country Clubs, on the other.

The metropolitan conurbation ends after General Pacheco, from where the landscape becomes more rural as the train approaches Benavídez. However, the urban centers organized around these intermediate stations are active commercial centers.

At the end of the line, you will find Campana and Zárate, large industrial and commercial cities, with a combined population of over 160,000, and also active ports on the Paraná de las Palmas river. Both cities have developed pleasant residential areas, specially on the heights of Zárate, which overlooks the river. A bridge complex links Zárate with the Mesopotamia provinces, and with Uruguay and Brazil, as part of a MERCOSUR network of main roads.

TABLE 4.3: A summary of accidents associated with the TBA operations (accidents over the six month period from November 1997 up to May 1998).

Sarmiento Line

Total Number of events: 105

• Car accidents	25 (23.8%)
• Death by accidents	22 (20.95%)
• Injured passengers	16 (15.25%)
• Injured pedestrians	12 (11.9%)
• Alleged suicides	25 (23.86%)
• Suicides	3 (2.86%)
• Alleged fires	0 (0%)
• Fires	2 (1.9%)
• Railway collisions	1 (0.95%)

Mitre Line

Total Number of events: 80

• Car accidents	17 (21.25%)
• Death by accidents	13 (16.25%)
• Injured passengers	19 (23.75%)
• Injured pedestrians	15 (18.75%)
• Alleged suicides	9 (11.25%)
• Suicides	5 (6.25%)
• Alleged fires	2 (2.5%)
• Fires	0 (0%)
• Railway collisions	0 (0%)

Following is the definition of terms used in the TBA statistics:

Car accidents: involves collision with a car, at a railway crossing, with or without personal injuries

Death by accident: affects a passenger at the station or on board of the train, or a pedestrian killed in an accident.

Suicides: passenger or pedestrian who voluntarily jumps at the train passage and is killed, his behavior being witnessed by the police or by the justice.

Alleged suicides: passenger or pedestrian killed after jumping at the train passage in an apparent voluntary action, but whose confirmation remains to be established in the justice.

Injured passenger: Passenger who receives injuries of different gravity at the railway station or on board of the train.

Injured pedestrian: Pedestrian injured, after the occurrence of an accident involving possessions of the concessionaire.

Fire: Any fire of a certain magnitude in railway coaches.

Railway collision: Railway accident involving the collision of two or more railway formations.

TABLE 6.1: Mitigation measures for underpass construction

Conditioning of the site for each work. These measures must contemplate, at a minimum: to avoid environmental consequences related to the cleaning of the site and interference with urban activities, disinfecting activities (rats-insects, etc.), and deforestation and re-implantation activities

Transport and storage of materials for each underpass. Measures should be designed to ensure an adequate location, treatment and transportation of this kind of material (site protection and water pollution prevention).

Planning of public circulation. These measures must contemplate, at a minimum: prevention of nuisances to vehicular or pedestrian circulation, accessible deviations , clear signaling or similar measures, supply of effective fencing

Interference with ducts belonging to other services. Measures should be designed in order that for each particular underpass actions are taken to avoid the interference with and possible breakage of ducts belonging to other services.

Noise and air quality control. Measures should be designed in order to appropriately comply with either Ordenanza Municipal 39.025/83 (Environmental Code of the City of Buenos Aires) or Laws 5.965/58 and 11.459/93 of the Province of Buenos Aires (and its Reglamentary decrees and resolutions) as far as noise and air quality are concerned.

Information to the community. These measures must contemplate, at a minimum a permanent and appropriate information to the community involved with the following characteristics: information properly in advance, precautions to be taken against accidents that may be caused by the underpasses under construction, warnings on disruptions or diversion of traffic, breakage of streets and roads, possibility of interception of ducts belonging to different kind of public or private services

Access to Assistance Centers. These measures must contemplate, at a minimum: identification and characterization of Assistance Centers for each particular underpass and preservation of a fluid access to those assistance centers previously identified for each particular underpass

Evacuation Plan. These Plan must contemplate, at a minimum, eventual cases of fire, explosion, floods, storms or serious accidents during the construction phase. This plan must include: suitable condition and maintenance of the pathways used for the construction phase; internal communication system ; availability, in strategic areas, of vehicles to transport the staff and any other personnel related to the construction of the different works; availability, in due time and strategically located work areas, of information about procedures and exits in case of emergency; Industrial Security and First Aid structure; and Surveillance staff training on fight against fires.

Building facilities. These measures should be designed in order to provide to each building facility, as a minimum: drinking water supply; sewage disposal; solid waste disposal; fuel, oil and other construction wastes disposal; training of personnel to avoid generation of wastes and pollution; location of fuel and oil tanks; and general cleaning conditions.

Measures to be taken in specific cases. Special security measures must be foreseen and designed to preserve the integrity of the personnel and appropriate operative conditions in those cases where the construction is being developed in areas of high social “marginality”.