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Project Team: Leandro Alves and Rocio Medina-Bolivar (PRI Project team leaders), Robert Montgomery (Head, Environmental and Social Unit - ESU), Elizabeth Brito (PRI/ESU), *Sargent & Lundy LLC* (Environmental Consultants) and Roberto Veluttini (Head Group II).

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ACCRONYMS AND ABBREVIATIONS

Acronym	Definition
ABNT	Brazilian Association of Technical Standards
ACSR	Aluminum-cored steel reinforced transmission line phase conductor
AGMAR	Goiás State Environmental Agency (<i>Agência Goiana de Meio Ambiente</i>)
ANEEL	National Electric Energy Agency, the Brazilian power sector regulatory agency (<i>Agência Nacional de Energia Elétrica</i>)
BNDES	National Bank of Economic and Social Development (<i>Banco Nacional de Desenvolvimento Econômico e Social</i>)
CAL	Cal Meio Ambiente e Consultoria, Ltda
CCI	Facilities Sharing Contract (<i>Contrato de Compartilhamento de Instalações</i>)
CIGRE	Commission International des Reseaux Electricite
CIPA	Internal Commission for Accident Prevention (<i>Comissão Interna de Prevenção de Acidentes</i>)
CLT	Consolidation of Labor Laws
CONAMA	National Environmental Council (<i>Conselho Nacional do Meio Ambiente</i>)
CPST	Transmission Services Contract (<i>Contrato de Prestação de Serviços de Transmissão</i>)
CUST	Transmission System Usage Contract (<i>Contrato de Uso do Sistema de Transmissão</i>)
DEPIMA	Environment Department of the National Foundation for Indigenous People Affairs (FUNAI)
DIN	German National Industrial Standards
DNPM	National Department of Mineral Production
EIA	Environmental Impact Assessment (<i>Estudo de Impacto Ambiental</i>)
ELETRONORTE	Vertically integrated power company that owns the Northern section of the parallel circuit to North–South II and Miracema, Colinas and Imperatriz 500 kV substations
ESMP	Environmental and Social Management Plan(<i>Programa de Gestão Ambiental</i>)
EPC Contract	Engineering, Procurement and Construction Contract
EPI	Personal Protection Devices (<i>Equipamentos de Proteção Individual</i>)
FUNAI	National Foundation for Indigenous People Affairs

Acronym	Definition
FURNAS	Vertically integrated power company which owns the Southern section of the parallel circuit to North–South II and Samambaia, Serra de Mesa and Gurupi 500 kV substations
GE	The General Electric Company
H&S	Health and Safety
HPP	Hydroelectric Power Plant
IAB	Institute of Brazilian Archaeology (<i>Instituto Brasileiro de Arqueologia</i>)
IBAMA	Brazilian Institute for Environmental and Renewable Natural Resources, the Brazilian national environmental agency
IDB	Inter-American Development Bank
IGP-M	Brazilian General Index for Market Prices (<i>Índice Geral de Preços de Mercado</i>) – as published by Getúlio Vargas Foundation
INCRA	National Institute for Colonization and Agrarian Reform
IPHAN	National Institute for Archaeological and Historic Heritage
ISS	Tax for Products and Services (<i>Imposto Sobre Bens e Serviços</i>)
LI	Installation License (<i>Licença de Instalação</i>)
LO	Operation License (<i>Licença de Operação</i>)
LP	Previous License (<i>Licença Prévia</i>)
MAE	Brazilian Wholesale Market for electrical energy (<i>Mercado Atacadista de Energia Elétrica</i>)
MAR	Maximum Allowed Revenue: the maximum annual income received by the project for the transmission services
MMA	Ministry of Environment (<i>Ministério do Meio Ambiente</i>)
MME	Ministry of Mines and Energy (<i>Ministério de Minas e Energia</i>)
MTE	Ministry of Labor (<i>Ministério do Trabalho e Emprego</i>)
NATURANTINS	<i>Fundação Natureza do Tocantins</i>
NRs	Regulatory Norms of the Consolidation of Labor Laws (<i>Normas Regulamentadoras</i>)
O&M	Operation and Maintenance
OA	Operating Agreement by and between Novatrans and FURNAS and ELETRONORTE
OIT	International Labor Organization
ONS	National Power System Operator (<i>Operador Nacional do Sistema</i>)
OPGW	Optical Ground Wire, incorporating fiber optic circuits
PB	Monthly payment for transmission services (<i>Pagamento Base</i>)

Acronym	Definition
PBA	Environmental Management Plan (<i>Plano Básico Ambiental</i>)
PCA	Environmental Plan of Control (<i>Plano de Controle Ambiental</i>)
PCBs	Polychlorinated Biphenyls
PCMSO	Occupational Health and Medical Control Program (<i>Programa de Controle Médico e de Saúde Ocupacional</i>)
PPCR	Preliminary Plan of Compensation and Resettlement
PPRA	Environmental Risks Prevention Program (<i>Programa de Prevenção de Riscos Ambientais</i>)
PV	Variable Portion discounted on the monthly transmission services payment (PB), due to unavailability of transmission line facilities
RIMA	Environmental Impact Report (<i>Relatório de Impacto Ambiental</i>)
ROW	Right-of-way
SEMARH	Federal District Environment and Water Agency (<i>Secretaria de Meio Ambiente e Recursos Hídricos do Distrito Federal</i>)
SESMT	Specialized Services in Safety Engineering and Occupational Health (<i>Serviços Especializados em Engenharia de Segurança e em Medicina do Trabalho</i>)
SIN	National Interlinked Power System (<i>Sistema Interligado Nacional</i>)
SLD	Single line diagram

I. INTRODUCTION

- 1.1 In the 1990s, in response to Brazil's increasing energy demands and the limited capacity of the country's electrical transmission system, especially in the Northeast, the government carried out energy evaluations and studies on the expansion of the transmission system. One result was the Serra da Mesa associated interconnection system, including three North–South interconnection lines. North-South Interconnection I transmission line began commercial operation in March 1999. This transmission line links the Imperatriz substation in the state of Maranhão with the Serra da Mesa substation in the state of Goiás, plus a Serra da Mesa-Samambaia section. The North-South Interconnection I transmission line includes three new substations, one in each of the municipalities of Gurupi, Miracema and Colinas in the state of Tocantins, and expansion of the substations of Samambaia, Serra da Mesa, Imperatriz and Presidente Dutra, and Marabá. The location of these three new substations (Colinas, Miracema and Gurupi) was determined as to enable the future integration of the energy that would be generated in the hydro power plants planned for the Tocantins River, as part of the 10-year Brazilian energy master plan.
- 1.2 As part of the country's national energy planning, in the year 2000 the National Electric Energy Agency (ANEEL) bided for the construction, operation, and maintenance of the North–South Interconnection II Transmission Line (the Project). The Project consists of a new 500-kV transmission line parallel to the North–South Interconnection I Transmission Line and the expansion of six existing substations. Novatrans Energia S.A. (Novatrans) was the winner of the bidding, and has signed a Concession Contract with ANEEL and an Engineering, Procurement and Construction (EPC) Contract with Consortium Enelpower. Project construction began in July 2002 and it is expected to be completed by February 2004.
- 1.3 The Inter-American Development Bank (IDB) is considering financing the Project with a Type A loan in the amount of approximately U\$30 million and a Type B loan in the amount of approximately U\$36 million. In addition, the National Bank of Economic and Social Development (BNDES) is expected to provide a loan in the amount of approximately U\$132 million and ABN-AMRO (*Repasse*) is approximately U\$32.8.

II. PROJECT DESCRIPTION

A. Location

- 2.1 The route of the North–South Interconnection II Transmission Line is approximately 1,278 km long, beginning in the Northeastern region of Brazil and extending into central Brazil, crossing portions of the states of Maranhão, Tocantins, and Goiás and the territory of the Federal District (See Figure 2-1). Within these states, the route will cross 52 municipalities, and three Administrative Regions within the Federal District, as summarized in Table 2-1.
- 2.2 The Project route is parallel to the route of the existing North–South Interconnection I Transmission Line, except for approximately 80 to 90 km between the towns of Imperatriz and Porto Franco, near the northern end of the transmission line, where the route deviates approximately 7 km from the Line I right-of-way (ROW), primarily in order to avoid residential areas. The Project also includes the expansion of six existing substations: Imperatriz in the state of Maranhão; Colinas, Miracema, and Gurupi in the state of Tocantins; Serra da Mesa in the state of Goiás; and Samambaia in the Federal District. The substation locations are shown in Figure 2-2.

- 2.3 The municipalities crossed by the Project contain a total resident population of 1,526,494, approximately 88% of who live within urban areas. In the last two decades, the region has experienced significant population growth as a result of population movement from rural areas and the concentration of population within the urban areas.

B. Components and Activities

- 2.4 The North–South Interconnection II Project consists of a new 500-kV, 1,200-MW electric transmission line with a total length of approximately 1,278 km and the expansion of six existing substations. For contracting and administration purposes, the line is divided into three main segments (See Table 2-2) with anticipated designs as follows:
- (i) Samambaia to Serra da Mesa Substation: 248 km long with 490 support towers;
 - (ii) Serra da Mesa to Miracema Substation: 512 km long with 1,022 support towers; and
 - (iii) Miracema to Imperatriz Substation: 518 km long with 1,059 support towers.
- 2.5 The transmission line will be supported on lattice steel towers. The majority of towers will have a V-shaped design and will use guy wires for support. In locations where extra strength is required, self-supporting towers will be used.
- 2.6 The transmission line will be centered in a 60 meters wide ROW, where no houses or other structures will be allowed. The Project ROW is adjacent to the ROW of the existing North–South Interconnection I Transmission Line, with the exception of the section between Imperatriz and Porto Franco, as already mentioned.
- 2.7 As much as possible, the Project will use the access roads constructed for North–South Interconnection I Transmission Line, but in some areas, new access roads will have to be constructed. In forested areas, an approximately 5 m wide path normally will be cleared for each new access road.
- 2.8 Expansion of the existing substations will primarily involve the installation of electrical equipment for the new transmission line. All of the substations already exist and no construction will be required outside of the existing fences. The new electrical equipment to be installed will be compatible with the existing equipment and will use the existing infrastructure. In this way, the present characteristics of the substations will be maintained and there will be no significant changes in drainage, buildings, or other environmentally significant features.
- 2.9 Given the planning and regulatory framework in Brazil, the North-South Interconnection II transmission line has been planned and developed primarily to integrate the flow of electricity from several hydroelectric power plants as part of the Brazilian 10-year energy master plan, some of which are already in operation (such as Tucuruí, Serra da Mesa, Lajeado and Cana Brava) and others that are currently in the planning or construction stages. The Planning Committee of the Expansion of the Electric Sector (*Comitê Coordenador da Expansão dos Sistemas Elétricos – CCPE*) is responsible for decisions on the implementation of the planned projects and the National Electric System Operator (ONS)¹ is the one who dispatches the energy generated by the power plants through the National Interconnected System, according to technical and economic

¹ The ONS is a private institution integrated by entities granted with concessions or authorizations as well as customers. ONS is responsible for the sector's operations planning and programming, and the activities of coordination and control of the generation and transmission system.

criteria. The Project's transmission capacity revenue is guaranteed by ONS, regardless of the energy transmitted. Therefore, the construction of the North–South Interconnection II Transmission Line was determined as part of the energy master plan and it does not depend on the construction of any additional future power plants in the region.

- 2.10 The following four power plants are already in operation along the line: Tucuruí (first phase 4200 MW and second phase 375 MW); Serra da Mesa (1,290 MW); Lajeado (900 MW); and Cana Brava (450 MW). The following nine additional power plants are expected to begin feeding power to the Project during the next several years: Tucuruí (additional 3,750 MW), expected to start operation in 2003; Peixe (450 MW), expected to start operation in 2006; Santa Isabel (1,080 MW), expected to start operation in 2008; Serra Quebrada (1,494 MW), expected to start operation in 2008; Estreito (1,050 MW), expected to start operation in 2007; São Salvador (279 MW), expected to start operation in 2007; Tupiratins (1,001 MW), expected to start operation in 2009; Marabá (960 MW), expected to start operation in 2009; and Ipoeiras (405 MW), expected to start operation in 2009.

C. Workforce

- 2.11 The number of construction workers required will vary for each segment of the transmission line. In general, at the peak of construction activities, it is estimated that construction will require about 675 specialized workers (such as electricians and tower assemblers) and about 525 non-specialized workers (such as laborers and helpers), for a total of approximately 1,200 construction workers. For construction of substations expansion it is estimated that about 455 specialized and 345 non-specialized workers will be required, for a total of approximately 800 construction workers at the peak of activities.
- 2.12 Some construction workers will be housed in worker camps provided by the construction contractors. For the first two segments (Samambaia - Serra da Mesa Substation and Serra da Mesa - Miracema Substation), three worker camps have been established. These camps are located in the cities of Padre Bernardo and Nova Rosalândia (state of Goiás), and Gurupi (state of Tocantins). For the third segment, one worker camp has been established in Ribamar Fiquene. Table 2-3 details the worker camps that have already been established. Other construction workers will live in private residences and transportation will be provided to the work areas.
- 2.13 In addition to worker camps, for these two segments, eight support facilities have been established or are planned. The support facilities do not include housing for workers, but provide first aid, health and safety supervision, warehousing of equipment, quality control, and administration offices, in addition to transportation for workers. These facilities are located in the cities of Brazilândia, Mato Seco, Infinito/Cascabulho, Colinas do Sul, Barrolândia, Aliança do Tocantins, Bangolândia and Palmeirópolis. Table 2-3 details the support facilities that have already been established. The support facilities in Cascabulho, Mato Seco, Bangolândia, Miracema, Guaraí, Colinas, Araguaína, Wanderlândia and Imperatriz are also equipped with an ambulance. Each worker camp and support facility is planned to be responsible for approximately 80 km of the transmission line, so that the construction teams have a maximum daily journey of 40 km to reach the work areas.
- 2.14 The number and location of the worker camps and support facilities for the third section of the transmission line (Miracema Substation to Imperatriz Substation) are also shown in Table 2-3. Additional worker camps will be set up as necessary, given that the construction of the third section of the line is in its initial stages.

D. Schedule and Cost

- 2.15 The total cost of the Project is estimated to be US\$338 million, of which approximately US\$270 million is for construction and the remaining are for SPC administrative costs and financial interests. Construction of the first segment of the transmission line (Samambaia – Serra da Mesa) began in July 2002 and it was completed in May 2003. Construction of the second segment (Serra da Mesa – Miracema) is scheduled to be completed in October 2003, and the third segment (Miracema – Imperatriz) is scheduled to be completed in February 2004.

E. Alternatives Analysis

- 2.16 The North–South Interconnection II Transmission Line is part of the North–South Interconnection System associated to Serra da Mesa HPP, which encompasses three North–South Interconnection Transmission Lines, of which North–South Interconnection I Transmission Line (financed by the IDB public sector) is already in operation, North–South Interconnection II Transmission Line is under construction, and the third interconnection transmission line is still under study by ANEEL. All three interconnection transmission lines were planned to be installed in a corridor between Serra da Mesa and Imperatriz substations. This 100-meter wide corridor was studied and approved by IBAMA as part of the environmental permitting process for Serra da Mesa and associated facilities. An authorization from the Brazilian Congress was also issued as part of the Brazilian legal requirements for the environmental permitting of activities that affect indigenous areas, given that the corridor crosses the Ava-Canoeiro indigenous areas.
- 2.17 Subsequently, a detailed study of the specific location of the transmission line within this corridor was performed as part of the environmental permitting process for the North–South Interconnection I Transmission Line. Several alternative routes were considered and the current alignment was considered the most favorable alternative. The North–South Interconnection II Transmission Line project was then conceived to follow parallel to the existing North–South Interconnection I Transmission Line and to expand the substations already constructed for that line. The only exception is between Imperatriz and Porto Franco, where large residential areas were developed in the region adjacent to the North–South Interconnection I Transmission Line. In this section, the North–South Interconnection II Transmission Line moves further from the existing route approximately 7 km to by-pass the existing residential areas.
- 2.18 The primary advantage of this route was its proximity to the Belém–Brasília highway (BR–153). In addition, this route did not directly affect the Xerente and the Kraolândia Indigenous Lands and did not interfere with a State Conservation Unit. This route was also distant from the Tocantins River margins and it was already approved by IBAMA and by the State Environmental Control Agencies. The use of a parallel right-of-way also requires minimal opening of new access roads, minimizing the environmental impacts of construction and maintenance of the transmission line. The route is located approximately 4.6 km from the Indigenous Land of the Apinayé tribe (state of Tocantins), which is within the regulatory buffer zone of 10 km. However, the study of alternatives demonstrated that the Tocantins River and the Belém–Brasília highway are located between the transmission lines and the indigenous land, and can be considered as “natural” obstacles that minimize the potential impact of the transmission lines on the indigenous area.

III. INSTITUTIONAL AND LEGAL FRAMEWORK.

A. Institutional.

Electric Sector

- 3.1 The National Electrical Energy Agency (ANEEL), a special agency (*autarquia*) of the Ministry of Mines and Energy (MME), was instituted and regulated by Federal Laws 8.897/95 and 9.427/96 and its regulations. ANEEL has the responsibility for the regulation and inspection of energy generation, transmission and distribution, and the commercialization of the generated energy, as well as, for issuing the appropriate concessions, permits and other forms of authorizations.
- 3.2 There are 3 (three) entities involved in the planning and operation of the Brazilian Power Sector: (a) the National Council of Power Policy (*Conselho Nacional de Política Energética – CNPE*); (b) the Coordinator Committee for the Planning of the Expansion of the Power System (*Comitê Coordenador do Planejamento da Expansão – CCPE*), both of them directly subordinated to the Ministry of Mines and Energy (MME); and (c) The National Electric System Operator (ONS).
- 3.3 The National Council of Power Policy (*Conselho Nacional de Política Energética – CNPE*) is responsible for the development and review the energy matrix and issues the resolutions and directives that regulates the national energy plans and programs.
- 3.4 The Coordinator Committee for the Planning of the Expansion of the Power System (*Comitê Coordenador do Planejamento da Expansão – CCPE*) was established by Directives N° 150 and 485 (1999) of the MME, and it is responsible for the expansion of the power sector planning. The CCPE is composed by all Energy Companies, divided in technical committees responsible for the Supply and Demand of Energy (CTDO), Transmission (CTET), Environmental Aspects (CTSA), among others.
- 3.5 The National Electric System Operator (ONS), a private company, is responsible for the operation of the Brazilian Interconnected Power System. ONS is integrated by entities operating under concessions or authorizations as well as final customers. Together they are responsible for the sector's operations planning and programming, and the activities of coordination, control and dispatch of the generation and transmission system.

Environment

- 3.6 In Brazil, the main institutions relevant to the environmental permitting process for the Project are the Brazilian Institute for Environmental and Renewable Natural Resources (IBAMA) and the environmental control agencies of the affected states². Projects that involve more than one state should be submitted for permitting to IBAMA, who analyzes the required documents and, after consulting with the state agencies, issues the licenses for the project.
- 3.7 The National Foundation of the Indian (FUNAI) and the National Institute for Archeological and Historic Heritage (IPHAN) participate in the environmental licensing process, through consultation with IBAMA. FUNAI also authorizes entrance into Indigenous Land and establishes construction procedures, mitigation, and compensatory measures required for the interference

² Maranhão (*Gerência de Junta de Meio Ambiente*), Tocantins (*Fundação Natureza do Tocantins – NATURANTINS*), Goiás (*Agência Goiana de Meio Ambiente – AGMAR*) and the Federal District (*Secretaria de Meio Ambiente e Recursos Hídricos do Distrito Federal – SEMARH*).

within the indigenous areas and establishes its general conditions and requirements through specific documents forwarded to IBAMA. The MME also participates through its National Department of Mineral Production (DNPM), which is responsible for blocking activities in the administrative ROW of DNPM projects.

Health and Safety

- 3.8 At federal level, the Ministry of Health has legislative jurisdiction over health-related issues, and the Ministry of Labor and Social Action issues related to occupational health and industrial hygiene. Locally, health matters are coordinated by the corresponding state secretariats. The Secretariat of Labor and Social Action deals with occupational safety issues, in cooperation with the Regional Labor Offices (Ministry of Labor).

B. Legal.

Energy sector

- 3.9 The regulation of the public provision of electricity is mainly centered in articles 175 and 121 of the Federal Constitution which establish that the following are federal responsibilities: services and works of electric energy and exploration of hydroelectric potential of the water resources (together with the States where the hydroelectric resources are found), and rendering of public services, either directly or under regime of concession or permit, always by means of public bidding. The reform of the Brazilian power sector began in 1995 with the privatization of government-owned electricity utilities and with Constitutional amendments allowing private investment in the electricity sector. In 1996, the GOB undertook regulatory reform by setting rules of a new and competitive electricity market. The new market model opened generation and trading businesses to competition, while transmission and distribution continued as regulated activities. The modification of the institutional organization of the Brazilian power sector is not finalized. During August 2003, the CNPE approved new guidelines for the institutional structure, which are currently being implemented. The main modifications are: the replacement of the existing sales and purchase structure (the new organization will be based on a pool of agreements instead of the open market), and the creation of a specific foundation, in the MME, for the development of the power sector planning.
- 3.10 The main legal documents related to the Project concerning the electricity sector are the Resolutions enacted by ANEEL. Of particular importance are (1) the Concession Contract, covering the public utility power transmission service signed by and between the Brazilian Federal Government and Novatrans Energy, and (2) the resolution that allows ANEEL to conduct the expropriation process and to issue a public declaration confirming that the Project's ROW becomes a restricted area (*Área de Interesse Público*). In addition to these two legal documents, the Project should also sign two other documents with electric power institutions: (1) the Facilities Sharing Contract (CCI) with the owners of the substations and access roads, Furnas and Eletronorte and (2) the Transmission Service Contract (CPST) with ONS.
- 3.11 The Concession Contract governs the public utility power transmission service concession granted to the transmission utility. This Concession Contract, among other provisions, establishes the dates for beginning operation of the three sections of the transmission line and the overall responsibilities for the implementation, operation, and maintenance of the transmission facilities.
- 3.12 The expropriation process is regulated by the Federal Decree-Law 3.365/41 and Federal Law 2.786/56. This legislation constitutes the legal basis for the acquisition of private properties for

public good/use. Article 5 (item XXIV) of the Federal Constitution defines the concept of fair payment. The expropriation process is to occur in two stages. In the declaration stage, ANEEL publishes a resolution determining that the area to be expropriated is of public utility. In the expropriation stage, the concessionaire is allowed to acquire and required to compensate the affected properties in the areas to be expropriated.

- 3.13 Other relevant pieces of legislation that regulate the provision of electricity are: Federal Law 8.987/95, which establishes the regime of concession and permit for public services, as established by article 175 of the Federal Constitution; Federal Decree 1.717/95, which establishes procedures for concessions of public services related to electric energy; Federal Decree 2.003/96, which regulates the electric energy production by independent producers; and Law 9.648, which included amendments to all the above legislation, as part of the government's reform to introduce greater competition and transparency in the generation of electricity.
- 3.14 In addition, specific legal documents and contracts apply to Novatrans, including: (i) Facilities Sharing Contract (*Contrato de Compartilhamento de Instalações – CCI*) signed by and between Novatrans and the owners of the substations (FURNAS and Eletronorte) for the use of the existing substations and common access roads. The CCI describes and determines duties and liabilities and establishes the procedures required for the operation relationship between Novatrans and the owner of each shared facility; (ii) Transmission Services Contract (CPST) signed by and between Novatrans and the ONS establishing the terms and conditions of administration and coordination of transmission services; and (iii) Transmission System Usage Contract (CUST) signed by and between ONS, on behalf of Novatrans, and the energy system users for the regulation of the transmission services to the users.

Environment

- 3.15 There are a number of laws, decrees, and resolutions, declarations and authorizations that regulate the implementation of different aspects of the project at a federal level in terms of the environment.
- 3.16 Environmental Licensing: The Brazilian licensing system involves the issuance of the following permits for projects within the electricity sector: Preliminary (or Previous) Permit (LP) in the preliminary phase of the planning of the activity, containing the basic requirements to be met in site selection, installation and operation phases, observing the municipal, state or federal plans for land use; Installation Permit (LI) authorizing the start of construction, according to the specifications contained in the approved Environmental Management Plan (*Plano Básico Ambiental – PBA*); and the Operating Permit (LO) authorizing, after the required inspections, the beginning of commercial operations.
- 3.17 Environmental Impact Assessment (EIA): With regard to the EIA: (a) CONAMA Resolution 001/86, which establishes the obligation of an Environmental Impact Assessment (*Estudo de Impacto Ambiental – EIA*) and its respective Environmental Impact Report (*Relatório de Impacto Ambiental – RIMA*) for the environmental licensing of transmission lines above 230 KV; (b) CONAMA Resolution 237/97, which defines the responsibilities of IBAMA in the environmental licensing of projects that involve other countries, and regulates the environmental permit process; (c) CONAMA Resolution 006/87, which establishes the requirements for the licensing of projects within the electricity sector; and (d) CONAMA Resolution 02/96, which establishes the obligation on the part of the contractor to implant *Unidade(s) de Conservação de Domínio Público e Uso Indireto* (Conservation Units of Public Domain and Indirect Use), with investments no less than 0.5% of the total project cost, as a prerequisite for the licensing of large

scale works that require suppression of vegetation areas.

- 3.18 Environmental Control and Protection: *Flora:* With regard to the protection of flora: *Código Florestal* (Forest Code) (Law 4771/65) and Regulation 37, of April 3, 1992, issued by IBAMA, which publishes the Official List of Brazilian Flora Species Under Threat of Extinction; *Noise:* Relating to noise are: CONAMA Resolutions 001/90, which adopt the noise levels in the NBR-10151, of the Brazilian Association of Technical Standards (ABNT). *Waste:* Interministerial Ruling 019/981, SEMA/STC/CRS Normative Resolution 001/83, CONAMA Resolutions # 06/88, 9/93 and # 05/93 which regulate the sale and use of PCBs, rules of handling, storage and safety of these products; it regulates and sets fines for the discharge of lubricating oils; it regulates the management of solid waste by the generators; *Appropriation and Compensation:* the passage of the transmission line through private property, since it is of public interest, is subject to the Federal Decree-Law 3.365, of 21/06/41, which regulates appropriation for public use. In addition, this process is regulated by Law 8987 of 13.02.95, which covers the concession regime and permission for rendering public services, and Law 9427, which creates ANEEL; *Archaeological Heritage:* Ruling 07/88 regulates requests for authorization to IPHAN for the realization of archaeological research; *Public Participation:* CONAMA Resolution 001/86 and Law 237/97 regulate the requirement of a public hearing (obligatory for projects with an EIA) and the availability of the EIA report for public consultation. *Indigenous peoples:* The rights of indigenous peoples are established in the Federal Constitution (Chapter 8, articles 231 and 232). Paragraph 3 requires that a special authorization be obtained from the Congress in order to develop mining activities or hydroelectric power generation within indigenous land. Moreover, the Constitution requires consultation with the affected indigenous people prior to decision-making regarding the project construction. These articles are on hold for regulation by Law. There are no specific requirements for the transmission lines. However, in practice, the same requirements regarding conservation units have been adopted. CONAMA Resolution 13/1990 establishes that the projects should not be constructed within an area of 10 km around the conservation unit (buffer zone). Based on this requirement, FUNAI is contacted and issues a specific report to IBAMA regarding the interference of one specific project on the neighboring indigenous populations.
- 3.19 Conservation Units: The owner of a large development project, such as a transmission line, is obliged to implement, at his expenses, what are known as “Conservation Units of Public Domain and Indirect Use”³. The total required expenditures with such conservation units should be no less than 0.5% of the total project investment value. Agreement with that requirement is a prerequisite for the licensing of all large-scale works that require suppression of significant vegetation. For the Project, IBAMA is responsible for the definition of the Conservation Units or areas that will be contemplated with this compensation.
- 3.20 Archaeological Heritage: Archaeological monuments are protected and maintained under the guard and protection of the Brazilian Government⁴. Authorization is required from IPHAN⁵ to conduct an archaeological survey of the area planned for the transmission line right-of-way.
- 3.21 Indigenous Lands: The legal documents related to Indigenous Lands in Brazil are Article 231 of the Federal Constitution and Federal Law 6001/73 (*Estatuto do Índio*). The Federal Constitution acknowledges the right of indigenous peoples to their social organizations, ancient habits and

³ Under CONAMA Resolution 02/96

⁴ Federal Law Nº 3.924, July 26, 1961

⁵ IPHAN Regulation 07/88

behavior, beliefs and traditions, including the rights related to the land traditionally occupied by the indigenous peoples. It is a responsibility of the Federal Government to fix the boundaries of these lands legally and to ensure that their rights will be respected.

- 3.22 The lands reserved for the use of indigenous peoples includes the ownership of the land, water and other natural resources. However, Article 231, Paragraph # 3 of the Constitution allows for other uses “interference” as follows: “the use of hydro and mining resources within Indigenous Lands will only be allowed with a previous authorization to be given by the National Congress, and based on previous consultation of the indigenous communities”. This paragraph guarantees the indigenous people the right to benefit from the potential profits related to these activities. Although this Article is not yet regulated by a specific law and is not currently operational, it is being used through Federal Legislative Decrees following a request of the President. Since 1988, only two projects have been submitted to a Congress Authorization: the hydropower plants of Serra da Mesa and São Jerônimo. The authorizations for these two projects included the associated transmission systems (including Interconnections I and II). Brazil is also a signatory of the Labor International Organization Convention 169, which addresses indigenous populations and tribes within the countries.
- 3.23 Information Disclosure and Public Participation: There are requirements⁶ for public hearings on the Project and that the EIA findings be made available for public review within the Environmental Impact Report (*Relatório de Impacto Ambiental* – RIMA).

Health and Safety

- 3.24 The rules and regulations for occupational health and safety in Brazil are defined in the Consolidation of Labor Laws (CLT) and its regulating codes (*Normas Regulamentadoras* – NRs), as well as in the conventions of the International Labor Organization (ILO). Law 6514/77 alters the clauses of CLT related to safety and occupational health, and Ruling 3214/78 approves the Regulatory Norms (NRs) of Law 6514/77. The following NRs are relevant to the Project:
- NR-4, which establishes the specialized services in safety engineering and in occupational health (*Serviços Especializados em Engenharia de Segurança e em Medicina do Trabalho* – SESMT), based upon a gradation of activity risks and the number of employees;
 - NR-5, which regulates the objectives and attributes of the internal commission for accident prevention (*Comissão Interna de Prevenção de Acidentes* – CIPA);
 - NR-6, which establishes the requirements for personal protection devices (*Equipamentos de Proteção Individual* – EPI);
 - NR-7, which establishes the medical control program for occupation health (*Programa de Controle Médico de Saúde Ocupacional* – PCMSO); and
 - NR-9, which defines the program for prevention of environmental risks (*Plano de Prevenção de Riscos Ambientais* – PPRA).

C. Compliance.

- 3.25 The EPC Contract was signed by and between Novatrans and Consortium Enelpower on April 30, 2002, and it establishes obligations for construction of the Project. The Contract specifies that

⁶ CONAMA Resolutions 001/86 and 237/97

Novatrans is responsible for obtaining all required environmental permits for construction, and for the payment of indemnification for the access roads and Project right-of-way. Enelpower is responsible for all construction activities, commissioning tests, and implementation of the Restoration of Degraded Areas Program, as well as for supplying materials and equipment. The contract also stipulates that Enelpower must comply with the Environmental Management Plan and the Health and Safety Plan developed by Novatrans (both included in the Contract).

- 3.26 For obtaining the Previous License (LP), the EIA and the corresponding RIMA were developed and submitted to IBAMA. In compliance with Brazilian legislation, the RIMA was made available for the period of 45 days to the local population and institutions at the city halls of the states of Maranhão, Tocantins, and Goiás and in the Federal District. No public hearing was requested by local population or institutions during that time, and subsequently the Previous License Nº 101/2001 was issued by IBAMA on July 13, 2001. Although no public hearing was requested, Novatrans carried out, by its own initiative, several technical meetings in five municipalities of the States of Maranhão, Tocantins, and Goiás. These meetings were conducted during the month of June 2001 (see Section VII - Information Disclosure and Public Participation).
- 3.27 Additionally, the EIA and the RIMA were made available August 15, 2002 in the Public Information Center of the IDB and in the IDB Country Office in Brazil.
- 3.28 Subsequently, on September 20, 2001, IBAMA issued the Installation License Nº 143/2001 upon the approval of the Environmental Management Plan (*Plano Básico Ambiental* – PBA) and approvals of the State environmental control agencies and from FUNAI and IPHAN⁷.
- 3.29 An Operation License (LO) for the first segment of the transmission line was issued by IBAMA on May 23, 2003 upon verification of the status of implementation of the applicable environmental management programs proposed in the PBA. Construction is proceeding in the two remaining sections of the transmission line. Novatrans will apply to IBAMA for the correspondent Operation Licenses as construction is finalized in each remaining section, expected as follows: Serra da Mesa – Miracema section, to be completed in October 2003, and Miracema – Imperatriz, scheduled to be completed in February 2004.

IV. ENVIRONMENTAL AND SOCIAL CONDITIONS

- 4.1 For most environmental aspects, the Area of Influence was considered to be a 20 km wide corridor, centered on the transmission line right-of-way (ROW). For socio-economic aspects, the Area of Influence was considered to be all areas within the boundaries of the municipalities crossed by the transmission line. The Direct Impact Area was considered as the 60 meters wide transmission line ROW, an approximately 1 km wide corridor on each side of the ROW, and the locations of the substations and new access roads.

⁷On December 18, 2001, IPHAN issued Directive Nº 135, published in the Official Gazette (Diário Oficial) on January 25, 2002, regarding the approval of the Archaeological Project for the activities of survey, monitoring, and archaeological rescue. Novatrans hired the Brazilian Institute of Archeology (IAB) and the University of Tocantins to implement the program. No additional authorization from IPHAN is required.

A. Environmental Aspects.

- 4.2 Geomorphology and Soils: The Area of Influence includes several geomorphologic units, including river valleys, plateaus, and rolling hills. Elevations range from about 200 to 1,200 meters above mean sea level (masl). Ground slopes range from about 0% to 20%. Soils are generally deep and well drained, consisting primarily of clay with a mixture of secondary minerals. The most common topsoils are Latisols, Cambisols, and Litholic Neosols.
- 4.3 Water Resources: The Area of Influence includes several large rivers and numerous smaller streams. The most significant river system is the Rio Tocantins, which in terms of water flow is one of the largest river basins in Brazil. The most important rivers crossed by the Project include Rio Tocantins, Rio Tocantinzinho, Rio Maranhão, Rio Bagagem, Rio Cana Brava, Rio das Almas, Rio Santa Tereza, and Rio Crixás.
- 4.4 Climate: Climatic conditions are relatively homogeneous, with a generally hot and humid climate. There is a rainy season and a dry season. The rainy season generally occurs from October through April, and the dry season generally occurs from July through August. Annual average temperatures are between 24° and 28°C. The maximum average monthly temperature (about 38°C) typically occurs in August or September.
- 4.5 Flora: The Area of Influence is located primarily in the Cerrado ecosystem, a tropical seasonal savanna characteristic of central Brazil Plateau. The Cerrado is the second largest ecosystem in Brazil, representing 22% of the country, or approximately 2 million km². In general, Cerrado vegetation consists of a layer of low-growing herbaceous plants (primarily grasses) with scattered trees and shrubs that in some places form a continuous canopy. However, several distinctive vegetation associations have been identified within the Cerrado ecosystem, including grassland, open savanna, shrub savanna, wooded savanna, savanna forest, and gallery forest (corridors of trees that occur along rivers). In the northern part of the Area of Influence, which is transitional between the Cerrado and the Amazon Rain Forest. Table 4-1 summarizes the vegetation associations found within the Area of Influence, and Table 4-2 summarizes the vegetation associations found within the 60-meter wide ROW. In both areas, much of the original vegetation has been disturbed to some extent by cattle grazing and other agricultural activities. In addition, suppression of tall-growing vegetation for the ROW of the North–South Interconnection I Transmission Line has modified the narrow band of vegetation adjacent to the ROW.
- 4.6 Fauna: The variety of vegetation associations found within the Area of Influence result in a rich diversity of animal species. Field surveys conducted for the Project within the Area of Influence identified 190 species of birds, 49 species of mammals, 27 species of reptiles, and 18 species of amphibians. Several of the animal species identified are hunted by people living in the area.
- 4.7 Endangered Species: Two plant species included in the government of Brazil's endangered species list were identified within the Area of Influence and the transmission line right-of-way. These species are the trees Tigerwood (or Zebrawood) and Aroeira⁸. Both are relatively common in the Area of Influence, and are used for a variety of commercial and medicinal purposes by people living in the area. The government of Brazil reportedly included these species in the endangered species list mainly in order to protect them from over-exploitation. In addition, 23 animal species included in the endangered species list have been known to occur within the

⁸ *Astronium fraxinifolium* and *Myracrodruon urundeuva*

general Project area, but none of these species (See Table 4-3) were identified during the field surveys conducted for the Project.

- 4.8 Protected Areas: Five areas protected as Parks or Environmental Preservation Areas are located within the Area of Influence (that is, within 10 km on either side of the transmission line ROW). These areas are listed in Table 4-4. The only one of these areas that is actually crossed by the Project is the Environmental Preservation Area of the Bacia do Rio Descoberto. This area was created in 1983 and is managed by IBAMA for the protection of the Rio Descoberto basin. The transmission line crosses approximately 2.5 km of this area, and four towers are located within the area.

B. Social Aspects

- 4.9 Population: Of the municipalities crossed by the transmission line, the largest urban area in the Project's Area of Influence is Imperatriz, located at the southeastern area of the state of Maranhão. Imperatriz has a total urban area of 218,555 ha and 230,450 inhabitants. It attracts intense external and internal migration, functioning like a territory of passage between the northeast and the center-west of Brazil. Within the state of Tocantins, the Araguaína municipality is the largest area with a population of 112,762 inhabitants. Águas Lindas de Goiás has the most extended urban area of the state of Goiás, with 105,216 ha and 105,379 inhabitants. Other important municipality of the Area of Influence is the municipality of Minaçu, which is located in the northern part of the State of Goiás. This town has 28,906 inhabitants, and the population growth occurred due to the mining activities and the construction of the Serra da Mesa and Cana Brava hydropower plants. Within the territory of the Federal District, Ceilândia is the most relevant urban area. It was the first satellite city established within the surrounding areas of the Federal District, following the inauguration of the federal capital, and was established to house the large number of people who migrated, attracted by work opportunities and better conditions of life.
- 4.10 Properties Directly Affected: The easement of the new ROW (which is adjacent to the existing North-South Interconnection I) required the indemnification of 1,160 rural properties and 114 urban properties, including resettlement of 34 families and one private school that were settled adjacent to the existing ROW for North-South I Interconnection, in the municipality of Águas Lindas de Goiás. A Preliminary Resettlement Plan (*Plano Preliminar de Compensação e Reassentamento* – PPCR) was developed in compliance with the IDB Operational Policy for Involuntary Resettlement (OP-710) and disclosed as part of the EIA. The Resettlement Plan was implemented between August and December 2002 and it is currently in the monitoring phase (See Table 4-5 for further details on total number of properties crossed per section of the transmission line).
- 4.11 Land Use and Economic Aspects: The Area of Influence is characterized by a significant diversity of social and economic aspects and associated land use. The main characteristics are summarized as follows:
- State of Maranhão near Imperatriz and State of Tocantins near Tocantinópolis: Imperatriz is the dominant municipality, characterized by a mobile labor force, based on rural or urban activities depending on the existing opportunities.
 - Central region of the state of Tocantins: Sparse activities are predominant, with old agricultural and extractive systems replaced by a productive structure based on extensive cattle raising with a small labor force.

- State of Tocantins around Araguaína: Mainly cattle raising and soy plantations. This area has smaller cities in comparison with the other Project areas.
- State of Goiás at the municipalities of Minaçu and Niquelândia: Traditional mining and agricultural activities are characteristic of this area.
- Areas around Brasília: This area is characterized by agricultural expansion and areas that are currently under a process of urbanization of the periphery.
- Periphery of Brasília: Expansion is occurring in this area as a consequence of the growing metropolis. This process can be observed in the installation of new industries and the distribution of assets and services. Within this area, the old agricultural regions are being replaced by parceling of the land for residences without adequate infrastructure.

4.12 The main land use within the area is farming with livestock farming predominating over agriculture, especially in the states of Goiás and Tocantins. Within the State of Maranhão, livestock farming has no economic importance and the agriculture, in general, is only for subsistence. Within the towns in Tocantins, Maranhão, and the northern part of Goiás, there is an industrial sector, which is growing as a result of increases in local economies, mainly through of the manufacturing of fruit juices and other related products. The commercial activities of this region are characterized by the predominance of the retail sale shops of first-need products, such as clothing, food, and medicine. Imperatriz, in the State of Maranhão, is the dominant city, with a commercial flow that extends beyond the municipal limits and which extends to other towns located along the Belém–Brasília highway (BR-153). Ceilândia, the oldest “satellite-city” of the Federal District, is a significant commercial hub for the adjacent areas, including the cities of Recanto das Emas and Samambaia.

4.13 Education and Health: Educational standards are being improved in the states of the Maranhão and Tocantins, with an increased number of children entering primary education and an increased percentage of the public receiving education. However, the overall levels of education are still low. High numbers of students still leave school early, due to economic pressures. In the northern part of the state of Goiás and in Brasília, the levels of education have stagnated and there has been no significant improvement regarding the addition of new students. The situation regarding health services provided for the population living in the Area of Influence is similar to that observed in other areas of Brazil, in which population growth has not been accompanied by improvements in health and life conditions. The health infrastructure is significantly deficient, and the availability of hospitals and health equipment in the main cities (Imperatriz, Araguaína, and Gurupi) do not guarantee good health service. Cities that have better health services are always overwhelmed with the demands for health services originating in nearby towns. The number of medical clinics in the towns is unstable, and the number of doctors per local population can be considered insufficient.

4.14 Archaeological Heritage: The Central Region of Brazil is rich in archeological heritage. The research already conducted for the North–South Interconnection I Transmission Line shows that the area has burial grounds, ceramic material, and lithic material, among other archaeological finds. In the State of Goiás, a pre-Columbian human occupation was dated to approximately 1,000 to 9,000 years BP (before present). In addition, along the rivers within the Project area historical remains were found of the human occupation that occurred during the 18th and 19th Centuries.

4.15 Indigenous Lands: There are four Indigenous Lands within the Project area, and only the land of the ethnic group in the state of Goiás, is crossed by the transmission line route (i.e. 13 km length of the route crosses the total area of 38,000 hectares). The Ava Canoeiro are part of the Tupi

Group, from the linguistic family Tupi-Guarani. The Ava Canoeiro are currently in the process of extinction, with barely two remaining groups. One of them, established in the area of the Tocantins, is affected by Project. This group has six members, four from the same family. The group is the remainder of a slaughter that occurred in the 1970s and was hiding in caves until 1983, when they were contacted by FUNAI and led to an area that was later affected by the Serra da Mesa HPP. As part of the mitigation measures of the Serra da Mesa hydropower plant, FUNAI resettled the six remaining individuals to the area where they currently inhabit in the municipalities Minaçu and Colinas do Sul, also in Goiás. The land is already demarcated and it is in the process of completing the legal regularization process.

- 4.16 After the Ava Canoeiro, the nearest, at 4.6 km from the transmission line route, is the land of the Apinajé (State of Goiás). However, the indigenous lands are separated from the Project by the Belém–Brasília highway, a railway, and by the River Tocantins, which altogether form a physical barrier. In the state of Tocantins, the land of the Xerente is 29.8 km from the line, and the land of the Kraolândia 76.5 km.

V. ENVIRONMENTAL AND SOCIAL IMPACTS

- 5.1 Transmission lines are linear structures whose direct impacts occur primarily in the right-of-way and secondarily in the immediately surrounding areas (typically within about 500 meters from the center of the transmission line). The Project transmission line largely follows the route of the North–South Interconnection I Transmission Line, which is already constructed and in operation. The substation expansions required for the Project will occur within the areas already graded and fenced for the North–South Interconnection I substations. Therefore, the environmental and social impacts of the Project will be negligible, and related primarily to incremental effects, which are likely to be successfully mitigated with the adoption of adequate environmental, social, and health and safety management procedures during construction and operation.
- 5.2 Construction activities for the transmission lines include clearing vegetation, excavating foundations, erecting transmission towers, and stringing conductors. These activities have direct impacts on environmental aspects such as flora and fauna, and they may have indirect social impacts due to the influx of construction workers and the disruption of the local way of life. During the operation phase, there is a need for periodic vegetation suppression, for preventive and corrective maintenance, for maintenance of access road openings, and for emergency maintenance activities in inaccessible areas. These activities can produce environmental and social impacts proportional to the significance of the work being performed, but the impacts usually are less significant than the construction impacts. Health impacts may result from electromagnetic effects due to operation of the transmission line and substations to nearby residents, especially in areas with multiple transmission lines together

A. Construction

- 5.3 Environmental and social impacts during construction of the Project will result mainly from the following activities associated with the transmission line: acquisition of easements for the right-of-way; displacement of people living within the ROW; mobilization of construction workers; storage of construction materials and equipment; clearing vegetation along the ROW, access roads (where necessary), and tower base areas; excavating and installing foundations for the transmission towers and guy wires; erecting the towers and stringing conductors; and clean-up of debris and restoration of disturbed areas. The substation expansions for the Project will consist on the installation of electrical equipment within areas already graded and fenced for the North–

South Interconnection I substations. Therefore, the substation activities will have negligible environmental and social impacts, and they are not discussed further in this section.

Environmental

- 5.4 Impacts on Flora: Some alteration of existing vegetation will result during construction, but the impacts are not expected to be significant. Novatrans does not intend to clear the entire 60 meters wide ROW, but instead will clear only a 3 meters wide path to allow passage of construction vehicles. Where the existing vegetation consists of grasses and other low-growing herbaceous species, little or no vegetation clearing will be necessary. Where the vegetation includes trees or shrubs that could interfere with construction, some clearing will be necessary but this clearing will be minimized. Additional clearing will be necessary at the tower base locations and where new access roads are required. However, existing access roads for the North–South Interconnection I Transmission Line will be used where possible, minimizing the number of new access roads required. Overall, Novatrans estimates that about 12% (approximately 580 ha) of the total vegetation will be cleared, in several locations and not on a continuous corridor, thus minimizing the “boundary effects” (*efeito de borda*). In addition, mechanized equipment will not be used for vegetation clearing. Rather, workers on foot will do the work, and only the vegetation that could interfere with construction will be removed. This is considered good standard practice for minimizing unnecessary disturbance of vegetation and soil.
- 5.5 Impacts on Fauna: Vegetation clearing may produce some direct mortality to animals in the construction areas, especially small mammals, reptiles, and amphibians that are not able to move away quickly. However, impacts of this type usually affect a relatively small number of individuals and, therefore, are not ecologically significant. Larger animals are likely to leave the construction areas because of noise, dust, and the presence of human beings, but impacts of this type would be temporary. Indirect impacts on animal populations may result from changes in vegetation structure, such as the reduction or fragmentation of habitats and an increase in “edge effect” (the border between two different habitats). Changes of this type may increase the amount of land that is suitable for some animal species and decrease the amount of land suitable for other species. In addition, the owners of land affected by the transmission line may burn more of their land for agricultural purposes, because of improved access to the property. Because the Project is adjacent to the North–South Interconnection I Transmission Line for almost its entire length, animals living in the area have already been exposed to human activities. In addition, the Project crosses land predominantly used for agriculture and cattle raising, and overall alteration of vegetation is not expected to be significant.
- 5.6 Two tree species included in the government of Brazil's endangered species list have been identified in the Project ROW, the Tigerwood (or Zebrawood) and the Aroeira. Both of these species are relatively common in the Project area, and neither is actually considered to be in danger of extinction, and therefore IBAMA has granted permission to remove these trees from the ROW if they interfere with construction. However, for the first two segments of the transmission line, Novatrans was able to locate and design the transmission towers so that none of the trees had to be cut. The location and design of the towers for the third segment of the line have not been finalized, but Novatrans indicated that they would attempt to avoid cutting any of the trees in the third segment. Therefore, no significant impacts on these tree species are expected.
- 5.7 Impacts on water resources: The installation of access roads and the grading of construction areas can alter natural drainage patterns. In addition, the crossing of rivers and streams can disturb soil and vegetation along the banks, resulting in increased erosion and sedimentation. However, all of

these impacts can be managed through proper design and construction practices, such as culverts and other measures that have been used by Novatrans. In addition, transmission towers will be located outside of the protected areas along rivers and streams wherever possible. For the major rivers crossed by the transmission line, the towers are at least 35 meters away from the river (Rio Cana Brava) and most are over 100 meters away. That distance, combined with the planned construction practices should ensure that tower construction should have little or no effect on the river.

- 5.8 Impacts on Protected Areas: The Project crosses approximately 2.5 km of the Environmental Preservation Area of the Bacia do Rio Descoberto. Four transmission towers have been constructed within this area, and some vegetation clearing was required. However, the natural vegetation in this area is relatively sparse, low-growing savanna vegetation, so the impacts of construction and vegetation clearing were not significant. In addition, the Project crosses several environmental protection zones associated with rivers and wetlands. IBAMA has approved clearing vegetation from a total of 49.8 ha in these areas, and for the first two segments of the transmission line approximately 25 ha had been cleared as of April 2003. The Project also crosses the Brejo do Mel, a seasonally flooded wetland located in the second segment of the transmission line. Although this area is not officially protected, it is considered environmentally sensitive, and Novatrans indicated that alternatives were being evaluated to minimize construction impacts. Novatrans is required to pay compensation to environmental protection areas within the vicinity of the Project. The amount of the compensation generally is proportional to the size of the area, and the amount paid to each area is shown in Table 5-1.
- 5.9 Soil Erosion: Transmission line construction can result in increased soil erosion due to the disturbance of soil and removal of vegetation. Direct modification of the ground surface usually is not required except for the excavation of holes for the transmission tower and guy wire foundations. In some areas, a small amount of grading may be necessary, but earthmoving activities are expected to be minor. However, these impacts normally can be managed through proper design and construction practices, and residual impacts will be temporary.
- 5.10 Impacts on Land Use: During construction phase, the impacts of the transmission line on land use are not considered significant, since most of the properties crossed by the ROW are medium to large in size and are mainly dedicated to extensive cattle farming. Therefore, it is not expected that the implementation of the ROW will affect the actual characteristics of the properties. Some areas of the towers and the access roads will be subject to restricted soil use.
- 5.11 Impacts on Mining Activities: The Project is not expected to have any impact on existing mining activities, although the route of the transmission line crosses areas with different stages of authorization by DNPM for exploration of mineral resources. In September 2002, Novatrans submitted to DNPM the requirements for the use of the transmission line ROW and the blocking of all mining activities within the Project area and the deviation from the original transmission line route between the municipalities of Porto Franco and Imperatriz, in the State of Maranhão, and got no objection from DNPM, according to the standard procedure required.

Social

- 5.12 Easement of the Right-of-Way (ROW): Easement of the ROW required the indemnification of 1,160 rural properties and 114 urban properties. The most significant impact was in the municipality of *Águas Lindas de Goiás*, where resettlement was required. Within this area, 34 families and one school located within the 60 meters wide ROW were resettled. A Preliminary Resettlement Plan (PPCR) in compliance with IDB operational policy on Involuntary

Resettlement (OP-710) was developed, implemented in August and December 2002 and is currently in the monitoring phase. The results of the initial monitoring indicate that approximately 80% of the resettled families are satisfied with the resettlement process.

- 5.13 The rural properties crossed by the ROW did not suffer significant impacts on their productive activities, and in almost all cases, the relocation of assets was avoided. The ROW also crosses federal government settlements implemented by INCRA, and a collective area in the settlement of Fausto Duran, in the municipality of Padre Bernardo (Goiás), but did not affect residences or assets. Only small areas of the properties were temporarily affected during construction.
- 5.14 Potential Social Conflicts with Local Population: Construction activities generally will not cause alterations in the daily routines of the populations located in the immediate vicinity of the Project or near the worker camps and support facilities. Most of the workers hired by the contractors responsible for construction activities are from municipalities near the work sites. In addition, the number of workers is not significant in relation to the population of the municipalities crossed by the transmission line. Some minor expectations related to job generation and additional income to the municipalities can occur during the construction activities.
- 5.15 Increase in Traffic: Considering that most of the access roads for the transmission line are already in place, and that the main road to be used is the Belém–Brasília highway, additional potential impacts will be barely incremental, and may occur only during the period of construction of the transmission line by the transport of equipment from the work sites to the tower construction.
- 5.16 Archaeological Heritage: The implementation of the North–South Interconnection I Transmission Line involved extensive archaeological research within a 20 km wide corridor. This research identified 492 small archaeological sites. Several of these sites, however, were subsequently discarded based on a consideration of their low level of importance. Other sites are currently being studied and rescued by the North–South project as a part of the Archeological Program, approved by the IPHAN, and executed by the Brazilian Institute of Archeology (*Instituto Brasileiro de Arqueologia – IAB*) hired by Novatrans.
- 5.17 Impacts on Indigenous Lands: The potential impacts on the small Ava Canoeiro community are already addressed by the Compensation Program developed for the Serra da Mesa hydroelectric power plant and approved by the National Congress. These impacts of the Project are only those related to crossing 13 km of the Indigenous Land through a corridor already containing transmissions lines for the Serra da Mesa Project. The project impacts are related to the construction and assembly of the towers within the corridor (vegetation suppression, interference with fauna, etc); to the orientation of people and the transportation of equipment and material, which intensifies the use of existing access roads; and to the opening of new access roads to the tower sites. Vegetation suppression will occur on 6.81 ha of land, including 5.41 ha of wooded savanna, 0.35 ha of sparse savanna, and 1 ha of gallery forest. The remaining 0.05 ha is occupied by degraded vegetation (see Table 5-2). After restoration of the areas disturbed by construction, which will be conducted during the operation phase, additional impacts will be related to the maintenance of the transmission line, with associated vegetation suppression, orientation of workers, and visual impacts. Due to the existence of transmission lines already there, some cumulative impacts can also be expected. These impacts are related mainly to the visual impact of four transmission lines in parallel. Some transmission towers are located at the top of an existing mountainous area and are quite visible within the existing landscape.

- 5.18 The health and safety impacts due to the construction activities of the transmission line and expansion of the substation are related mainly to the potential risks to the workers. These impacts and risks are generated by the construction activities and include exposure to noise, dust, and air pollutants from machinery and vehicles; fall hazards including slips and trips, stairways and ramps, ladders, scaffolds, open-sided floors, platforms, and roofs (especially within the substations); vehicle accidents; accidents from loading and unloading operations; fire and explosions; inadequate grounding, insulation, or improper use of electric tools or cables that can pose electrocution, electric shock, burns, and falls.

B. Operation

- 5.19 During operations, the principal potential negative impacts of the transmission line and associated facilities are: (i) suppression of vegetation (and associated impacts on fauna) during maintenance; (ii) erosion and sedimentation along maintenance/access roads; (iii) noise from substations; (iv) soil and water contamination from inappropriate management and disposal of wastes; and (v) impacts associated with the electric discharges, electromagnetic fields and induced currents. These impacts are likely to be adequately mitigated with the implementation of international standards for design and operation of transmission lines as well as appropriate environmental and social management procedures.

Environmental

- 5.20 Impacts on vegetation: During operation of the transmission line, there will be some need to suppress vegetation that has the potential to grow tall enough to touch the conductors or to interfere with maintenance activities, only sporadically and over smaller areas. Overall, the impacts of operational vegetation suppression are expected to be insignificant.
- 5.21 Impacts on Fauna: In general, operation of a transmission line has very little impact on animals. Under certain circumstances, transmission lines can be a significant source of mortality for birds, either through collision with the conductors or through electrocution due to contact with more than one conductor at the same time. Significant impacts are most likely to occur where a transmission line crosses a "flyway" (a corridor used by large numbers of migrating birds) or where large birds of prey use the transmission towers for perching places from which to hunt. There is no indication that either of these circumstances applies to the Project. There also is no indication that the North–South Interconnection I Transmission Line, which has been in existence for several years, has caused any significant impacts on birds.
- 5.22 Wastes: Certain types of waste materials will be generated during operation and maintenance of the transmission line and substations including oils, lubricants, paints, and solvents. None of the equipment will use PCBs (polychlorinated biphenyls). There is the potential for impacts from spills or leaks of these wastes if not handled properly.

Social

- 5.23 Impacts on Land Use: Land use impacts during operation will be insignificant, restricted to small areas located in the access roads and the area of the towers themselves that will be subject to restricted use. In almost all the areas of the transmission line, the existing agricultural and livestock farming activities will be allowed to continue.
- 5.24 Risk Associated with Electric Discharges: The electric field surrounding an operating transmission line can produce an electric discharge (or shock) to a person, animal, or object on

the ground near the line. The intensity of the shock is a function of the strength of the electric field, the distance from the conductors, and the points of contact between the body and the ground. Under certain circumstances, a shock of this type can have an adverse effect on people or cattle. Significant effects are very rare and normally can be avoided through proper design of the line. Nevertheless, education of people living or working near a transmission line may be advisable. As several residences are located adjacent to the Project right-of-way and two other transmission lines are located in the same corridor, risks due to electric discharges may exist in this Project. To mitigate such risk, Novatrans has properly designed the Project according to internationally accepted standards, verified by IDB's Independent Engineer.

- 5.25 Electromagnetic Effects: The electric and magnetic fields generated by an operating transmission line can produce audible noise, radio and television interference, and concern over possible health effects. The significance of these effects depends on the strength of the electric and magnetic fields, the distance from the conductors, and other environmental factors. Because the transmission line crosses areas that are predominantly rural and sparsely populated, this impact is not expected to be significant, with the exception of the urban area of *Águas Lindas de Goiás*, where several residences are located adjacent to the Project ROW and two other transmission lines are located in the same corridor. In that location, several dirt roads cross the ROW, thus posing a potential concern related to induced currents in large vehicles that might park under the line.
- 5.26 The transmission line was designed according to internationally accepted standards. Accordingly, the maximum field gradient associated with the line conductors and other equipments energized at 500kV is 24.45 kV peak/cm (kVp/cm), below the internationally accepted level not to be exceeded of 28.7 kVp/cm. Calculations performed by the IDB independent engineers indicated that the electric field strength due to more than two lines will not increase the total field strength significantly at the edges of the ROW of the outermost line on each side and residences may be permitted 25 meters from the centerline of the ROW of this outermost line (on each side).
- 5.27 The corona losses at maximum voltage (500 kV) are also calculated at 1.7kW/km under normal weather conditions and 70.8 kW/km under hot weather condition, both typical corona losses associated with EHV transmission lines and accepted internationally. The radio interference levels at distances greater than 28 meters from the line conform to ANATEL regulations and therefore there should not be significant impacts beyond the ROW.
- 5.28 Visual Impacts: The visual impacts from the Project will be incremental, as the Project is included in an existing corridor where three other transmission lines are already installed. However, this impact can be considered significant within the Ava Canoeiro Indigenous Land, where some towers are located at the top of an existing mountainous area and are quite visible within the existing landscape.

Health and Safety

- 5.29 During operation, the main activities are related to minor vegetation suppression, electrical and structural work for maintenance, and the implementation of the recovery of degraded areas. The main risks are of electrocution when working with energized lines, falling from high towers, and improper use of tools and equipment.

C. Positive Impacts

- 5.30 The ultimate positive impact of the Project will be felt at regional and national scales and are related improvements in the existing North–Northeast and South–Southeast transmission systems interconnecting the national system. During the construction period, the Project will provide direct and indirect job opportunities, thus contributing to temporarily improve the economic and social conditions in the region, particularly in the municipalities located near the work sites and workers' accommodations. Municipal tax revenue will also increase due to the enlarged consumption of construction products and services, therefore contributing to improve the municipalities' public finances.
- 5.31 Increase of Jobs: During the peak construction period, the Project will provide approximately 2,000 new construction jobs. Considering that for each new construction job, approximately two or three indirect jobs are created (based on experience with other construction projects in Brazil), the Project can be expected to generate approximately 4,000 to 6,000 indirect jobs. These direct and indirect jobs will contribute, at least temporarily (until completion in 2004), to an improvement in the local job market, which normally is characterized by a situation of unemployment.
- 5.32 Increase of Municipal Revenue: The increase in income of local families as a result of the new jobs generated by the Project will improve the tertiary sector in the Project vicinity, particularly in the municipalities located near the work sites and workers' accommodations. During Project construction, it is expected that the municipal tax revenue will increase because of the increase in the consumption of products and services, such as construction materials, fuels, services for repairing machines and vehicles, and consumption of water and electric energy. The municipality of Porto Franco included in the Municipal Authorization for the Project an item that establishes that the existing Tax for Products and Services (*Imposto Sobre Bens e Serviços – ISS*) related to the Project will be paid directly to the municipality.

VI. ENVIRONMENTAL, SOCIAL, AND HEALTH AND SAFETY MANAGEMENT

A. Mitigation Measures

- 6.1 The environmental and social mitigation measures and monitoring programs for the construction and operation of the Project are consolidated in the Environmental Management Plan (*Plano Básico Ambiental – PBA*). A summary of the PBA is presented in the following paragraphs.

Construction Phase

Environmental

- 6.2 Technical Guidelines for Construction, Operation, and Maintenance: This program provides general guidelines and procedures to be adopted by Novatrans and its contractors and subcontractors for the mitigation of construction and operation impacts. For the construction phase, this program includes procedures for such items as vegetation clearing, control of fire, crossing of rivers, control of erosion and sedimentation, control of noise and atmospheric pollution, assembly of towers, oil spill prevention and control, among others. Under this program, all of the contracts between Novatrans and each contractor and subcontractor should include a clause requiring that the contractor/subcontractor provide an Environmental Plan of Control

(PCA) with specific procedures for its activities, and these plans should be approved by Novatrans.

- 6.3 Program for Vegetation Suppression: This program is designed to mitigate potential impacts caused by vegetation clearing. It establishes the operational procedures for the selective clearing of the transmission line ROW and any new access roads that are found to be necessary, including the acquisition of the authorizations and environmental licenses required by law. The key objective of this program is to maintain all vegetation such that, at its maximum height, it cannot come in contact with the transmission line conductors.
- 6.4 Program for Restoration of Degraded Areas: This program provides general guidelines for the restoration of areas disturbed by construction. The key objective of this program is to ensure the restoration of natural vegetation cover, soil characteristics (including the soil permeability, aeration, compaction, stability, and agricultural capability), rainfall runoff patterns, and the stability of river and stream banks, among other items. The IBAMA Operation License requires Novatrans to implement the Restoration of Degraded Areas Program for the first segment of the transmission line and to ensure that all wood material produced by vegetation suppression is removed and properly disposed of.
- 6.5 Environmental Compensation Program: This program is intended to satisfy Resolution CONAMA 002/96, concerning the implementation of new environmental protection areas or support for existing areas. Under this program, Novatrans pays compensation to environmental protection areas within the vicinity of the Project. The compensation can be used by each area for whatever improvements are most needed. (Refer to Table 5-1).

Social

- 6.6 Health Program: The Health program is divided in two sub-programs. The first one is related to providing the local municipalities with the required support for existing local health systems in order to minimize potential impacts related to the increase in the external demand represented by workers, so that the existing systems will be able to continue attending to the local population, without any decline in the quality of the service and available resources. The second sub-program is related to the workers' health and includes agreements with local municipalities for the provision of these services. Regarding the first subprogram, two Novatrans subcontractors agreed with local municipalities to make available their ambulances for the municipalities when they were not in use and also to supply medicines for local hospitals. For the workers' health, the subcontractors have signed agreements with local municipalities for the use of the local health structure by workers when required. The municipalities have also included the workers accommodation in their immunization campaigns.
- 6.7 Protection of Historic and Archeological Heritage: This program includes surveys, monitoring, and recovery approved by IPHAN. The main activities are related to the characterization of the archeological potential, the field investigation and subsequent laboratory analysis, and publication of the results in scientific magazines. The program was developed and is being executed by a qualified institution, and the safety of the material will be a responsibility of Tocantins University. The activities will be divided into three phases: survey, monitoring and recovery. The publication of the results in scientific magazines and the disclosure of the findings to the public are, in regard to the archeological heritage, an effective contribution to the knowledge of the pre-historical period and the regional history. The overall schedule foresaw the conclusion of the activities within two years.

- 6.8 Social Communication Program: A complete Social Communication Program was developed by CAL and approved as a requirement of the IBAMA Installation License. The IBAMA Operation License also requires Novatrans to implement an Environmental Education Plan (a portion of the Social Communication Program) for the first segment of the transmission line. The Social Communication Program comprises three main components: (1) Institutional, which aims to consolidate a communication channel between Novatrans and the local community through the signing of agreements and the inspection of subcontractor activities; (2) Informative, which aims to keep the population informed about Project implementation activities; and (3) Training of workers, on the safety procedures and requirements, and the workers' code of conduct to minimize social impacts in the communities in the Project area.
- 6.9 Indigenous Lands: All the social and environmental impacts of the Project on the Ava Canoeiro Indigenous Land were studied and mitigated during the permitting process of the Serra da Mesa hydroelectric power plant. Therefore, the compensation required from Novatrans for the environmental permitting of the Interconnection II transmission line addresses only the potential impacts of the construction phase of the transmission line. This compensation program is subdivided in three main components: (1) environmental control during construction, (2) social communication to the indigenous population, and (3) social communication to the workers. During construction (of the first segment) inside the Indigenous Land, the procedures for environmental control were implemented. At the current stage, as part of the implementation of the rehabilitation of the degraded areas, Novatrans presented the detailed proposal to FUNAI and is awaiting the agency's approval, which could include some specific requirements regarding the type and species of vegetation to be used.
- 6.10 The agreement signed between FUNAI, Furnas, and the Serra da Mesa HPP concessionaire company included the following components:
- Health Program;
 - Program of Environment, Inspections and Protection of the Territory;
 - Program of Self-sustainability;
 - Program of Unification of the Ava-Canoeiro People;
 - Program for Population Growth;
 - Indigenous Education Program;
 - Program of Documentation and Memory;
 - Program of Works and Equipment to Consolidate the Infrastructure of the Indigenous land; and
 - Program of Location and Contact of Possible Remainders⁹.
- 6.11 Easement of the ROW: Although not required under the IDB operational Policy on Involuntary Resettlement, given the small number of families to be resettled (34), a Preliminary Compensation and Resettlement Plan (PPCR) was developed. Novatrans is responsible for the easement of the ROW and hired a social consultant (Pallos) and a subcontractor (ECARI), to implement the indemnification and resettlement activities. Public consultation with the affected population associated with the development of the PPCR were implemented in June 2001, to ensure that the negotiation process and the indemnification addressed the expectations of the

⁹ This program was discontinued by FUNAI after twelve years of implementation, upon the lack of evidence of the existence of remaining survivors of the Ava-Canoeiro group.

affected population, and that the resettlement would be completed before the start of construction activities.

- 6.12 Indemnification was provided in the following circumstances: indemnification of vacant (with no construction) lots, indemnification of lots with assets in various stages of construction (mostly semi-abandoned constructions), and indemnification of lots used for commercial purposes. Resettlement was provided for residences located within the ROW. In addition to the resettlement, the resettled families received an additional indemnification to compensate the non-measurable losses and to improve the conditions of life of these families. The values of the residences were defined considering the cost of a new residence. Novatrans assisted the families in the selection of the house, the signature of legal documents, the relocation (moving) as well as the removal of all the material from the old residence that could still be useful.
- 6.13 The first five activities of the programs were already completed: (1) development of the baseline information (*Cadastro Fundiário*) and the socioeconomic research, (2) disclosure of the PPCR and public consultation and participation, (3) negotiation, (4) indemnification, and (5) resettlement. The monitoring phase, which comprises the development of three reports, is currently in progress. The first report has been developed, and the second one is being prepared.
- 6.14 The actual status of the indemnification process is as follows: Samambaia to Serra da Mesa segment 100% concluded; Serra da Mesa to Miracema segment almost 100% concluded; and Miracema to Imperatriz segment 88% concluded. Table 6-1 summarizes the number of properties in each segment of the line for which the indemnification process has been concluded and the number of properties for which the process is ongoing. The transmission line affects 1,317 properties, of which only 35 will require resettlement and all the remaining will be indemnified. Of those that will be indemnified, approximately 1,000 properties have already received indemnification and of those 34 filed legal complaints claiming for additional payments.
- 6.15 The 35 properties that required resettlement comprise 34 residences (corresponding to 34 families) and one private school. All 35 properties are located in the urban area of *Águas Lindas de Goiás*. Resettlement was completed in December 2002 and monitoring is undergoing. Families were resettled in the same neighborhood in properties that were selected and acquired with technical and legal assistance from Novatrans. A new school was also built in the same neighborhood and the students were not affected. A summary of the resettlement plan is presented in Annex 1.
- 6.16 Mining Activities: This program is intended to identify areas where the Project potentially could interfere with areas of mineral exploitation and areas under investigation for exploitation. This program has been successfully completed, and no impacts on mining activities are expected.

Operation Phase

Environmental and Social

- 6.17 Novatrans has finalized the specific Environmental and Social Management Plan (ESMP) for the operational phase including the specific mitigation measures for environmental, social, or health and safety impacts of the Project's operation, considering that the first section of the transmission line is already in commercial operation since June 2003. The ESMP includes a number of mitigation and monitoring programs, for maintenance of the transmission line and associated facilities. The mitigation programs include vegetation trimming and clearing, and management of hazardous wastes.

- 6.18 As part of the ESMP, the social communication and education program for the operational phase is the most relevant one. It addresses the safety signs and advertisements that Novatrans must place in the energized lines and in all towers, as well as, the safety measures that must be observed by the communities crossed by the transmission line (such is the case of *Aguas Lindas de Goiás*) and property owners that have towers located in their properties.

B. Monitoring Programs

- 6.19 Specific monitoring programs for the social and environmental aspects of the Project were included in the PBA (the Environmental Management Plan) approved by IBAMA and detailed by Novatrans for the construction and operation phases. The following monitoring programs were implemented during construction: vegetation suppression, resettlement of affected population, social communication, and impacts on indigenous lands.
- 6.20 For the operational phase, the following monitoring programs are implemented: resettlement of affected population, rehabilitation of degraded areas, erosion and sedimentation, electromagnetic fields and noise.

C. Health and Safety

- 6.21 Novatrans developed the required health and safety programs for construction and operation. For the construction phase, Novatrans developed the Occupational Health and Medical Control Program (PCMSO) and the Environmental Risks Prevention Program (*Programa de Prevenção de Riscos Ambientais – PPRA*), as required by existing regulations. These documents include the procedures, equipment, training, responsibilities, and resources necessary to properly minimize and control project-specific worker health and safety risks. Novatrans also developed a Health and Safety Manual and a Safety Plan. The manual contains Novatrans health and safety policy and its main goals and objectives. It also provides clear and detailed descriptions of the responsibilities of the personnel assigned to health and safety programs. A training program is also included, incorporating emergency procedures, health and safety responsibilities, and use of personal protective equipment. Procedures for inspection and monitoring the implementation of the program and registering the incidents and accidents are also included in the manual. The guidelines and procedures are part of the EPC contract and must be fully implemented by the contractor and subcontractors, who have signed agreements with local hospitals to provide the adequate health service support to the workers during construction.
- 6.22 Similar documentation was developed for the operational phase, as required by Brazilian legislation.

D. Contingency and Emergency Plans

- 6.23 Novatrans has developed an Emergency and Contingency Plan for the construction phase. The construction activities include procedures for identifying risks, first aid in case of incidents and accidents, evacuation areas for the workers' camps, supporting sites and substations, and the required training. The responsibilities are defined, formal register and documentation of incidents and accidents are established, and a fire brigade is implemented at each work site with monthly training.
- 6.24 The Final Emergency and Contingency Plan for Operation is being prepared, based on the preliminary plan approved as part of the PBA, and will be required to be in form and content satisfactory to IDB, prior to first disbursement.

E. Environmental, Social and Health and Safety Management

- 6.25 For the implementation of the Environmental and Social Management Plan (ESMP) for construction, an environmental and social management system (ESMS), compatible with the principles of ISO 14001, was developed and implemented by *CAL Meio Ambiente e Consultoria, Ltda.* – CAL, the environmental and social consultant company hired by Novatrans. The supervisory and monitoring activities are implemented by CAL's environmental management team, which consists of professionals with large experience in environmental issues associated with the implementation of transmission lines projects.
- 6.26 The ESMP includes monthly meetings with the coordinators and the inspector's teams to discuss the results of the inspections and evaluate the implementation of the social and environmental programs in order to identify and implement the corrective measures. In general, the ESMS was implemented adequately, with only minor non-compliances in some sections, for which the necessary corrective measures have been developed and implemented (or are in the process of implementation).
- 6.27 The same Environmental and Social Management System has been adapted for the operational phase of the first segment and will be reviewed and enhanced (if necessary) for the operation of the entire line.

VII. INFORMATION DISCLOSURE AND PUBLIC PARTICIPATION

- 7.1 The Environmental Impact Assessment (EIA) and corresponding summary report (RIMA) were prepared and submitted to IBAMA on May 15, 2001, as part of the requirements for the Preliminary License (LP), and were immediately made available to the public. Subsequently, during the period June 18-21, 2001, Novatrans implemented five community meetings in the principal cities in the area of influence of the Transmission Line to discuss the EIAs: Imperatriz (Maranhão), Araguaína (Tocantins), Paraíso do Tocantins and Gurupi (Tocantins), and Águas Lindas de Goiás, in Goiás. The RIMA was distributed to all the municipal city halls in the municipalities crossed by the North–South II Transmission Line. Public announcements were placed in newspapers and local radio stations, informing the date and time of the meetings.
- 7.2 The principal objectives of these meetings were: (a) to disclose information regarding the Project's potential impacts and proposed mitigation and hear concerns from the affected population and public in general; (b) to create a communication channel with the local population and municipalities; and (c) to develop a collaborative environment with the municipalities and civil society organizations for the implementation of Novatrans' future activities in the region. Among the principal concerns expressed during these meetings were: (a) the indemnification process; (b) the effects on public health of the electromagnetic fields; and (c) the expected increase in local revenues due to the collection of municipal taxes associated with the construction phase of the transmission line.
- 7.3 Following the public disclosure period required as part of the regulations associated with the legal requirements of the environmental permitting process, IBAMA issued the LP N° 101/2001 on July 13, 2001. Subsequently, IBAMA issued the Installation License (LI) N° 143/2001 on September 20, 2001, upon approval of the Environmental Management Plan (*Plano Básico Ambiental* – PBA) for both construction and operation, and approvals from FUNAI and IPHAN of the proposed management plans for the indigenous territories and historic and archaeological remains.

- 7.4 Since August 15, 2002, the EIA and RIMA were made available to the public in the IDB's Public Information Center and in the Country Office in Brazil.
- 7.5 On May 23, 2003, the Operation License (LO) for the first segment of the transmission line was issued by IBAMA upon verification of the status of implementation of the applicable environmental management programs proposed in the PBA. Construction is proceeding in the two remaining sections of the transmission line. Novatrans will apply to IBAMA for the correspondent Operation License as construction is finalized in each remaining section, expected as follows: Serra da Mesa – Miracema section, to be completed in October 2003, and Miracema – Imperatriz, scheduled to be completed in February 2004.
- 7.6 The implementation of a social communication program associated with the operational phase of the transmission line is a requirement of the LO already issued. It includes specific public disclosure of safety requirements to be adopted by the population in connection with the transmission line, in particular the community of *Águas Lindas de Goiás* (where some residences are adjacent to the ROW, thus in compliance with legal and international safety requirements), and communication mechanism between the public and the Company, such as 0-800 numbers and others. Special emphasis will be placed on the public disclosure of the result from the monitoring programs, through periodic newsletters.

VIII. RECOMMENDATIONS

- 8.1 The IDB will require as part of the Loan Agreement that Novatrans and all portions of the Project shall, at all times during the life of the Loan Agreement, comply with each of the following:
- (a) All applicable environmental, health and safety Brazilian regulatory requirements, including all environmental, health and safety requirements of the Project contracts, and any subsequent modifications, and all requirements associated with any environmental, health and safety related permits, authorizations, or licenses that apply to the Project or the Company, particularly in connection with the Environmental Permit System, the NRs from the MTE, and all regulatory requirements from FUNAI with regard to the Ava-Canoeiro indigenous lands.
 - (b) All aspects and components of the various Project-related environmental, health and safety plans, in particular the Environmental Management Plan (*Projeto Básico Ambiental – PBA*) for construction and operation, the Resettlement Plan, and the Health and Safety, and Contingency Plans for construction and operation.
 - (c) Applicable aspects of the International Finance Corporation Guidelines for Electrical Power Transmission and Distribution (1998), including emissions, air quality and ambient noise standards and wastewater discharge limits.
 - (d) Applicable aspects of the World Bank General Environmental Guidelines (World Bank Pollution Prevention Handbook, July 1, 1998).
 - (e) Applicable aspects of the World Bank Monitoring Guidelines (World Bank Pollution Prevention Handbook, July 1, 1998).
 - (f) Applicable aspects of the International Finance Corporation Guidelines for General Health and Safety (1998).

- (g) Consult with IDB before approving or implementing any and all substantive changes to the Project or its timetable that could potentially have negative environmental, social, or health and safety effects.
- (h) Send written notice of any and all noncompliance with any environmental requirement of the Loan Agreement and any significant environmental, social, or health and safety accident, impact, event or environmental claim.
- (i) Ensure that all companies contracted for construction or operation activities comply with the applicable environmental and social requirements of the Loan Agreement.
- (j) Implement ongoing information disclosure and consultation activities related to environmental, social, and health and safety aspects of the project, including but not limited to, the results of the monitoring programs.
- (k) Implement an environmental, health and safety management system that is consistent with ISO 14001 and BS 8800 (for environment and health and safety, respectively), for the construction and the operation phases.

8.2 Prior to the date of First Disbursement, the IDB will require certification by an independent environmental and social consultant that:

- (a) The Project is fully compliant with the Environmental Permits issued by IBAMA, specifically the LI and the LO (this latter for the first segment only), in particular has commenced when applicable the implementation of the proposed and applicable ESMPs programs, Health and Safety Plans, Contingency Plans, Resettlement Plan, Social Communication Plan, Rehabilitation of Degraded Areas (particularly in the Ava-Canoeiro Indigenous Land), and Environmental Education Program;
- (b) Novatrans has initiated implementation of an adequate system of environmental, social, and health and safety management for the Project's construction and operation.

8.3 Prior to First Disbursement, the IDB will also require, in form and content satisfactory to IDB, the following Environmental Plans:

- (a) Environmental and Social Management Plan (ESMP) for the construction phase;
- (b) Environmental and Social Management Plan (ESMP) for the operation of the first segment of the Transmission Line;
- (c) Health and Safety Plan for the construction phase;
- (d) Health and Safety Plan for the operation of the first segment of the transmission line;
- (e) Contingency Plan and Spill Prevention and Countercontrol Plan for the construction phase;
- (f) Contingency Plan and Spill Prevention and Countercontrol Plan for the operation of the first segment; and
- (g) A Final Resettlement Plan, including the results of the monitoring campaigns and evidence of compliance with the IDB operational policy OP-710.

8.4 Prior to Technical Completion, the Company shall submit, in form and substance satisfactory to the IDB, the following revised and updated Environmental Plans:

- (a) Environmental and Social Management Plan for the Project's operational phase;
- (b) Health and Safety Plan for the operational phase;
- (c) Contingency Plan and Spill Prevention Plan for the operational phase; and
- (d) Environmental, Health and Safety Management System for the operational phase.

8.5 Prior to each disbursement, the Company must certify compliance with all environmental, social, and health and safety requirements in the Loan Agreement.

8.6 During the life of the Loan Agreement, the Company must prepare and submit an Environmental and Social Compliance Report, in form, content and frequency as agreed between the IDB and the Company.

8.7 The Bank will monitor the project's environmental, social, and health and safety aspects via internal Bank supervision actions (e.g. site visits, review of documentation, etc.) and will contract an external independent environmental consultant to assist the Bank in supervision/monitoring the Project. In addition, the Bank will have the right, as part of the Loan Agreement, to contract for the performance of an independent environmental, health, and safety audit, if needed.

TABLES

Table 2-1

Municipalities Crossed by the North–South Interconnection II Transmission Line

	State	Municipality
1	Maranhão	Campestre do Maranhão
2	Maranhão	Davinópolis
3	Maranhão	Imperatriz
4	Maranhão	João Lisboa
5	Maranhão	Governador Edison Lobão
6	Maranhão	Porto Franco
7	Maranhão	Ribamar Frenque
8	Maranhão	Senador La Rocque
1	Tocantins	Palmeirópolis
2	Tocantins	Jaú do Tocantins
3	Tocantins	Figueirópolis
4	Tocantins	Cariri do Tocantins
5	Tocantins	Gurupi
6	Tocantins	Peixe
7	Tocantins	Gurupi
8	Tocantins	Aliança do Tocantins
9	Tocantins	Crixás do Tocantins
10	Tocantins	Santa Rita do Tocantins
11	Tocantins	Fátima
12	Tocantins	Nova Rosalândia
13	Tocantins	Pugmil
14	Tocantins	Paraíso do Tocantins
15	Tocantins	Miracema do Tocantins
16	Tocantins	Rio dos Bois
17	Tocantins	Fortaleza do Tabocão
18	Tocantins	Guaraí
19	Tocantins	Presidente Kennedy
20	Tocantins	Brasilândia do Tocantins

	State	Municipality
23	Tocantins	Colinas do Tocantins
24	Tocantins	Nova Olinda
25	Tocantins	Aguiarnópolis
26	Tocantins	Araguaína
27	Tocantins	Darcinópolis
28	Tocantins	Palmeiras do Tocantins
29	Tocantins	Wanderlândia
30	Tocantins	Sucupira
31	Tocantins	Oliveira de Fátima
32	Tocantins	Barrolândia
33	Tocantins	Miranorte
34	Tocantins	Dueré
35	Tocantins	Palmeirante
36	Tocantins	Piraquê
37	Tocantins	Talismã
1	Distrito Federal	Samambaia
2	Distrito Federal	Ceilândia
3	Distrito Federal	Recanto das Almas
1	Goiás	Águas Lindas de Goiás
2	Goiás	Padre Bernardo
3	Goiás	Mimoso de Goiás
4	Goiás	Cocalzinho de Goiás
5	Goiás	Colinas do Sul
6	Goiás	Minaçu
7	Goiás	Niquelândia
8	Goiás	Água Fria

Table 2-2
Key Statistics for the Primary Segments of the North–South Interconnection II
Transmission Line

	Samambaia Substation to Serra da Mesa Substation	Serra da Mesa Substation to Miracema Substation	Miracema Substation to Imperatriz Substation
Length of segment	248 km	512 km	518 km
Number of towers	490	1,022	1,059
Number of new access roads	400	1,011	Not determined
Total length of new access roads	31.6 km	65.9 km	Not determined
Expected operation date	June 2003	October 2003	February 2004

Table 2-3
Worker Camps and Support Facilities Established as of August 2003

Worker Camp/ Support Facility	Municipality	Number of Workers Served
Padre Bernardo	Padre Bernardo	250*
Nova Rosalândia	Nova Rosalândia	308*
Colinas do Sul	Colinas do Sul	46
Bangolândia	Niquelândia	23
Vila Borba	Colinas do Sul	133
Mato Seco	Águas Lindas	203
Cascabulho	Niquelândia	23
Miracema	Miracema	56

Worker Camp/ Support Facility	Municipality	Number of Workers Served
Barrolândia	Barrolândia	294
Miracema do Tocantins	Miracema do Tocantins	80
Guaraí	Guaraí	350
Colinas do Tocantins	Colinas do Tocnatins	150
Araguaína	Araguaína	250
Wanderlândia	Wanderlândia	200
Ribamar Fiquene	Ribamar Fiquene	300
Imperatriz	Imperatriz	80

*Maximum number of workers housed.

Table 4-1
Vegetation Associations Found in the Area of Influence

Type of Association	Area (ha)	Percentage of Total Area
Open Savanna	508,200.84	19.67
Wooded Savanna/Babacu Forest	487,445.04	18.86
Seasonal Forest/Savanna Forest	412,935.84	15.98
Grassland/Shrub Savanna	378,983.52	14.67
Hyper-seasonal Savanna/Gallery Forest	107,185.68	4.15
Liana Forest	313,32.24	1.21
Water	41,237.64	1.60
Other	61,6543.27	23.87
Total	258,4167.12	100.00

Table 4-2
Vegetation Associations Found in the Right-of-Way

Type of Association	Area (ha)	Percentage of Total Area
Open Savanna	1,446.12	20.03

Wooded Savanna/Babacu Forest	1,311.12	18.16
Grassland/Shrub Savanna	1,192.68	16.52
Seasonal Forest/Savanna Forest	789.48	10.93
Hyper-seasonal Savanna/Gallery Forest	333.00	4.61
Liana Forest	98.28	1.36
Water	33.48	0.46
Other	2,015.64	27.89
Total	7,219.80	100.00

Table 4-3
Endangered Animal Species Reported from the General Project Area

Scientific Name	Common Name
Birds	
Anodorhynchus hyacinthinus	Hyacinth Macaw
Pyrrura pfrimeri	Pfrimer's Parakeet
Leucopternis albicollis	White Hawk
Rhea Americana	Common Rhea
Sarcoramphus papa	King Vulture
Mammals	
Alouatta caraya	Black Howler Monkey
Myrmecophaga tridactyla	Giant Anteater
Priodontes maximus	Giant Armadillo
Chrysocyon brachiurus	Maned Wolf
Speothos venaticus	Bush Dog
Lutra longicaudis	Neotropical Otter
Pteronura brasiliensis	Giant Otter
Felis concolor	Cougar
Felis geoffroyi	Geoffroy's Cat
Felis pardalis	Ocelot
Felis tigrina	Tiger Cat
Felis wiedii	Margay Cat
Panthera onça	Jaguar

Scientific Name	Common Name
Tapirus terrestris	Lowland Tapir
Tayassu pecari	White-Lipped Peccary
Ozotocerus bezoarticus	Pampas Deer
Blastocerus dichotomus	Marsh Deer
Sylvilagus brasiliensis	Brazilian Cottontail

Table 4-4
Environmental Protection Areas Located Within the Area of Influence

Area	State	Type of Protection	Distance from Transmission Line
APA da Bacia do Rio Descoberto	DF	Sustained Use	Crossed
Parque Ecológico do Rio Descoberto	DF	Complete Protection	170 m
Floresta Nacional de Brasília	DF	Sustained Use	1.8 km
Parque Ecológico e de Uso Múltiplo Veredinha	DF	Complete Protection	8.1 km
Parque Ecológico e de Uso Múltiplo Três Meninas	DF	Complete Protection	9.3 km

Table 4-5
Properties Crossed by the Transmission Line

Section of the Line	Properties with Resident Landowners	Properties with Non-Resident Landowners	Properties used for Commercial Purposes	Properties with Residents who Do Not Own the Land	Total Number of Affected Properties
Samambaia — Serra da Mesa	290	84	1	—	375
Serra da Mesa — Gurupi	179	33	—	—	212
Gurupi — Miracema	115	70	—	—	185
Miracema — Colinas	109	29	—	—	138
Colinas — Imperatriz	230	150	—	27*	407
Total	923	366	1	27	1,317

Table 5-1
Compensation Paid to Environmental Protection Areas by the Project

Area	State	Compensation Paid
Reserva Biológica de Gurupi	MA	R\$1,930,000
Parque Nacional Nascentes do Rio Parnaíba	PI/MA/TO/BA	R\$1,752,000
Estacao Ecológica Serra Geral do Tocantins	TO	R\$1,500,000
PARNA Chapada dos Veadeiros	GO	R\$610,000
APA da Bacia do Rio Descoberto	DF	R\$250,000
Total Compensation		R\$6,042,000

Table 5-2
Construction Impacts on Vegetation Associations in Indigenous Lands

Construction Activity	Vegetation Association				Total (ha)
	Wooded Savanna	Sparse Savanna	Gallery Forest	Degraded Vegetation	
Cable laying	2.78	0.21	0.70	0.00	3.69
Assembly of towers	2.19	0.09	0.29	0.00	2.57
Opening of new access	0.44	0.05	0.02	0.05	0.56
Total Area (ha)	5.41	0.35	1.00	0.05	6.81

Table 6-1
Status of the Indemnification of Affected Properties (as of May 30, 2003)

Line Segment	Responsible Company	Affected Properties			
		Process Concluded	Process Ongoing	Total	Percent
Samambaia - Serra da Mesa	Ecari	340	-	340	100
Serra da Mesa - Miracema	ETS	389	1	390	100
Miracema - Imperatriz	Ecari	481	63	544	88
Total		1,210	64	1,274	95

FIGURES

Figure 2-1
Location of the North-South Interconnection II Transmission Project

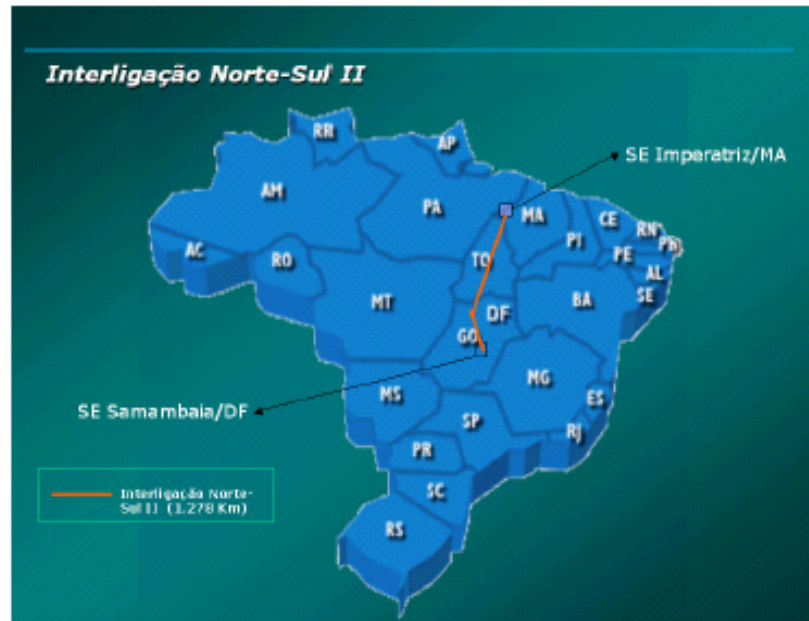


Figure 2-2
Location of the North-South Interconnection II Transmission Project Substations



ANNEX 1

SUMARIO DO

PLANO DE COMPENSAÇÃO E REASSENTAMENTO

1 - Apresentação

Para a implantação da Linha de Transmissão Norte – Sul II (2º Circuito) será necessário o reassentamento de famílias e a relocação¹⁰ de moradias e benfeitorias situadas em sua faixa de servidão. Apesar do pequeno número de famílias afetadas pelo reassentamento não requerer a elaboração de um plano formal de reassentamento conforme a regulamentação local, atendendo à Política de Reassentamento Involuntária do BID, foi elaborado e divulgado um Plano Preliminar de Compensação e Reassentamento (PPCR), juntamente com o EIA apresentado àquela instituição. O PPCR foi revisado e esta versão final foi implementada de acordo com os resultados finais da consulta pública e dos trabalhos de campo.

2 – Antecedentes Históricos

A elaboração do PPCR foi antecedida por um conjunto de eventos que auxiliaram na escolha da opção mais adequada para o tratamento das seguintes situações: (1) relocação de moradias e/ou benfeitorias dentro de uma mesma propriedade; (2) reassentamento das famílias cujas moradias estão localizadas na faixa de servidão; e (3) indenização aos proprietários a título de servidão de passagem. Dentre os eventos mencionados destacam-se:

A realização dos Estudos Sócio-econômicos integrantes do EIA/RIMA, quando foram obtidas as primeiras informações sobre as populações afetadas – de janeiro a março de 2001;

A realização de Fóruns Técnicos de Apresentação do Empreendimento, quando foram discutidas as alternativas mais condizentes com as demandas da população atingida e da sociedade em geral – junho de 2001;

A realização de Cadastro Fundiário – junho de 2001;

A realização de Cadastro Sócio-econômico – julho a setembro de 2002.

As primeiras informações decorrentes dos eventos acima mencionados possibilitaram a redefinição do traçado original da Linha de Transmissão Norte-Sul II, o que contribuiu para a redução significativa dos casos de reassentamento das famílias cujas moradias encontravam-se situadas na antiga faixa de servidão.

É importante destacar que, tendo em vista a especificidade do planejamento das obras de construção de uma Linha de Transmissão (divide-se o traçado em trechos, cujas obras são iniciadas em momentos distintos), a realização dos dois últimos

¹⁰ Relocação consiste em transferir, dentro de uma mesma propriedade, as edificações (moradias e ou benfeitorias) situadas na faixa de servidão; Reassentamento consiste em transferir para outra propriedade as famílias cujas moradias estão localizadas na faixa de servidão.

eventos acima mencionados tende a ocorrer também segundo as previsões do cronograma de obras.

3 - Objetivos Gerais

Visando reduzir os impactos da Linha de Transmissão Norte –Sul II sobre as populações rurais e urbanas que vivem em sua faixa de servidão, este Plano de Reassentamento tem como objetivo geral viabilizar o reassentamento de todas as famílias, cujas moradias estão localizadas na faixa de servidão da Linha de Transmissão, e a relocação dentro da mesma propriedade de todas as edificações situadas nesse espaço, atendendo às demandas e expectativas de proprietários e ocupantes e garantindo a todos condições de vida iguais ou melhores do que as disponíveis antes da instalação do empreendimento.

4 - Objetivos Específicos

Contemplar a diversidade de situações encontradas tendo em vista minimizar os impactos porventura previstos para ocorrer em consequência da instalação do empreendimento.

Tratar caso a caso as situações identificadas como sensíveis e, portanto, merecedoras de atenção e encaminhamentos especiais.

Discutir previamente com os grupos sociais atingidos os critérios e procedimentos a serem adotados de modo a negociar possíveis divergências e ajustar ações e medidas às demandas emergentes.

Identificar impactos e/ou transtornos emergentes dos processos de mudança e relocação, objetivando minimizá-los ou solucioná-los.

5 - Metas

Garantir que o processo de negociação e procedimento indenizatório ocorra afinado com as demandas da população atingida.

Realizar integralmente a relocação de edificações antes do início das obras.

Garantir que todas as indenizações a título de servidão de passagem estejam pagas antes do início das obras.

Garantir condições para que a mudança de todas as famílias atingidas seja realizada antes do início das obras.

6 - Área de Abrangência

O Plano de Reassentamento foi implementado nas áreas rurais e urbanas atravessadas pela Linha de Transmissão Norte – Sul II nos seguintes municípios:

Municípios do Estado de Goiás: Águas Lindas de Goiás, Colinas do Sul, Mimoso de Goiás, Minaçu, Niquelândia e Padre Bernardo. No Estado de Goiás foram

reassentadas 34 famílias¹¹; indenizados integralmente 84 proprietários¹²; indenizados a título de servidão de passagem 278 proprietários; indenizado e remanejado 01 estabelecimento escolar; e relocadas na mesma propriedade 02 benfeitorias.

Municípios do Estado do Maranhão: Campestre do Maranhão, Davinópolis, Imperatriz, João Lisboa, Governador Edison Lobão, Porto Franco, Ribamar Fiquene, e Senador La Rocque. No Estado do Maranhão não foi necessário reassentar famílias, nem relocar benfeitorias. No Estado do Maranhão, a LT Norte – Sul II atravessa 177 propriedades, cujos proprietários foram indenizados a título de servidão de passagem.

Municípios do Estado do Tocantins: Aguiarnópolis, Aliança do Tocantins, Araguaína, Barrolândia, Brasilândia do Tocantins, Cariri do Tocantins, Colinas do Tocantins, Crixás do Tocantins, Darcynópolis, Dueré, Fátima, Figueirópolis, Fortaleza do Tabocão, Guaraí, Gurupi, Jaú do Tocantins, Miranorte, Miracema do Tocantins, Nova Rosalândia, Nova Olinda, Oliveira de Fátima, Palmeirante, Palmeirópolis, Palmeiras do Tocantins, Paraíso do Tocantins, Peixe, Piraque, Presidente Kenedy, Pugmil, Rio dos Bois, Santa Rita do Tocantins, Sucupira, Talismã e Wanderlândia. No Estado do Tocantins não ocorreram casos de reassentamento, mas sim 14 casos de relocação de benfeitorias (dentro na mesma propriedade). Neste Estado a Linha de Transmissão Norte – Sul II atravessa 705 propriedades, cujos proprietários foram indenizados a título de servidão de passagem.

Regiões Administrativas do Distrito Federal: Ceilândia, Recanto das Emas e Samambaia. No território correspondente ao Distrito Federal não foi necessário reassentar famílias nem relocar benfeitorias, tendo sido indenizados 38 proprietários a título de servidão de passagem 38 proprietários.

QUADRO RESUMO - PROPRIEDADES E BENFEITORIAS

Tipo de Procedimento	Estado de Goiás	Estado do Tocantins	Estado do Maranhão	Regiões Administrativas do Distrito Federal
Indenização e reassentamento	34 famílias			
Indenização integral da propriedade	84 propriedades			
Indenização a título de servidão de passagem	278 propriedades	705 propriedades	177 propriedades	38 propriedades

¹¹ Estas famílias vivem na área atravessada pela LT no município de Águas Lindas de Goiás (GO).

¹² Este grupo se refere aos proprietários de lotes vazios no município de Águas Lindas de Goiás, aqueles que possuem outra propriedade para onde pretendem se mudar após receberem a indenização e aqueles que, após receber a indenização, pretendem retornar ao seu lugar de origem.

Indenização e relocação	01 unidade escolar			
Relocação de benfeitorias	02 benfeitorias	14 benfeitorias		

7 - Reassentamento e Monitoramento

Os únicos casos de reassentamento de famílias ocorreram na área urbana do município de Águas Lindas de Goiás, conforme mencionado anteriormente. Aqui a Linha de Transmissão Norte – Sul II atravessa 119 propriedades. O diagnóstico socio-econômico destas famílias e a caracterização geral das propriedades são apresentados em relatório anexo. A cidade de Águas Lindas de Goiás pode ser caracterizada como um espaço cujas formas de organização e dinâmica territorial estão estreitamente associadas ao processo de expansão da cidade de Brasília, tal como os espaços, inicialmente denominados de “satélites”, que hoje correspondem as Regiões Administrativas do Distrito Federal. A caracterização social e econômica das 34 famílias reassentadas indica que todos são proprietários das residências em que vivem, apesar de que, devido à situação fundiária mencionada acima, não existem títulos de propriedade na região.

Por essa razão, a Novatrans proporcionou assistência legal a todas as 34 famílias diretamente afetadas para a seleção de outra propriedade urbana no Município. Para a escola privada de pré-escolar e maternal, a Novatrans assistiu na seleção do terreno onde foi construída a nova instalação, conforme projeto selecionado pela proprietária da escola. O reassentamento foi concluído em dezembro de 2002.

De acordo com o monitoramento das famílias e atividade escolar reassentadas que vem sendo efetuado em conformidade com a política do BID de reassentamento involuntário, 80% dos afetados estão satisfeitos com a nova moradia, e 20% encontram alguns problemas relacionados com as novas moradias. Estes problemas estão sendo revisados pela Novatrans e deverão estar refletidos no resultado do próximo monitoramento semestral previsto para dezembro de 2003.

8 - Conclusão Preliminar

A Linha de Transmissão Norte – Sul II atravessa 1.317 propriedades. Foram parcialmente indenizados (somente pela servidão de passagem) 1.198 proprietários; reassentadas 34 famílias e um estabelecimento escolar privado; e indenizados integralmente 84 proprietários. Com exceção da área urbana do município de Águas Lindas de Goiás/GO, a totalidade do território atravessado pelo empreendimento possui uma ocupação populacional rarefeita, predominando as grandes e médias propriedades.

QUADRO RESUMO - Propriedades

Tipo de Procedimento	Estado de Goiás	Estado do Tocantins	Estado do Maranhão	Regiões Administrativas do Distrito Federal	TOTAL

Indenização e reassentamento	34				34
Indenização integral da propriedade	84				84
Indenização a título de servidão de passagem	278	705	177	38	1.198
Indenização e relocação	01 (unidade escolar)				01
TOTAL	397	705	177	38	1.317

QUADRO RESUMO – Distribuição das propriedades por municípios

Trecho	Estados	Municípios	Indenização e reassentamento	Indenização integral da propriedade	Indenização a título de servidão de passagem	Indenização e relocação	Total
SM- S	Regiões Adm. DF	Ceilândia			28		28
			Samambaia			10	
	Goiás	Colinas do Sul			15		15
		Niquelândia			61		61
		Água Fria			03		03
		Mimoso de Goiás			15		15
		Padre Bernardo			88		88
		Águas Lindas de Goiás	34	84	36	01	155
TOTAL			34	84	256	01	375
SM-G	Goiás	Minaçu			60		60
	Tocantins	Figueirópolis			28		28
		Palmeirópolis			37		37
		Jaú do Tocantins			53		53
		Cariri do Tocantins			03		03
		Gurupi			22		22
		Peixes			09		09
SUB TOTAL					212		212
G-M	Tocantins	Gurupi			20		20
		Aliança do Tocantins			26		26
		Crixás do Tocantins			06		06

		Santa Rita do Tocantins			13		13
		Fátima			22		22
		Rosalândia			11		11
		Pugmil			09		09
		Paraíso do Tocantins			28		28
		Miracema			50		50
SUB TOTAL					185		185
M-C	Tocantins	Miracema			30		30
		Rio dos Bois			16		16
		Fortaleza do Tabocão			08		08
		Pres. Kennedy			15		15
		Guaraí			15		15
		Brasilandia			04		04
		Colinas do Tocantins			50		50
SUB TOTAL					138		138
C – I	Tocantins	Nova Olinda			39		39
		Araguaína			47		47
		Wanderlândia			58		58
		Darcinópolis			19		19
		Palmeira do Tocantins			50		50
		Aguiarnópolis			17		17
	Maranhão	Porto Franco			60		60
		Campestre do Maranhão			14		14
		Ribamar Fiquene			21		21

		Gov. Edson Lobão			42		42
		Davinópolis			08		08
		João Lisboa			24		24
		Imperatriz			08		08
SUB TOTAL					407		407
TOTAL			34	84	1148	01	1317

Trecho SM-S = Serra da Mesa/ GO – Samambaia/DF ; Trecho SM-G = Serra da Mesa /GO – Gurupi/TO ; Trecho G-M = Gurupi/TO-Miracema/TO ; Trecho M- C = Miracema/TO – Colinas/TO
Trecho C - I Colinas/TO – Imperatriz/MA

9 - Princípios e Informações Básicas

A ações integrantes do PPCR foram concebidas a partir dos seguintes princípios básicos:

- **Tratamento Universal**

No PPCR todos os ocupantes e todos os proprietários que vivem nas áreas correspondente a faixa de servidão da Linha de Transmissão Norte-Sul II devem ser igualmente considerados elegíveis para a compensação.

- **Direito de Opção**

No PPCR todos os ocupante e todos os proprietários que vivem nas áreas correspondentes à faixa de servidão da Linha de Transmissão Norte-Sul II têm direito a optar por alternativas de tratamento que levem em conta a diversidade de suas formas de vida na família, no trabalho e na comunidade.

- **Direito de Negociação**

O reassentamento involuntário diz respeito a um determinado número de famílias que terão de promover uma reconstrução particular de seu quadro de vida, modificado, num dado momento, pelas exigências de construção de uma obra de interesse coletivo. Assim sendo, essas famílias têm o direito de participar e opinar sobre as soluções que lhe serão oferecidas, seja de maneira individual, seja de maneira coletiva. Nesse sentido, os tratamentos propostos pelo PPCR devem ser vistos como parâmetro inicial de negociação com as famílias afetadas. Isso implica a adoção de um planejamento negociado das relocações, onde as intenções e decisões do empreendedor sejam tornadas públicas de maneira clara e transparente e a legitimidade das aspirações da população seja democraticamente aceita, para que possa ocorrer um processo de construção de acordos socialmente justos e economicamente viáveis. Para que isso ocorra, o PPCR deverá se desenrolar em estreita articulação com o Programa de Comunicação Social que deverá estabelecer mecanismos de informação e comunicação que contribuam para esclarecer dúvidas e identificar soluções para possíveis transtornos que ocorram.

9.1 Público Alvo

Compõe os grupos de interesse, objeto das ações do PPCR: os proprietários residentes, os proprietários não residentes na propriedade, os moradores não-

proprietários, os proprietários de imóveis comerciais e ou de serviços. O quadro a seguir apresenta os referidos grupos de interesse segundo os trechos da Linha de Transmissão Norte – Sul II:

QUADRO RESUMO

Trecho \ Grupos de interesse	Proprietários residentes	Proprietários não residentes	Proprietários de imóveis de uso comercial e ou de serviços	Não proprietários	Total de Propriedades
Trecho Serra da Mesa/GO – Samambaia/DF (construção em andamento)	374	--	01	--	375
Trecho Serra da Mesa /GO – Grurupi/TO (construção em andamento)	179	33	---	---	212
Trecho Gurupi/TO- Miracema/TO (construção em andamento)	115	70	---	--	185
Trecho Miracema/TO – Colinas/TO (construção prevista para iniciar em dezembro de 2003)	109	29	---	---	138
Trecho Colinas/TO – Imperatriz/MA (construção prevista para iniciar em dezembro de 2003)	230	150	---	27	407
TOTAL	1.007	282	01	27	1.317

9.2 Critérios de Indenização

Indenização da servidão de passagem - a composição de um “valor” que corresponda a uma indenização compensatória. Esse valor deverá ser calculado a razão de 20% sobre o valor do hectare pesquisado para o município onde se situa o

imóvel, sendo que, em alguns casos, em função do grau do prejuízo que a Linha de Transmissão causará ao imóvel, a composição do valor total deverá agregar um valor compensatório. É importante destacar que os critérios para a definição do grau de prejuízo têm como pressupostos básicos os seguintes itens:

- o posicionamento da LT em relação ao imóvel como um todo;
- os remanescentes aproveitáveis e não aproveitáveis; e
- a destinação dada ao imóvel.

Reassentamento - se refere aos casos onde a moradia localizada na faixa de servidão deverá ser destruída e a família transferida para outro domicílio. Esta situação é típica das áreas urbanas e de periferia urbana. Aqui se destacam duas situações distintas: (1) Quando a família afetada é proprietária legítima de sua casa. Neste caso a indenização deverá ser composta de um “valor” que contemple as perdas não mensuráveis a partir da agregação ao custo material - segundo o padrão do patrimônio impactado - do custo da recomposição do “modo de vida” desestruturado. Este valor agregado estaria considerando simultaneamente as atuais condições de vida disponíveis, ao qual deverão ser adicionados alguns benefícios compensatórios, de modo a melhorar o padrão de vida das unidades familiares atingidas. Este procedimento permitirá que se chegue a um valor “justo”, não só do ponto de vista das perdas quantificáveis e das medidas compensatórias, mas principalmente atenderá às expectativas identificadas no que tange as perdas “qualificáveis”; ou seja, aquelas nas quais predominam as expressões subjetivas provocadas pelo processo de mudança. Além disso, caberá ao empreendedor a realização da mudança de todas as famílias. Nesses termos deverá ser realizada uma avaliação das edificações considerando seu custo de reposição, tomando-se por base os valores do metro quadrado pesquisado para o município. O pagamento da indenização, independentemente da situação de quitação do imóvel (prestações vencidas, prestações em atraso, inadimplência e/ou quitados), ocorrerá da seguinte forma: 50% à vista e os 50% restantes quando da efetiva desocupação da casa e/ou da apresentação do recibo de quitação de suas prestações, se for o caso, perante o empreendedor. Simultaneamente a este procedimento, a família atingida será orientada a adquirir nova propriedade, indicando-se, para tal, um corretor de imóveis da região para catalogar os imóveis disponíveis. Complementando, será oferecida às famílias toda a condição para a realização de sua mudança e disponibilizado para retirada todo o material de construção aproveitável da antiga moradia. (2) Quando a família afetada não tem propriedade legal sobre o imóvel. Neste caso será elegível para uma das opções de reassentamento urbano, reassentamento rural, ou carta de crédito. Da mesma forma, os demais critérios utilizados para indenização técnica e legal, assistência para mudança e recomposição da base familiar.

Indenização de Lotes vazios (sem edificações) - para os lotes, independentemente de sua situação de quitação (prestações vencidas, prestações em atraso, inadimplência e/ou quitados), será realizada uma avaliação da terra nua, segundo sua localização em relação ao loteamento / bairro, e este em relação ao município. Neste caso, irá se proceder da mesma forma que na situação anterior, 50% do pagamento será realizado à vista e os outros 50% quando da apresentação do recibo de quitação de suas prestações perante o empreendedor e/ou quando da finalização dos trâmites legais.

Indenização de Lotes com edificações em fase de construção - estas situações serão tratadas tal como a anterior, sendo que o proprietário será também indenizado pelo estágio atual da obra, podendo ser orientado no sentido da aquisição de novo lote ou propriedade a partir da indicação de um corretor de imóveis da região para catalogar aqueles disponíveis. O processo indenizatório ocorrerá tal como sugerido anteriormente.

Indenização Estabelecimentos Comerciais - com relação às atividades comerciais presentes na área a ser atingida, além dos procedimentos aqui sugeridos para os demais grupos, destaca-se a necessidade de utilização, conforme previsto por lei, do fundo de comércio¹³ - cerca de 25% - como valor adicionado à indenização.

Resumidamente, os critérios acima descritos podem ser identificados nos seguintes termos:

Indenização em dinheiro aos proprietários legítimos (legais) das culturas temporárias e/ou permanentes e das demais benfeitorias atingidas pelo empreendimento. Esta indenização deverá representar o justo valor de sua recomposição, acrescida dos lucros cessantes nos casos em que se aplique.

Indenização em dinheiro pelos custos relativos à transferência/relocação, na mesma propriedade, das benfeitorias atingidas, no caso de proprietários legítimos, posseiros e outras formas de propriedade não legalizada. A relocação será de responsabilidade do empreendedor – construção de nova moradia e mudança de bens e pertences.

Indenização em dinheiro pelos custos relativos à transferência/relocação das instituições atingidas (escolas, por exemplo), desde que esta seja a opção dos atingidos, que poderão escolher construir diretamente outro estabelecimento, ou alternativamente responsabilizar o empreendedor pela construção e realização da mudança.

Indenização com interveniência do Empreendedor, para aquisição de imóvel semelhante ao atingido, quando assim solicitado.

Transporte de móveis, utensílios e materiais provenientes da demolição da benfeitoria atingida, para o novo local/residência, no próprio município ou para área situada até 80 km de distância.

9.3 Responsável pela Implementação

A realização do PPCR é de total responsabilidade da Novatrans, empresa detentora da licença de instalação da Linha de Transmissão Norte-Sul II.

¹³ - Como fundo de comércio entende-se a universalidade de bens corpóreos e incorpóreos unidos para atender a finalidade social do proprietário (empresário)

9.4 Etapa de Monitoramento

Esta fase do PPCR é dedicada ao acompanhamento das famílias objeto do reassentamento. Este acompanhamento foi planejado para janeiro, abril e outubro de 2003 e março de 2004. Nestas ocasiões são realizados contatos com as famílias reassentadas e avaliadas, através de entrevistas abertas pré-roteirizadas, suas condições de vida no que tange ao risco de perdas e ou de empobrecimento em decorrência da mudança realizada.

10 - Cronograma de Atividades

Todas as ações integrantes do PPCR estão programadas para iniciarem-se no período que antecede às intervenções de engenharia em cada trecho, de modo a que todas as pendências estejam solucionadas quando do início das obras.