



Environmental and Social
Due Diligence Report
for the
CMPC Guaíba 2 Project

Prepared for:
**Inversiones CMPC S.A.,
Banco Santander S.A., and
Nordea Bank Finland Plc**

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Acronyms and Abbreviations

APP	Permanent Preservation Area
AOI	Area of Influence
ASME	American Society of Mechanical Engineers
BLRBAC	Black Liquor Recovery Boiler Advisory Committee
CERFLOR	Brazilian National Forest Certification Program
CMPC	Inversiones CMPC S.A.
CMPC-CRG	CMPC Celulose Riograndense
CONAMA	<i>Ministério do Meio Ambiente</i> (Ministry of the Environment)
DAI	Direct Area of Influence
EHS	Environmental, Health, and Safety
EMP	Environmental Management Plan
EP	Equator Principles
EPC	Engineering, Procurement and Construction
EPFI	Equator Principle Financial Institution
ESAP	Environmental and Social Action Plan
ESDD	Environmental and Social Due Diligence
ESHS	Environmental, Social, Health, and Safety
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
FEPAM	<i>Fundação Estadual de Proteção Ambiental Henrique Luiz Roessler</i> (State Foundation of Environmental Protection)
FUNAI	<i>Fundação Nacional do Índio</i> (National Indian Foundation)
FSC	Forest Stewardship Council
GHG	Greenhouse gas
H&S	Health and Safety
HSE	Health, Safety, and Environment
IESC	Independent Environmental and Social Consultant
IFC	International Finance Corporation
IAI	Indirect Area of Influence
ILO	International Labour Organization
IP	Indigenous Peoples
IPHAN	<i>Instituto do Patrimônio Histórico e Artístico Nacional</i> (National Institute of Historic and Artistic Heritage)

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IUCN	International Union for the Conservation of Nature
Km	Kilometers
MW	Megawatts
OECD	Organization for Economic Co-operation and Development
NBR	<i>Norma Brasileira Regulamentadora</i> (Brazilian Regulatory Norm approved by ABNT)
NRs	<i>Normas Regulamentadoras</i> (Brazilian Health & Safety norms and regulations approved by the Ministry of Work and Employment)
PASA	<i>Plano de Ação Social e Ambiental 2011</i> (Social and Environmental Action Plan)
PBA	<i>Projeto Básico Ambiental</i> (Action Plan)
PEFC	Programme for the Endorsement of Forest Certification
PLACOM	<i>Plano de Comunicação 2010</i> (Strategic Communication Plan)
PLASUS	<i>Plano de Sustentabilidade 2012</i> (The Operational Sustainability Plan)
PPE	Personal Protection Equipment
PPP	Public Participation Program
PPRA	<i>Plano de Prevenção de Riscos Ambientais</i> (Risk Prevention Plan)
PS	Performance Standards
RIMA	<i>Relatório de Impacto Ambiental</i> (Non-technical summary of the EIA)
ROW	Right of way
RS	Rio Grande do Sul
SIS	<i>Pesquisa de Avaliação de Imagem da Aracruz e Impactos do Plano de Expansão da Produção 2007</i> (3-part Social Impact Study)
WBG	World Bank Group
YTD	Year-to-date

1 Executive Summary

ENVIRON UK (ENVIRON) is engaged as the Independent Environmental and Social Consultant (the IESC) on behalf of prospective lenders (including Banco Santander Chile and Nordea Bank Finland Plc (the Advisors) and export credit agencies, together “the Lenders”) who are considering providing financing to CMPC for a mill expansion project involving the construction of a new pulp line and related facilities at an existing mill in Guaíba, Rio Grande do Sul, Brazil (the CMPC Guaíba 2 Project or the Project).

1.1 Scope of Review

This Environmental and Social Due Diligence (ESDD) Report provides an overview of ENVIRON's understanding of the Project, based on a site visit and the Project information made available to ENVIRON as of October 31, 2012, and also includes a review of information submitted by CMPC in response to the Gap Analysis developed by ENVIRON in October 2012. It should be noted that a number of material Project documents requested as part of the Gap Analysis have not yet been received by ENVIRON (refer to Appendix C). It is therefore quite possible that some of the information gaps and/or findings identified in the Gap Analysis may have been adequately addressed by CMPC, but in the absence of additional documentary evidence these items remain open and have been included in this ESDD Report as such.

This ESDD Report presents ENVIRON's assessment of the Project's compliance with the Applicable Standards, the key gaps, an environmental and social action plan (ESAP), and our conclusions and recommendations for going forward. The ESAP is in tabular format and the issues are organized by those that are applicable to: the entire project (general issues); Line 1 (in operation); and each of the new Project components.

An effort has been made throughout this report to summarize key EHS good management practices identified in relation to Line 2, the extension of Line 1 and plantations. The ESAP constitutes a summary of the recommended actions, whereas a full description is presented in the body of this report on the nature of the findings, distinguishing between:

- Those aspects that could not be verified based on the available information; and
- Those areas in which a non-compliance with International Standards or Brazilian National Regulations was observed.

1.2 Status of the Project

We understand that CMPC's Board approved the Project on December 6, 2012. Certain actions including the final design for the Project and the selection of contractors and sub-contractors were put on hold until the Project's receipt of Board approval. CMPC has selected 3 of the contractors for the Project, which suggests that CMPC has decided on the Project's final design but this has not yet been confirmed. Furthermore, while we initially were under the impression that there would be one EPC contractor, we have since been informed that there will be around 14 EPC contractors (for the various project components) and multiple other sub-contractors and suppliers. As the main contractors have not yet been selected, ENVIRON has not been able as part of its ESDD to review their contracts, and labor and EHS policies and procedures, and

provide an assessment of their individual capacities to construct the Project in compliance with the Applicable Standards.

On 30 April 2013, ENVIRON was informed that the following EPC contractors had been contracted at the beginning of April.

- METSO: Fiber Line, Evaporation, Recovery and Causticizing, NCG and DCS
- DEMUTH :Wood Handling
- VEOLIA: Waste Water Treatment and Water Treatment
- Chemical Plant EPC is still under negotiation.

No additional information was provided on the EPC contractors for other project components.

In order to provide CMPC and the Advisors with an interim assessment of the Project and also to prioritize the actions required to bring the Project into compliance with the Applicable Standards, ENVIRON prepared in October 2012 a detailed gap analysis of the Project against most of the Applicable Standards (in tabular format), which identified the key gaps and included our recommendations to close the gaps. After our submission of the Gap Analysis, CMPC-CRG provided ENVIRON with additional information which closed some of the gaps, but other gaps remain. The outstanding gaps and ENVIRON's recommendations to close these gaps are included in the ESAP included in this ESDD report.

1.3 Project Categorization and Rationale

Because the Project will likely have "significant adverse social and/or environmental impacts that are diverse, irreversible, or unprecedented" (IFC Guidance Note 1, 2012), the Project has been given an "A" categorization under the IFC's Policy on Environmental and Social Sustainability, the OECD Common Approaches and the Equator Principles (EPs). Key potential environmental and social impacts are detailed in section 6.

1.4 Status of Requested Project Documentation

We note that although a substantial amount of information has been received from CMPC-CRG, a large amount of the documentation ENVIRON would expect to review, which is customary for an ESDD review, has not yet been received (refer to Appendix C).

ENVIRON is in receipt of copies of the EIAs and RIMAs for the pulp mill, port expansion and the four hydrographic basins where the plantations are located (a total of 6 EIAs and 5 RIMAs (no RIMA was presented for the port expansion)) and all additional documentation listed in Appendix B. We have reviewed these materials to the level possible, considering the extreme volume of documentation provided, and the scope and adequacy of these documents. The EIAs and RIMAs were all developed in 2007 and contained socioeconomic baseline data primarily from 2000 - 2005, but in some cases dating back to 1995. As a result, most of this data was not useful for development of the ESDD Report. For potential social risks and impacts, ENVIRON relied more on information obtained and observations made during the site visit at the mill, in the communities in the vicinity of the mill and in the communities near the plantations we visited. Based on the Project documentation reviewed, along with information

obtained and visual observations made during the site visit, ENVIRON has identified the relevant risks and impacts and has determined whether appropriate mitigation measures and monitoring plans are in place for the Project.

ENVIRON has requested but not yet received detailed information on the infrastructure projects – transmission lines, roads and port expansion, which are all integral components of the Project. Some of ENVIRON's concerns relate to the Project's potential impacts on neighbouring populations (i.e., community health and safety), both for the communities surrounding the mill site and the communities in the four plantation areas.

1.5 Project Limitations

- The Project is comprised of multiple components at different stages of development; the mill and plantations have been in operation for a number of years and a complete review of all the operating procedures in place and a full assessment of the degree of implementation of recommendations from the EIAs could not be conducted based on the available information, and considering time and budget limitations.
- Six EIAs and five RIMAs (for the mill expansion, port expansion plus four plantation areas), an Environmental Impact Diagnosis, a Social Impact Study, Preliminary Report on the Development Plan for the Socio-environmental Communications Unit at Guaíba (all developed in 2007 by Aracruz) and multiple-related plans, programs and other documents were received by ENVIRON (more than 840 individual documents, sections of EIAs and other information), and no Executive Summary was provided to summarize the extensive documentation.
- Despite the submission of the large body of documentation noted above, key documents needed to conduct the ESDD review were either outdated (i.e. environmental and socioeconomic baseline data) and/or missing (i.e. EIAs for the transmission line and electrical road).
- In the original terms of reference (TOR) no information was provided on the number and location of plantations. The number of plantations has since been identified as 500, and this doesn't include the plantations acquired through CMPC's recent acquisition of the Losango Project from Fibria. It is not possible within our scope of work to analyze the potential environmental and social impacts to each plantation.
- In the TOR no information was provided on the number and location of potentially affected communities. The Social Direct Area of Influence is well defined in the EIA covering the mill expansion, but the Social Direct Areas of Influence in the four EIAs covering the plantation areas are too broad. At ENVIRON's request, CMPC-CRG has provided more than 20 maps of the plantation areas with municipalities identified but not local communities (refer to Appendix D). Based on the information received, it is not possible to determine the full extent of potential impacts to local communities (i.e. traffic and pesticide risks).

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- In the TOR no information was provided on the current extent of CMPC's engagement with potentially affected communities. Based on information received to date, no formal public consultation meetings have taken place in Guaíba or South Porto Alegre since 2007. During the ENVIRON site visit we were able to conduct a few informal consultations with stakeholders (a local business owner, an NGO and two brothers who are partners with CMPC-CRG in a parceria), but no formal consultations took place so we are not yet able to fully assess community support for the Project.
- The TOR included the task of reviewing existing bid documents for contractors and sub-contractors, focusing on the content of the code of conduct as well as lodging arrangements and provision of necessary services for the temporary workers. However, only three of the contractors and sub-contractors have been selected so ENVIRON cannot comment on the overall capacity of CMPC's contractors to construct the Project in accordance with the Applicable Standards.

2 Project Description

CMPC plans to build a new bleached kraft pulp line in the existing CMPC-CRG mill located in Guaíba, Rio Grande do Sul – Brazil . Raw material for the mill will be eucalyptus wood from plantations established by CMPC-CRG in several municipalities within Rio Grande do Sul.

The Guaíba 2 Project mill site is located within the fence of the existing pulp and paper mill, in a developed area and surrounded by residential and commercial properties on three sides; Guaíba Lagoon is to the east of the mill site. There is existing infrastructure, including road networks and utilities, but a new transmission line and access road are planned. Based on information ENVIRON has received to date, CMPC is targeting that 75% of workers for the construction phase will be local workers (from the same region as the Project), and 25% will be external (from other regions in Brazil). There will not be a need for any physical or economic displacement in the communities surrounding the mill and in the plantation areas.

Figure 2.1. Aerial view of the Guaíba 2 mill site indicating current extent of the existing line 1 (in green) and the mill boundary after the expansion (in yellow).



Figure 2.2. Mill expansion project (based on the 2007 RIMA)



The Project has the following components and associated facilities:

- Extension of the existing Line 1 and Installation of a new Line 2
- Port Expansion
- Rio Grande Port terminal
- New transmission lines
- New roads
- Plantations
- Plantation nursery

Each of these components is described in turn below.

2.1 Line 2 and Extension of Line 1

The Guaíba 2 Project, aimed at increasing the pulp production capacity at the Guaíba Mill, includes the expansion of the existing production line (Line 1) and the installation of a new line (Line 2). The total production capacity of 1 800 000 ADt/a will be divided between Line 1 and Line 2 as follows:

- Line 1: 500 000 ADt/a
- Line 2: 1 300 000 ADt/a

2.1.1 Line 1

Currently, the potential productive capacity of the Line 1 is 450 000 ADt/a. To reach the capacity of 500 000 ADt/a it will be necessary to make changes to the line fiber and to the drying process. The existing chipping lines present in Line 1 will be disabled, and this demand will be supplied by new lines to be installed in Line 2. Modifications of the fiber line include upgrade of the cooking plant, improving the washing process of the brown pulp and the renovation of the pulp bleaching plant.

The existing chlorine – caustic soda plant will be renovated to operate at maximum capacity, minimizing the need to purchase sodium hydroxide. The chlorine generated at this plant will be used in both lines and the unused chlorine generated will be sold.

A cooling tower is planned to be used in order to eliminate the use of mechanical water in open circuit, and the existing water treatment plant from the boilers will be disabled.

2.1.2 Line 2

The wood chipping line will be dimensioned to meet the total capacity of the factory. The fiber and drying processes of Line 2 will be fully independent of Line 1. CMPC does not plan to install a new chlorine-caustic soda plant for Line 2; as noted above the existing plant will be renovated to work at maximum capacity, and the additional sodium hydroxide necessary for Line 2 will be bought.

The chlorine dioxide plant will be integrated, and will comprise a new sodium chlorate plant and a hydrochloric acid synthesis unit. As in the current situation, the other chemicals used in the factory such as oxygen, sulfuric acid, sulfur dioxide and sulfur, will be acquired on the market.

The recovery boiler with auxiliary equipment will be designed and constructed according to the ASME Code and in accordance with the Brazilian NR-13 (Boilers and Pressure Vessels) requirements. The design, construction and commissioning must be in compliance with the relevant local directives as well as with the recommendations given by the Black Liquor Recovery Boiler Advisory Committee (BLRBAC).

After the implementation of Line 2, the mill should be self-sufficient in terms of electric energy. The steam and power balance indicates that the steam generated in the boiler recovery, together with the carbon generated in the boiler, are enough to meet the demands of steam and power at the plant.

In order to meet the additional demand for water and to treat a greater volume of effluents, the existing water treatment and wastewater treatment plants will be renovated. Water treatment for boilers (ETAC) will be reverse osmosis type and will be able to meet the demand from both Line 1 and Line 2.

2.2 Port Expansion

As part of the project, the port will be extended to increase the pier capacity (extension of the existing northern berth and addition of a new southern berth). Dredging operations will reportedly comprise the removal of 190,329 m³ of sediments to increase the width of the channel in the vicinity of the port in order to allow the maneuvering of barges at the pier. CMPC plans to use a portion of the dredged sediments for land reclamation during the extension of the

pier, whereas the redundant material will be disposed of by the company responsible for the execution of the dredging.

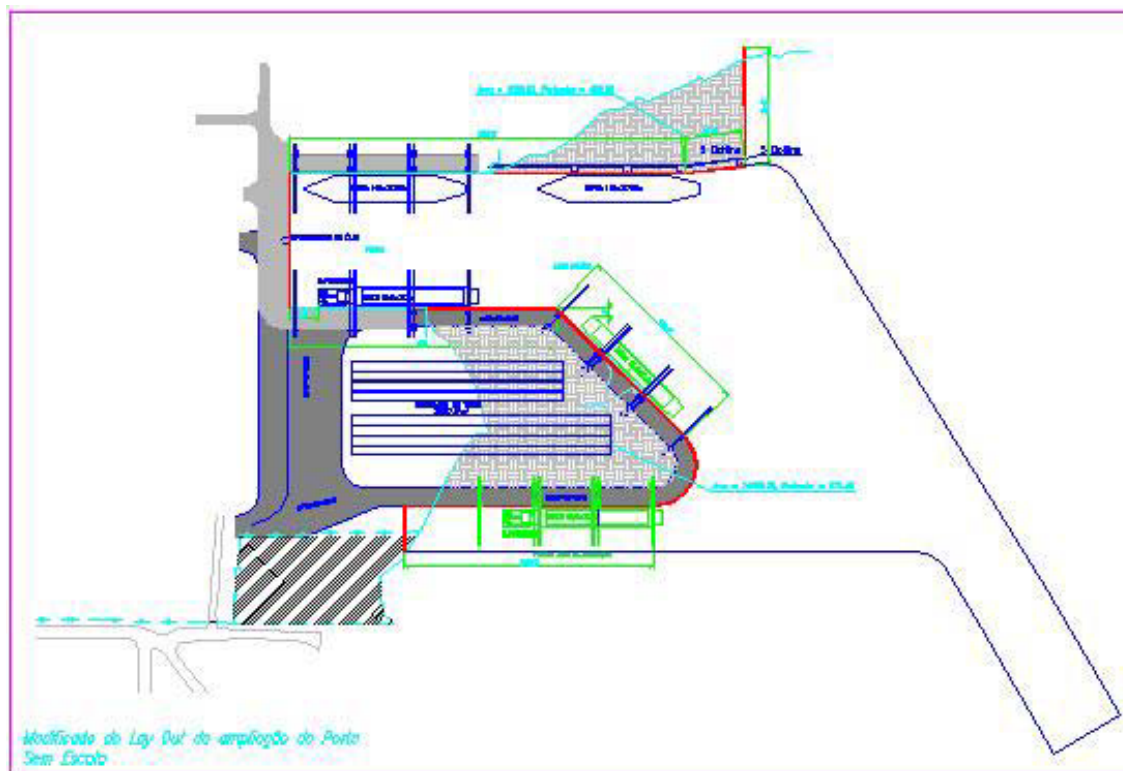
Pulp bales, final product from CMPC activities, are loaded into cargo boxes through a bridge crane to a pier located within the mill site. Then, the bales are shipped by barges through the Leitão channel at the Guaíba Lake to CMPC's terminal at the Rio Grande Port (a publicly owned port), from where they are internationally distributed. The CMPC terminal (the Rio Grande Port Terminal) is located on port property but is managed and operated by CMPC under its responsibility. Similar procedures are expected with the increased production, although it should be noted that CMPC is considering various options to increase the capacity of the Rio Grande Port Terminal (see below). Currently, a barge arrives at the Guaíba terminal every 3 or 4 days, however the number of vessel movements is expected to increase significantly with the operation of the new production line.

Loading and unloading of barges and internal logistics of the pulp storage warehouses at the CMPC private port as well as the Rio Grande Port Terminal are conducted by a contractor (Sagres), whereas transportation of the pulp in barges to the Rio Grande Port Terminal is conducted by a different contractor (Navegação Guarita). As part of the pier extension, barge fuelling operations will be conducted at the CMPC private port, with the installation of two aboveground fuel storage tanks. Waste and effluent management will continue to be conducted at the Rio Grande Port Terminal.

Figure 2.2.1. View of the current port at the Guaiba mill.



Figure 2.2.2. Schematic layout of the port expansion project (based on the 2007 EIA).



2.3 Rio Grande Port Terminal

As noted above, pulp bales are transported in barges to the Rio Grande Port Terminal, from where they are internationally distributed.

As part of the Guaíba 2 Project, CMPC is considering the following options in relation to the Rio Grande Port Terminal:

- i. expansion of the current terminal; or
- ii. construction of a new terminal on CMPC's land at São Jose do Norte

Both options were discussed during ENVIRON's meeting with CMPC's logistics manager and additional information including a map of the Rio Grande Port Terminal was requested. However, at the time of preparation of this report ENVIRON had not received additional information on the port project.

2.4 New Transmission Lines

The 230 kV capacity transmission line consists of a 6,800 meter line comprising 23 freestanding metallic towers, which will be located within a 30 meter easement. The line will begin at the Guaíba-2 Substation, owned by the public energy supplier (CEEE) and will go to the substation located on the CMPC mill property.

The implementation of the new transmission line aims to increase and ensure the supply of electricity demand for the maintenance and operation of the CMPC mill expansion and to allow for the eventual export of electric energy to the grid. Although, detailed information on the

amount of electricity that will be exported to the grid, if any, was not available for review during this assessment. During the site visit, ENVIRON was informed that the export of a maximum of 30 Mwh from Line 2 to the grid was being considered given the existence of economic incentives in Brazil.

The route choice was made to cause the least possible impact on the environment and to not interfere with agricultural and cattle raising activities, avoiding permanent protected areas and water bodies in the transmission line path.

CMPC will be responsible for constructing and operating the T-Line. Although, ENVIRON understands that the T-Line EIA has not yet been developed and the EPC contractor has not yet been engaged. CEEE decided that they didn't want to operate the T-Line when they learned that it will only provide electricity to CMPC, so it will now be necessary for CMPC to engage an operator to operate the T-Line as well.

Figure 2.4.1. T-Line alignment – western portion – connection to the Guaíba-2 Substation.



Figure 2.4.2. T-Line alignment – eastern portion – connection to the CMPC substation.



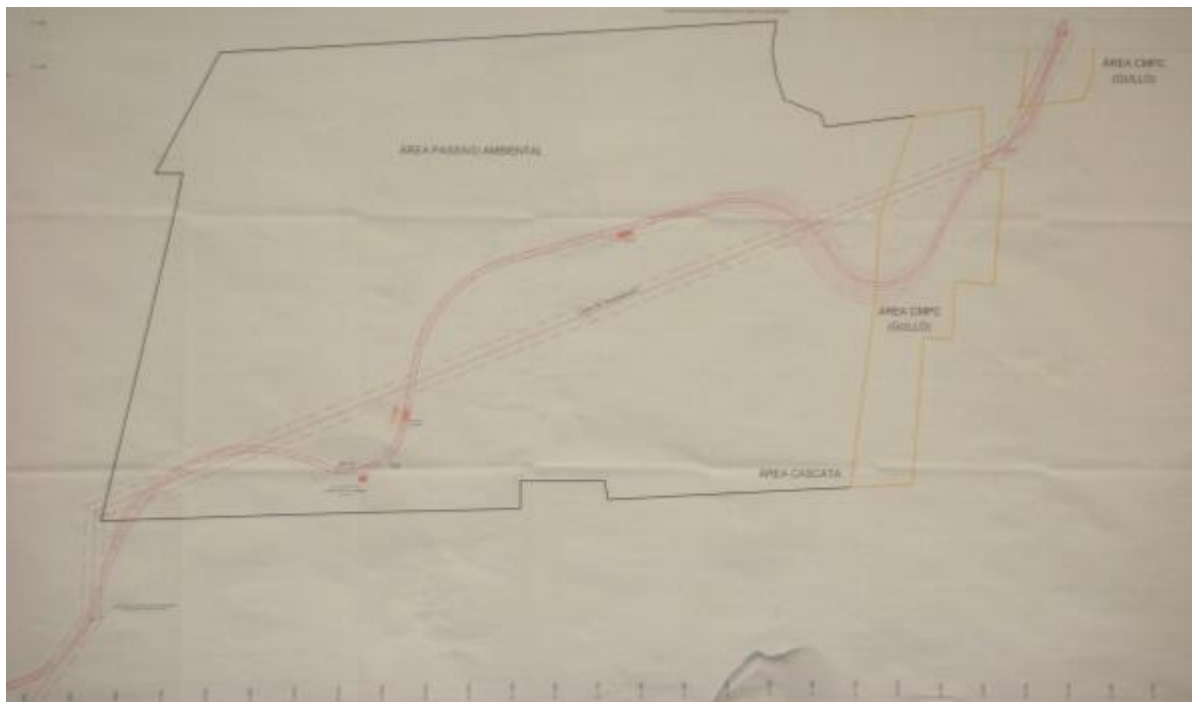
2.5 New Roads

Roads and access routes used by the company to perform plantation management operations include federal highways, state, municipal and owned roads. The road that crosses CMPC's land (the Horto Guaíba), is CMPC's responsibility in terms of construction and maintenance/operation. All other roads, installed in external areas will be built by CMPC but will operate under public management and maintenance. The owned roads are mapped as one type of land use at CMPC. The layout of roads and firebreaks in CMPC areas is done according to a schedule of use, drainage conditions and sizing standards in place. The objectives of the planning and control of these operations is to allow efficient movement of machinery and vehicles and to prevent soil erosion and impacts on watercourses.

With the increased production, the volume of timber trucks on public roads will increase as well, and a project for the improvement of the access to Guaíba is already being conducted by the road administrator. The project comprises installation of an asphalt pavement on a 10 km road that connects Guaíba to the BR-290, reducing the traffic at the BR-116, which is already congested. This project will benefit CMPC as the traffic from the plantations to the mill follows this route. It will also benefit other road users who will have an upgraded and safer road to travel.

Another road will connect BR 290 with the mill property. This road, originally called "the electrical road" received this name because it will follow the right of way of an existing power transmission line that supplies the site. The road will cross a eucalyptus plantation belonging to CMPC but at the time of the preparation of this report there was no information on the exact road alignment.

Figure 2.5.1. Electrical Road alignment option presented during the site visit.



2.6 Plantations

CMPC currently owns and operates over 300 eucalyptus plantations distributed across 4 hydrological basins within the State of Rio Grande do Sul:

- Baixo Jacuí;
- Camaquã;
- Vacacaí; and
- Santa Maria

Based on the latest information provided during the site visit, the eucalyptus plantations are intercalated with natural forest areas occupying a total of 216,000 hectares, of which over 130,00 are plantations and 79,000 hectares are legal reserve areas and permanent protection areas (APP). In order to meet timber demands for the increased production at the Guaíba 2 Project, the capacity of the plantation areas will need to be expanded by 50,440 hectares. This expansion is planned considering issues such as availability of land for partnership with other land owners, distance, modes of transport and environmental issues in the areas of interest.

In addition to the plantations owned by CMPC, a partnership program is in place, where CMPC makes an agreement with local property owners, providing technical assistance, material and personnel to conduct the plantation, maintenance and harvesting. Under the agreement, property owners have to sell the first harvesting to CMPC. Partnership programmes are as follows:

- Parceria – CMPC is responsible for establishing the plantations and their operations (planting, monitoring and conducting the harvest) and they are operated by CMPC

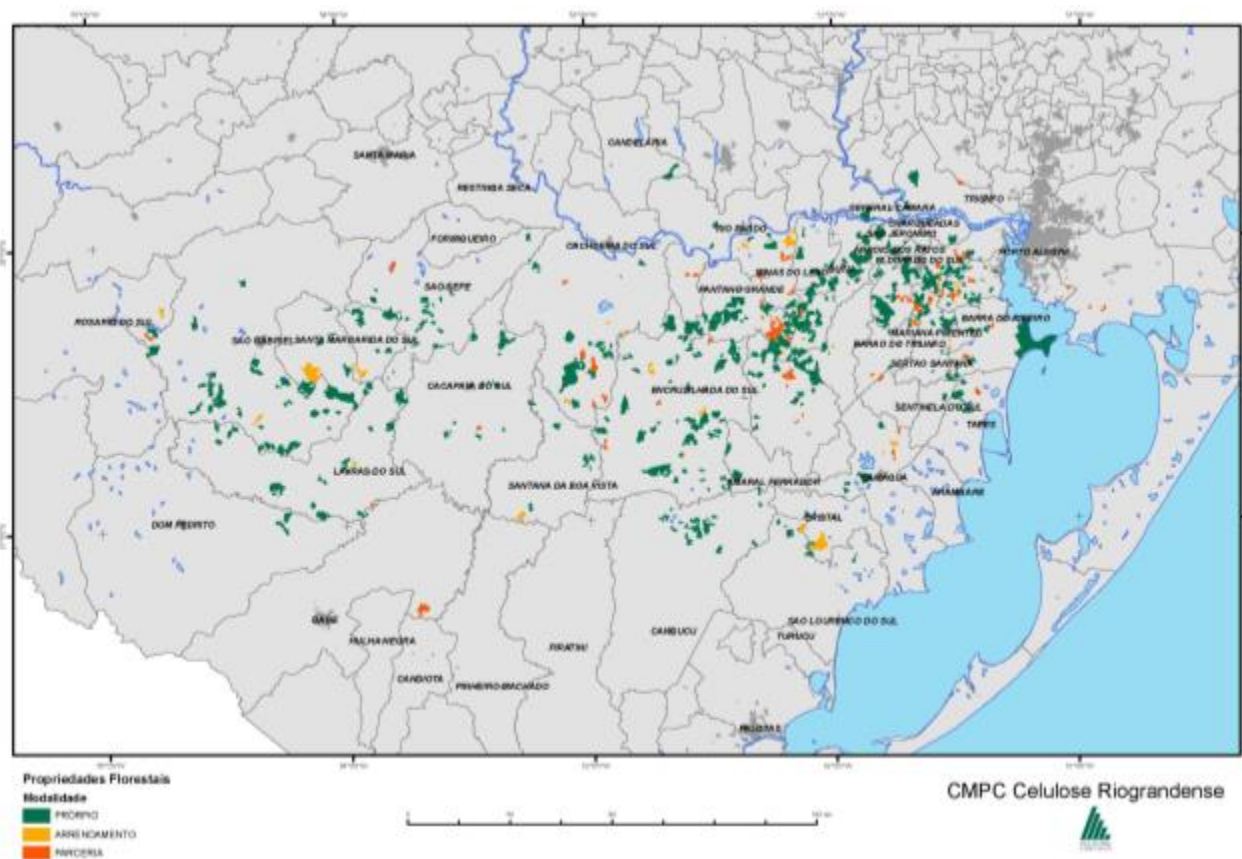
through subcontractors. Control of subcontractors is conducted through analysts. CMPC currently employs approximately 50 people for the management of forestry operations, including forestry analysts, harvesting analysts and transportation analysts. Analysts conduct periodic environmental and operational inspections.

- Fomento – CMPC is responsible for harvesting operations but the plantation is operated by a third party (e.g. small farm owners under the Fomento Forestal program).

Of the over 216,000 hectares of total plantation areas referred above, 188,000 hectares are owned by CMPC; the remaining 28,000 hectares are operated by third parties under the Parceria or Fomento regimes.

A map showing the location of the existing plantations (owned, Parceria and Fomento) is presented below.

Figure 2.6.1. Location of the plantation areas.



Currently, the Forest Management procedures adopted by CMPC are controlled by a management tool called Forest Management Plan, which discriminates between technical and operational procedures and considers the economic, social and environmental aspects and impacts of the business. This plan is periodically reviewed in order to absorb the results of the production monitoring or new technologies and scientific information. In addition, a program

called Forest Information System is available, where all the data from the growth and dynamics of the plantations are registered.

To identify and delineate the areas for plantation, a Land Use Planning Procedure has been implemented, which integrates environmental, operational and legal requirements.

Environmental aspects focus on the minimization of erosion, use of existing infrastructures, analysis of the distribution of native vegetation, potential for interconnection of vegetation fragments and recovery of degraded areas; the assessment of environmental conditions in the plantations is based on a desktop review of available information (i.e. aerial photographs) and supported by field data in order to determine the final soil use and vegetation maps. Protected areas are defined for each plantation, namely Permanent Protected Areas (along any water bodies that may be present) and/or Legal Reserve Areas (natural vegetation) and in areas where the PPAs are degraded, a program is in place for the restoration of native vegetation in allowing the recovery of ecological processes and promoting biodiversity.

The formation of a new plantation forest is achieved according to the activities described below:

- **Insects Control:** The control of ants is performed before soil preparation to new plantations or replantation and in cases where damages caused by ants are detected. The control is conducted by third parties, using a low toxicity, biodegradable product, approved by the Environmental Agency. According to the Pesticides Control Annual report, 2011, due to a continuous improvement of planning and control of pesticides use at the forest operations, such as the limitation of applications only to the plantation row, proper worker training and use of species more resistant to pests, the pesticide use decreased by 30% between the years 2010 and 2011
- **Herbicide application:** Seven days prior to plantation, herbicides are applied to prevent competing species to grow. During the three first months of the plantation, herbicides are occasionally used, after evaluation, and are applied only at the planting row, using backpack sprayers at the replanting areas and by tractors at the new planting areas.
- **Soil Preparation:** A study is conducted in order to identify the type of soil and topography to define which type of operations and machinery will need to be used to prevent soil erosion and to define the depth and width of the planting rows.
- **Fertilizer Application:** During the soil preparation for planting, an evaluation is conducted to define the kind of equipment to be used, according to the soil characteristics. This operation could be mechanized or manual. About 10 days after planting, a NPK fertilizer is applied, distant 10 to 15 cm of the seedling, in order to provide nutrients in the initial phase of plant life. The dosage varies according to the type of soil. Between 90 and 120 days after planting, another fertilization is carried out, using ammonium sulfate, potassium chloride and even ashes from the boiler of the mill. Subsequent fertilizer applications are conducted between 8 to 12 months from planting.
- **Planting and Irrigation:** The planting of eucalyptus seedlings is performed manually. The plantation rows are spaced in 3 meters and the plants are spaced in 3 meters within the row, ensuring an area of 9 m²/plant. Irrigation on eucalyptus culture occurs only in the first year. Reportedly, irrigation water is abstracted from local reservoirs existing within each farm. After the first year, the plantation relies on natural weather conditions.
- **Replanting:** This operation will be performed within 30 days after planting, only in plots that are experiencing failure rates over or equal to 2%.

- **Harvesting:** Harvesting is subject to previous planning; CMPC employs a mosaic system at the plantations, which avoids the harvesting of the entire property. 100% of the operations are mechanized, using wheeled or caterpillar harvesters. Upon being cut down, the logs are debarked, cut into pre-determined sized fragments by the harvester, and subsequently transported and stacked in piles along the trails by timber forwarders. Timber is transported to trucks with timber forwarders or tractors with trailer. After harvesting, the soil is covered with bark, branches and leaves generated during debarking operations which are allowed to degrade naturally, protecting the soil from compaction from harvesting machinery and erosion, whilst adding organic matter and nutrients to the soil.

ENVIRON understood from discussions during the site visit that CMPC did not require additional eucalyptus plantation areas for the Guaíba 2 projects, and that future needs of the mill would be covered by expanding planted areas in some of the plantations already acquired/managed by third parties which were not operated to their maximum capability.

However, after submittal of the Gap Analysis on October 2, 2013, ENVIRON learned about various press releases published in the Brazilian press in relation to the purchase of forestry assets and lands by CMPC, located in the state of Rio Grande do Sul (Fibria's *Losango project*) and consisting of approximately 100,000 hectares of owned areas and nearly 39,000 hectares of forestland of eucalyptus in these owned areas and in third parties' leased areas, for a total amount of Real 615 million (US\$302.7 million). According to the Project announcement posted on CMPC-CRG's website, the Fibria acquisition is providing CMPC with the additional hectares needed to support the expansion project.

No information in relation to these new assets was presented to ENVIRON in the course of this assessment, and thus, compliance with international standards from the new plantation areas is not reviewed as part of this report.

2.7 The Plant Nursery

The plant nursery (the Nursery), which is about 40km from the mill, is located in the Horto Florestal Barba Negra, in Barra do Ribeiro, and occupies a total of 17 hectares of which 11 hectares are built. The Nursery is owned by CMPC but leased to a third-party, Piraflora. The Nursery is certified to ISO 14001, ISO 9001, FSC and the Brazilian National Forest Certification Program (CERFLOR). The mill expansion will not require any expansion at the Nursery. The Nursery's production capacity is about 30 million seedlings per year, and they are currently only growing 15 million per year, at a cost of about US\$180 per 1000 plants.

CMPC has three full-time staff at the Nursery, and Piraflora has a current full-time staff of about 140, which will increase to 170 when Pulp Line 2 goes into operation (projected in 2015).

Piraflora is required to sell 50% of the seedlings it produces to CMPC (at a lower than market price) and they may sell the remaining seedlings in the open market to small farms in the area that are also producing eucalyptus trees which will ultimately be sold to CMPC under agreement. Piraflora pays a fee to CMPC for seedlings sold in the market. The program with small farms, the *Fomento Florestal*, was developed to improve the economic situation in the

area. As of the time of ENVIRON's August 2012 site visit, Piraflores's 2012 production YTD was 16 million plants (11 million sold to CMPC and 5 million sold into the market).

For additional information on the Nursery, refer to section 4.4.10.

Figure 2.7.1. Aerial view of the nursery.



3 Summary of Site Visit Activities

A summary of ENVIRON's activities during the Project site visit from August 27 thru 31, 2012 has been prepared. Findings and observations from the site visit are included under sections 5 and 6 below.

3.1 Site Visit Activities

Site visit activities by date are listed below.

Monday, August 27, 2012

Morning:

Environmental and Social teams:

- Site Visit kick-off meeting and Project presentations by CMPC management

Afternoon:

Environmental and Social teams:

- Mill tour

Environmental team:

- Continuation of the mill tour with Clovis Zimmer, covering wood chipping, storage and transport systems, hazardous material storage areas (limited), process areas (limited), wastewater treatment plant and CMPC port terminal storage warehouse. The paper mill was also visited although not part of the expansion project.
- Interviews were conducted with site staff responsible for each stage of pulp and paper production: logs reception and chipping, pulp production, chlorine-alkali production, paper production and utilities and maintenance.

Social team:

- Driveby along the road through the neighborhoods surrounding the mill site to observe neighborhood conditions, acoustic wall to mitigate noise from the wood chipping machinery (built in 2002), and 3.5km bike path and pedestrian walkway being constructed along perimeter of mill property; and
- Meeting with Danielle Andriotti, Community Relations Manager and his team to discuss CMPC's relationships with the local communities and community investment programs.

Tuesday, August 28, 2012

Morning:

Environmental team:

- Continuation of the mill tour with Clovis Zimmer and Humberto [surname unknown], including chlor-alkali plant, recovery boiler, coal boiler, fuel storage tanks and waste storage areas amongst other.

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- Documentation review and interviews with Clovis Zimmer (whilst most of the questions regarding pulp production were addressed by Clovis Zimmer, throughout the visit specific questions were addressed / responses were complemented by information provided by other site representatives as appropriate; this process was coordinated by Clovis Zimmer, and inclusion of the names of all the individuals who provided feedback during the site visit was not practical for the purposes of this report).

Social team:

- Meeting with Eloir Ambos da Silva, Human Resources Manager.

Afternoon:

Environmental team:

- Visit to the water discharge point and Horto Forestal J A Lutzeberg (coordinated by Clovis Zimmer).
- Documentation review and interviews with Clovis Zimmer regarding existing permits, license conditions, emergency lagoons, noise monitoring and pesticide storage practices.

Social team:

- Meeting with Maurem Alves, Environmental Coordinator, to discuss potential impacts in the Plantation Basins to Indigenous Peoples and Quilombola Remnants;
- Consultation with João Lara Pneus (local business owner);
- Consultation with Associação Amigos do Meio Ambiente, a local NGO;
- Meeting with Maurem Alves and Christiane Machado of Rhea to discuss potential impacts in the Plantation Basins to Cultural Heritage and Rhea's ongoing Cultural Heritage study of the plantations; and
- Attended a concert by a youth group playing accordions made out of wood donated by CMPC.

Wednesday, August 29, 2012

Morning:

Environmental team:

- Visit to CMPC port terminal to inspect EHS procedures followed during barge loading operations.
- Documentation review and interviews with Clovis Zimmer regarding water consumption and water balance for the mill, effluent discharges, evaporation process, cooking, bleaching, pulp washing, sewer and spill collection systems, waste management, greenhouse gas balance for the project and chlor-alkali plant, amongst other topics.

Social team:

- Visit to the Plant Nursery at Babra Negra Plantation, meeting with Glêison Augusto dos Santos, CMPC's Manager of the Plant Nursery and tour of the nursery operations.

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Afternoon:

Environmental team:

- Continuation of the interview with Clovis Zimmer regarding Line 2 and Line 1 extension.

Social team:

- Meeting with Piraflora Human Resources Manager at the Plant Nursery; and
- Visit to the Babra Negra Plantation and observation of planting and harvesting activities.

Thursday, August 30, 2012

Morning:

Environmental team:

- Meeting with Clovis Zimmer regarding CMPC's management system.
- Meeting with Maurem Alves to review criteria and procedures associated to the acquisition, operation and management of plantations, along with monitoring programs and studies.

Social team:

- Consultation with Alberto and Zener Eckert, brothers and owners of a farm that is in partnership with CMPC.

Afternoon:

Environmental team:

- Interview with Luis Carlos Slavutzki, H&S engineer, to review H&S and emergency procedures for the mill and plantations;
- Interviews with H&S management team (H&S technicians, H&S Doctor) and HR Training staff in order to evaluate H&S management and control procedures; and
- Interviews with Purchasing Dept. staff responsible in order to evaluate environmental management procedures associated with sub-contractors and service providers.

Social team:

- Visit to an antique house (Cultural Heritage site, built in the 18^h century) on the grounds of the Nursery at Babra Negra Plantation. The house is currently used by CMPC for company meetings and social functions and it is offered to employees for their personal use on weekends and for special occasions.

Friday, August 31, 2012

Morning:

Environmental team:

- Meeting with the engineering and maintenance team to discuss current maintenance practices and programs in place for Line 1.

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- Visit to the wood storage yard to review transport and storage practices.

Social team:

- Meeting with Maurem Alves to discuss criteria for selection of farms.

Afternoon:

Environmental team:

- Meeting with FEPAM - ENVIRON and CMPC met with FEPAM representatives at the Industrial Management and Environmental Permitting Department. The following issues were discussed: CMPC's general compliance with permits and environmental regulations throughout the company's history, since Aracruz; status of the ongoing permitting process related to: mill expansion, transmission line installation, port expansion and required dredging activities and roads installation; and to confirm there are no severe legal non compliances, infractions and fines not solved by the Company. Reportedly, there are no fines or major non compliances.

Environmental and Social team:

- Meeting with Roberto Hallal, Logistics Manager, to discuss CMPC's current use of the terminal at Rio Grande Port and the two options for expansion; and
- Site Visit close-out meeting with CMPC management team.

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During ENVIRON's site visit, CMPC and ENVIRON conducted informal consultations in Guaíba with a local business owner and a local NGO, and also with partners in a fomento in one of the plantation areas.

Table 3.1: Stakeholder Consultations, 2012 ENVIRON Site Visit to Guaíba

Date	Group Consulted	Meeting Location	No. of Stakeholder Attendees
Aug-28-12	João Lara Pneus, small business owner near the mill	Tire store owned by Mr. Preus	1
Aug-28-12	Associação Amigos do Meio Ambiente, a local NGO	Office of the NGO	2
Aug-30-12	Alberto and Zener Eckert, brothers and owners of a farm in partnership with CMPC	The Eckert family home on their farm	2

4 Project Compliance with Applicable International Standards

The table below indicates which Applicable Standards apply to each of the Project Components.

Table 4.1 Applicable International Standards

Project Component	Applicable Standards
Existing Facilities	
Line 1 (in operation)	EHS Sector Guidelines for Pulp and Paper Mills (air emissions and wastewater discharge limits) EHS Sector Guidelines for Thermal Power Plants (air emissions) Brazilian EHS regulations
Guaíba 2 Project Components	
Line 2 and extension of Line 1	EP and IFC PSs EHS Sector Guidelines for Pulp and Paper Mills EHS General Guidelines IPPC BAT WB Pollution Prevention and Abatement 1996, Chlor-Alkali Industry Compliance of coal boiler emissions with EHS Sector Guidelines for Thermal Power Plants Brazilian EHS regulations
Plantations	EP and IFC PSs EHS Sector Guidelines for Forest Harvesting Operations EHS General Guidelines (limited assessment) Brazilian EHS regulations
Port Expansion	EP and IFC PSs EHS Sector Guidelines for Ports, Harbors and Terminals EHS General Guidelines (limited assessment) MARPOL Australian Guidelines for Dredging 2009 ¹ Brazilian EHS regulations
Dredging Maintenance Operations	EP and IFC PSs

¹ Compliance with MARPOL and Australian Guidelines has been partially addressed through the assessment of compliance with the EHS Sector Guidelines for Ports, Harbors and Terminals. A detailed assessment against these regulations can be conducted at a later date.

Project Component	Applicable Standards
	EHS Sector Guidelines for Ports, Harbors and Terminals Australian Guidelines for Dredging 2009 Brazilian EHS regulations
Transmission line	EP and IFC PSs EHS Sector Guidelines for Electric Power Transmission and Distribution EHS General Guidelines Brazilian EHS regulations
New Electrical Road	EP and IFC PSs IFC EHS Sector Guidelines for Toll Roads EHS General Guidelines Brazilian EHS regulations

4.1 Overview

The following sections, organized by Project components and the Applicable Standards reviewed for each component, describe the good management practices identified, the Project aspects that could not be verified based on the available information, and those areas in which non-compliance with International Standards was observed, along with ENVIRON’s conclusions and/or recommendations for closing the observed gaps.

4.2 Existing Facilities (Line 1)

The existing pulp production Line 1 was benchmarked against the following guidelines.

4.2.1 WBG EHS Sector Guidelines for Pulp and Paper Mills (air emissions and wastewater discharge limits)

From a review of air emission and wastewater effluent discharge values provided by CMPC, process emissions from the existing pulp production Line 1 are in compliance with the guideline values established by the WBG EHS Sector Guidelines for Pulp and Paper Mills, Annex B, tables 1 and 2.

4.2.2 WBG EHS Sector Guidelines for Thermal Power Plants (air emission limits)

A comparison of air emissions from the coal fired boiler (125 MWth) with the WBG EHS Sector Guidelines for Thermal Power Plants has been conducted in accordance with the ToR. However it should be noted that the aforementioned guidelines are intended for new facilities, whilst CMPC’s coal-fired steam boiler dates from 1983. 2011 monitoring results showed air emissions to be in compliance with guideline values for TSP and SO₂ for Non-Degraded Airsheds, whereas guideline values for NO_x in Non-Degraded Airsheds were exceeded (761.7 mg/Nm³ over a limit of 510 mg/Nm³); estimated emissions for 2012 provided in October 2012 exceed guideline values for Non-Degraded Airsheds for all the parameters.

The Airshed is currently considered Non-Degraded, based on information presented in the EIA (2007), which in turn is based on the results of a monitoring campaign conducted in 2002. At the time of the visit, CMPC was installing an air monitoring station approximately 1.5 to 3 km from the site (the location of which has been reportedly agreed with FEPAM) as part of the conditions of the Installation License. It should be noted that further to the monitoring of current conditions, the classification of the Airshed could be modified from Non-Degraded to Degraded, resulting in more stringent air emission guidelines.

A desulphurization system will reportedly be installed as part of the Guaíba 2 Project. An enquiry specification for the desulphurization system of the coal-fired power boiler, prepared by Pöyry in September 2011, was available for review; however, no EPC tenderer proposals were available for review at the time of preparation of this assessment. Design data included in the enquiry specification (see below) are based on an internal study conducted by CMPC, although the tendered can propose alternative equipment and systems deviating from this specification, if technically or economically justified.

Main Design Data

Desulfurization System

– Type	Semi-Dry
– Design capacity	See main Design Data

Basic Design Data

– Boiler capacity	t steam/h	180
– Flue gas flow – dry base, normal	Nm ³ /h	220 000
– Temperature	°C	177
– Humidity	% v/v	11.75
– SO ₂ inlet	kg/h	660
– SO ₂ emission, required	kg/h	100

“The flue gas desulphurization will be based on semi-dry method using caustic soda as a reagent and the existing baghouse filter to reduce SOx emissions and separate the dust. The existing SOx analyzer shall be used to control the dosing of caustic soda. The caustic reacts with the sulphur compounds in the flue gas producing Na₂SO₃ and Na₂SO₄. The salts are dried in the spray dryer reactor and separated as dry ash in the baghouse filter. The ash from the Reactor and from the baghouse filter shall be transported and collected in a discharge bin. From the discharge bin, the collected dewatered ash is processed further in drum filters for filtrate and dust separation.”

4.3 Guaíba 2 Project Component: Line 2 and Extension of Line 1

4.3.1 PS 1 – Social and Environmental Assessment and Management Systems

Environmental and Social Assessment and Management System (ESMS)

An Integrated Management System (IMS) is in place, covering environmental, health, safety and quality aspects of the mill, nursery and plantations. This system includes procedures for human resources, environmental and health and safety management. However the system does not appear to adequately address the analysis, control and reduction of social impacts.

The IMS is certified by the following internationally recognized standards: ISO 9001/2008 and ISO 14001/2004. Additionally, forest management operations are certified in accordance with NBR 14789:2007; cellulose production, storage and sale operations are certified in accordance with NBR14790:2007.

The organizational capacity and competencies for the project have been defined. CMPC plans to incorporate the Project into the IMS. However, at the time of preparation of this report, ENVIRON did not have any evidence to verify that CMPC's plans and programs for the Guaíba 2 Project had been incorporated into the IMS. Refer to section 'Management Programs' below for additional information on the current status of the programs for the mill expansion. In order to meet the IFC requirements, CMPC shall ensure that the scope of the expanded IMS incorporates all the following elements and CMPC shall take the actions under the Recommendation below:

- Policy
- Identification of risks and impacts
- Management and mitigation programs (to control all identified risks and impacts)
- Organizational capacity and competency
- Emergency preparedness and response
- Stakeholder engagement; and
- Monitoring and review.

Recommendation: CMPC should ensure that the Project is incorporated into the IMS to prevent and mitigate risks and impacts derived from construction and operational phases, to ensure stakeholder engagement and to monitor and review the efficiency of the implemented procedures. The scope of the IMS should be expanded as necessary based on the recommended actions included under the ESAP to ensure that all environmental, labor and social risks and impacts derived from the project are identified and managed in compliance with IFC PS requirements, robust external stakeholder engagement features are included, and legal and other requirements are revised to incorporate all the objectives of the International Standards applicable to the Project.

Policy

The IMS policy defines environmental, health and safety and quality objectives. A social responsibility policy, however, has not been defined.

Recommendation: CMPC should extend the scope of the policy to include social objectives and principles to guide the Project.

Identification of Risks and Impacts: EIA for the mill expansion (2007)

The main Project documents (EIAs and RIMAs, Social Impact Study and the Preliminary Report on the Development Plan for the Socio-environmental Communications Unit at Guaíba) were all developed in 2007 by or on behalf of Aracruz, the previous owner of the mill and plantations and, therefore, are not based on recent social and environmental baseline data.

From a review of the EIA for the mill expansion (the Mill EIA), developed by EcoAguas in 2007 for Aracruz, it was noted that the impact identification and analysis section does not provide a comprehensive assessment of all the relevant risks and impacts associated to Line 2 and the extension of Line 1 (e.g. flooding risks, greenhouse gas emissions and climate change mitigation, climate change adaptation, landscape and visual impact, project impact on ecosystem services and community health and safety risks derived from the expansion of the chlor-alkali plant, increased road transportation of hazardous materials and timber, and accidents/explosions that may occur during operation of Lines 1 and 2, amongst others, have not been considered in the EIA).

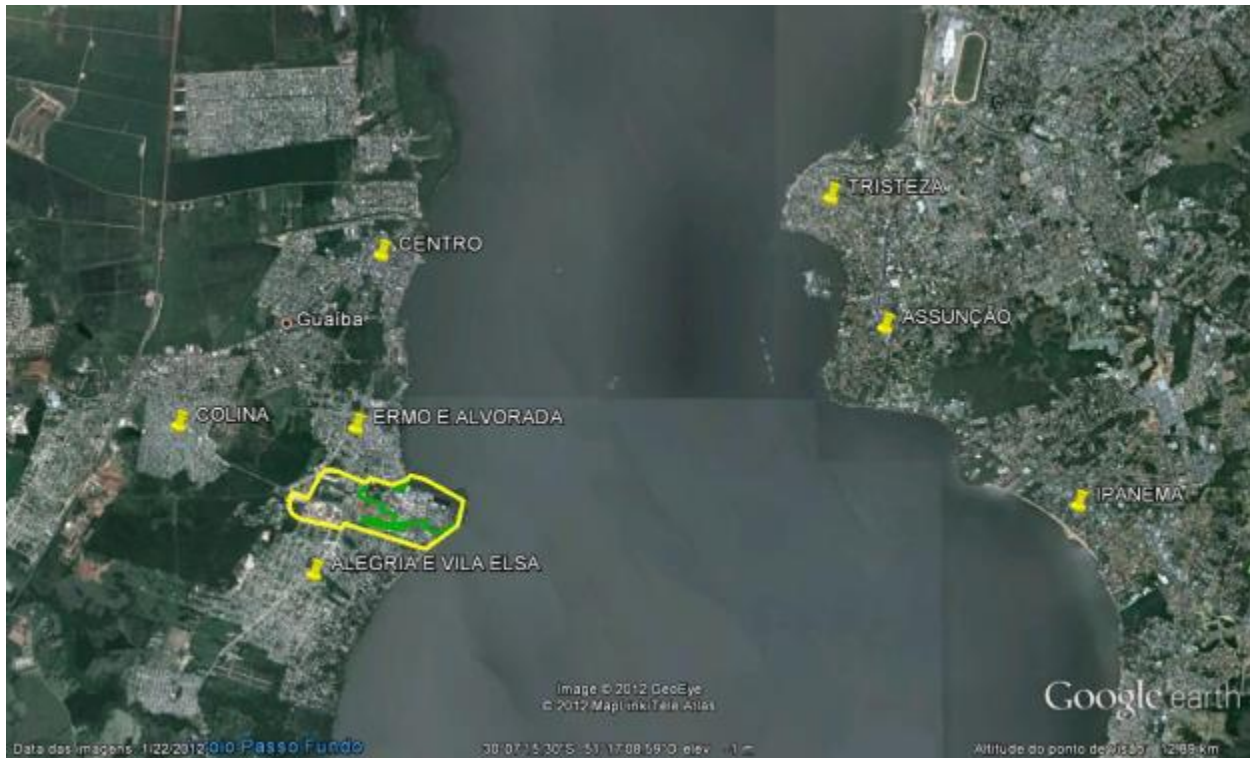
Consideration of existing or proposed government plans and programs within the area of influence of the mill is specifically assessed under the EIA, and is consistent with the issuance of an Installation License by FEPAM for the new line, the increase in capacity of the existing line and the port expansion (see section Installation License below). Moreover, CMPC's CEO participates in meetings with the National Bank of Economic and Social Development (BNDES) of the southern region in order to coordinate interests to facilitate investment in the area. However the assessment of government plans and programs, as the rest of the information contained in the EIA, dates from 2007 or earlier.

No transboundary effects were identified for the Guaíba 2 project.

Recommendation: The EIAs and other main Project documents should be updated to reflect current environmental and social baseline conditions, and the scope of the EIAs should be expanded to allow for a comprehensive assessment of all the risks and impacts associated to the Guaíba 2 project in compliance with IFC PS and a cumulative impact study should be performed on the potential cumulative impacts of the plantations, mill and port expansions, new T-Line and road.

Area of Influence

Figure 4.3.1.1. Communities within the Direct Area of Influence in the Mill area.



According to the Mill EIA (2007), the Direct Area of Influence (DAI) includes four municipalities: Guaíba and Porto Alegre, and Eldorado do Sul and Barro do Ribeiro, two municipalities located in the plantation basins. Eldorado do Sul and Barro do Ribeiro were included due to the anticipated changes in transport infrastructure (new roads and paving existing highways) to improve accessibility to the mill site. In addition, Eldorado do Sul and Barro do Ribeiro, along with Porto Alegre, are centers for hiring workers.

- Within the municipality of Guaíba are five communities in the vicinity of the mill:
 - Guaíba;
 - Alegria e Vila Elsa;
 - Ermo e Alvorada;
 - Colina; and
 - Centro
- Within the municipality of Porto Alegre are three communities, located across the lake from the mill:
 - Ipanema;
 - Assunção; and
 - Tristeza

The lake was not included in the Area of Influence under the 2007 Mill EIA. Refer to section 4.5: Port and Dredging Maintenance Operations for an assessment of the EIA for the port expansion and the DIA for the dredging operations and the Project's potential impacts to the lake.

Indirect Area of Influence:

According to the Mill EIA (2007), the Indirect Area of Influence (IAI) is the metropolitan Porto Alegre region.

Recommendation: A supplemental study to the Mill EIA (2007) should be developed and include a review of the boundaries of the Project's DAI and IAI to determine if they are still accurate, taking into consideration changes in the overall project design, including the new T-Line and road ROWs, that may affect the Project's footprint and have the potential to result in environmental and social impacts.

Socioeconomic Baseline Conditions

Detailed socioeconomic baseline information on the municipalities located within the DAI is included in the Mill EIA but the data and studies are outdated. Important indicators such as education, employment, migration, economics, among others, are taken from reference books published in the year 2000. The Mill EIA does mention that total population in the DAI was 1,593,741 (2006), but ENVIRON was unable to locate in the EIA a breakdown of population by municipality. Furthermore, minimal socioeconomic baseline information, if any, is provided on each of the affected communities within Guaíba and Porto Alegre (locations marked on the map above). The socioeconomic baseline conditions of Eldorado do Sul and Barro do Ribeiro are addressed in the Plantation Basin EIAs developed by Rhea (2007).

Recommendation: ENVIRON recommended in our Gap Analysis that a supplement to the EIA be developed and include more current socioeconomic baseline data, preferably collected within the past year. While CMPC did not agree to revise the Mill EIA, stating that there was no need within the context of the licensing process under which the Factory Installation License was issued, they did agree to provide updated socioeconomic data on Guaíba, based on 2011 information. ENVIRON is not aware of the status of this updated socioeconomic data, which was scheduled to be completed in December 2012. It is important to note that this data should be updated for all Areas of Influence, including Porto Alegre and the four plantation basins, and not just for Guaíba.

Management Programs

Management programs are included in the EIA for the mill expansion and are included as conditions of the Installation License. However, it should be noted that these are likely to change as part of the license renewal procedure discussed below.

An Installation License for the Project was obtained initially by Aracruz Celulose in June 2008 (a change of name – *Declaração de Alteração de Responsabilidade*, dated November 2010, is in place, and thus CMPC is the new operator for this license).

This permit is valid until June 30, 2013 and CMPC is aware of the need to apply for an extension. Reportedly CMPC filed a permit renewal request in February 2013, 120 days before the expiration date. This ensures that should FEPAM delay the new permit issuance the old one has extended and unlimited validity until the issuance of the new one.

It should be noted that as part of this extension CMPC was required to notify changes in the project scope (the original EIAs submitted as part of this licensing procedure – new production line and extension of the existing line on the one hand, and the complementary EIA for the extension of the port on the other - date from 2007). It is therefore understood that the conditions imposed in the Installation License will be modified by FEPAM, although the nature and extent of these changes cannot be anticipated at this stage as some aspects and details of the project are still being finalized.

The duration of the license extension process cannot be estimated at this stage. Additional documentation or an update of documentation previously submitted is likely to be requested by FEPAM as part of this process, given the significance of some of the changes (e.g. the EIA for the port expansion was prepared by Aracruz in 2007 and considers that 40% of the timber will be transported to the mill through barges, however, CMPC has confirmed that 100% of the timber will be transported by road).

The Installation License has several requirements, all related to construction works, plant installation and pollution abatement. As the project had not yet started several License requirements were in progress or had not yet started at the time of the visit. There is no updated information regarding current CMPC compliance status regarding the Installation License requirements. Also there is no updated information regarding construction works or the new line installation.

ENVIRON has no information on which documents/information were presented to FEPAM for the permit renewal process.

At the time of preparation of this report, an action plan for the implementation of management programs for the Line 2 and extension of Line 1, identifying resources, responsibilities and deadlines for implementation, had not yet been prepared, and there was no updated information regarding CMPC's current compliance status with the Installation License requirements. Reportedly, CMPC plans to develop an action plan (PBA) with the conditions of the Installation License (application for renewal submitted in February 2013) which in turn are based on the EIA.

Recommendation: CMPC confirmed that renewal of the Installation License was requested in February 2013. Based on the latest conditions imposed by the new license, CMPC shall update

the management programs for the project and shall subsequently develop and implement an action plan for the mill (PBA), which shall include environmental, social and health and safety monitoring and review programs to assess the effectiveness of the prevention and mitigation measures.

Monitoring and Review

As part of the Installation License for the new line and the expansion of the existing pier, CMPC is required to implement an environmental follow-up program during the construction phase, GCA (*Gerenciamento de Condicionantes Ambientais*). This program will need to cover all the environmental and monitoring programs presented in the EIA and shall also include the follow-up of all the construction works for the installation of the industrial units and their corresponding control equipment, the port expansion, and additional works conducted as part of this license. The follow-up shall be conducted by a technically competent contractor, who shall prepare and submit to FEPAM quarterly reports indicating all the projects/programs and works conducted in that period. Based on information provided by CMPC on 30 April 2013, the company is in the process of hiring an environmental supervisor for the construction works; this person will be responsible for the preparation of the PBA.

Reportedly, internal H&S inspections during construction and operation will be conducted as part of the internal audit program for the facility.

Recommendation: Based on the additional documentation submitted as part of the license renewal and further to the development of a PBA, CMPC shall develop and implement a GCA.

Organizational Capacity and Competency

The organizational capacity and competencies for the project have been defined.

According to information provided by CMPC's human resources department, all employees receive basic environmental training during the induction training. Employees that operate on high environmental risk functions (such as waste management, for example, or air emissions abatement) receive training specific for each task to be developed.

Subcontractors are trained along with CMPC staff. Additionally, by the time of the signature of the services agreement, each subcontractor must deliver to CMPC evidence of adequate EHS training performed on staff. Training is repeated annually or according to legally requested periodicity.

During the interviews undertaken as part of the site visit, ENVIRON observed that site personnel were well qualified in terms of the Company's EHS policies. The EHS staff was observed to be aware of local, state and federal regulations. However, it should be noted that the CMPC personnel interviewed were not familiar with the IFC PS, WBG EHS Guidelines and other international guidelines applicable to the project.

Recommendation: In order to ensure compliance with international standards, CMPC should ensure that support is provided during the project lifecycle, either through internally or through

an external subcontractor with practical experience in IFC PS, WBG EHS Guidelines and other international guidelines identified under Table 4.1.

Emergency Preparedness and Response

An emergency plan is in place for the mill, which addresses internal and external emergencies derived from CMPCs operations and is focused on chemical spills, explosions, recovery boiler emergencies, accidents involving radioactive sources, confined space emergencies, transport accidents, floods, oil spills to the Guaíba Lagoon, electrical emergencies, fires and leaks of chloride and its derivatives. The procedures described in this plan are applied by both CMPC personnel and contractors. Emergencies are classified in accordance to their scope (P –small; M – medium; G – large; E- external). An Emergency Response Central (*Central de Atendimento a Emergências*) operates 24/7 to coordinate response. The plan also covers communication with potentially affected communities, FEPAM, hospitals, police, fire brigade, military police and civil defence.

This same plan will be applied in the event of emergencies during construction and/or operation of the new pulp line. Training and drills are reportedly conducted (annual planning in accordance with the emergency plan.

Conclusion: No issues anticipated.

Stakeholder Engagement, Public Consultation and Disclosure of Information

According to CMPC, people living in Porto Alegre in the early 1970s had a negative image of the Borregaard pulp mill (this was the mill's original name). Since the 1970s, many changes and improvements in environmental performance were implemented at the mill. Previously, the principal impact to Ipanema (south region of Porto Alegre) was odor, but ever since 2002 when Aracruz started up a new recovery boiler (with low odor); they have not had any complaints from Porto Alegre.

The *Pesquisa de Avaliação de Imagem da Aracruz e Impactos do Plano de Expansão da Produção* (3-part Social Impact Study (SIS) developed by Ethos in 2007) included public consultations with communities to the west of the Guaíba lagoon (in the vicinity of the mill) and also with communities in the south region of Porto Alegre to assess their impressions of Aracruz, the mill and the potential impacts of the planned expansion. Three rounds of consultation were conducted (July, September and December 2007) to satisfy a requirement for the permit and the key findings of these consultations are summarized in Appendix A.

ENVIRON understands that no formal consultations have taken place in the communities in Guaíba and Porto Alegre since 2007, but CMPC has established community relations programs in the area. ENVIRON has received copies of CMPC's 2010 Communication Plan and the PASAs (Social and Environmental Action Plans) for 2011 and 2012, which provide details on all active community programs for both Guaíba and the plantation areas. Local consultancies have been involved in semi-annual monitoring of CMPC's image and the communities' perceptions of the Company in both the mill and plantation areas, but this is not the same as CMPC conducting face-to-face consultations with the communities and does not satisfy the public consultation

requirements of IFC PS1 (Assessment and Management of Environmental and Social Risks and Impacts).

We have been informed by CMPC that during the construction phase, the potential impacts will be significant in Guaíba, principally to neighborhoods near the mill site. To manage these impacts, CMPC has developed a new program which has been approved by FEPAM to dialogue monthly with neighborhoods in a forum during the construction phase (the Community Forum). Through the Community Forum, CMPC will be able to communicate with the community and respond to their questions about project development. CMPC plans to start the Community Forum one month before the start of construction.

CMPC plans to develop a similar program for the South Region of Porto Alegre to communicate and dialogue about the Project's potential impacts during the operational phase, and this program is scheduled to start 6 months before the Mill start-up (scheduled for July 2014).

Based on CMPC's responses to gaps on public consultation that were included in ENVIRON's October 2012 Gap Analysis, it appears that CMPC does not fully recognize all of the Project's Areas of Influence (i.e. new transmission line (T-Line) and Electrical/Private Road). There will be impacts to the neighboring communities during construction: noise, vibration, dust, traffic, etc. Also, the dredging could cause impacts to fishing in the area.

Recommendation: CMPC should develop an integrated Stakeholder Engagement Plan to include all of its stakeholder engagement, public consultation and disclosure of information plans, programs and monitoring procedures including the *Plano de Comunicação 2010* (The Strategic Communication Plan), *Plano de Sustentabilidade 2012* (The Operational Sustainability Plan), *Gerir Relacionamento com Partes Interessadas* and *Comunicação com Partes Interessadas* (Community Grievance Mechanism), Community Forum Program and image program.

Recommendation: CMPC needs to immediately implement their new Community Forum Program for the communities in Guaíba and the South Region of Porto Alegre; they should not wait until one month before construction begins to start this program. While the Community Forum Programs for Guaíba and the South Region of Porto Alegre should be launched at the same time, the meetings with the communities in the South Region of Porto Alegre can be less frequent than meetings in Guaíba until six months before the start of operations. Local communities should be advised as soon as possible of upcoming employment opportunities and potential impacts from the Project.

In addition, the communities that may be affected by the new T-Line, the Electrical Road and the maintenance dredging operations at the channel connecting CMPC's pier with the Leitão channel at Guaíba Lagoon will need to be made aware through the public consultation process of the projects' potential risk and impacts and any feedback received should be recorded with follow-up where needed.

External Communications and Grievance Mechanisms

ENVIRON understands that the Project was first announced and promoted 10 years ago and that the 2007 SIS was conducted specifically to obtain the license.

CMPC-CRG has its own website and posted on its website is the December 7, 2012 announcement of the upcoming mill expansion project, along with CMPC's most recent Sustainability Report, its commitments regarding the environment and corporate social responsibility and descriptions of various community social projects.

ENVIRON is in receipt of most, if not all, of CMPC's community relations plans, which are further described in the two sections below:

- *Gerir Relacionamento com Partes Interessadas* (Guide to Relations with Interested Parties, PP/GS-0005-UG);
- *Comunicação com Partes Interessadas* (Communications with Interested Parties, PO/GS-005-UG);
- *Gerir Comunicação Externa- Atendimento a Comunidade* (a flowchart for external communications);
- *Reclamações_rpi_sispart_rel_ocorrencia_area* (a 2011 monitoring report of stakeholders' inquiries on particular CMPC-related subjects of interest).
- *Plano de Comunicação 2010* (The Strategic Communication Plan);
- *Plano de Ação Social e Ambiental 2011* (*Social and Environmental Action Plan, community investment projects*); and
- *Plano de Sustentabilidade 2012* (The Operational Sustainability Plan).

According to CMPC, the *PP/GS 005-UG* and *PO/GS 005-UG* are orientation documents (guidelines for a relationship and communication programs).

External Communications

ENVIRON reviewed the framework for CMPC's Communications Plan for the Communities of Guaíba and Porto Alegre, developed by Aracruz, which, includes a report template for a Semi-Annual Report of Communication with the Community. This framework, a three-page document, is a very high-level framework for engaging with community leaders and for preparing a semi-annual report on communications with the communities surrounding the mill and in Porto Alegre. It is ENVIRON's assumption that this framework was superseded by CMPC's Strategic Communication Plan and the Operational Sustainability Plan which we received in October in response to the Gap Analysis.

During the site visit, ENVIRON was informed that CMPC has been conducting image monitoring of the Company on a semi-annual basis (since 2009) in the neighboring communities to the mill. This is a company-sponsored program and not required by FEPAM.

CMPC has established an internal committee in order to study and classify the Company's stakeholder engagement and the results of the committee's findings are pending. We are not aware if an organizational chart of the internal committee for stakeholder engagement has been developed.

Recommendation: CMPC's various community relations and communications plans and programs for public consultation should be integrated into a Stakeholder Engagement Plan. CMPC to provide ENVIRON with an organizational chart of the internal committee for stakeholder engagement.

Grievance Mechanism

During the first day of the site visit, CMPC's community grievance mechanism was discussed, along with the history of complaints received in recent years which include:

- 30 complaints in 2011, all about odor (22 resulting from a mill shutdown); and
- 7 complaints in 2012 (as of August), all about dust from the roads.

There is a direct line for people to call and most complaints for the mill are about dust and noise, and for the plantations, most complaints are about dust or damage to fences. According to CMPC, the last complaint from Porto Alegre about odor was in 2002. CMPC occasionally still gets complaints about odor but only from people living up 3km from the mill.

CMPC's community grievance procedures are described in the document *PO/GS-005-UG Comunicação com Partes Interessadas*, chapter 4.3 and the flowchart *Gerir Comunicação Externa - Atendimento a Comunidade 8.1.pdf*. However, we could not find any mention of the Grievance Mechanism on the CMPC-CRG website.

The *Comunicação com Partes Interessadas* plan refers to the receiving and managing of community inquiries and complaints but is not detailed and should include detailed procedures for receipt of inquiries and complaints, time deadlines for responding to the submitter and record keeping. We assume the flowchart under the *Gerir Comunicação Externa- Atendimento a Comunidade* is related to the *Comunicação com Partes Interessadas* but it does not include procedures and time deadlines.

Recommendation: The *Comunicação com Partes Interessadas* (the Grievance Mechanism) should be revised to include detailed procedures for receipt of inquiries and complaints, time deadlines for responding to the submitter of the grievance and record keeping. The revised Grievance Mechanism should be incorporated into the Stakeholder Engagement Plan (SEP) ENVIRON is recommending CMPC produce and the SEP publicly disclosed and copies made available in each community surrounding the mill as soon as possible. CMPC-CRG should also post information on its website about the Grievance Mechanism, along with contact information for the person who is appointed to receive and respond to inquiries from the public.

Ongoing Reporting to Affected Communities

Once the Community Forum Program is implemented for the communities in Guaíba and the South Region of Porto Alegre, CMPC plans to conduct monthly meetings.

Recommendation: The Community Forum Program should be instituted as soon as possible, far in advance of the commencement of construction.

4.3.2 PS 2 – Labor and Working Conditions

Working Conditions and Management of Worker Relationship

During the site visit, ENVIRON met with CMPC’s Manager of Human Resources (HR) to discuss HR-related policies, procedures and programs. Through this meeting we learned that CMPC retained Aracruz’s HR policies and procedures including bonus plan, which have been in place for 20 years but did make some improvements. We also received a presentation on CMPC’s current workforce (as of July 2012).

CMPC Workforce	
Own employees	497
Temporary workers	9
Apprentices	5
Trainees	17
Industrial Service Providers	538
Forestry Service Providers	1475

ENVIRON received copies of several HR-related documents including:

- *Código de Conduta* (Code of Conduct);
- *Desenvolver Pessoas* (Program for Developing Employees);
- *Gerenciar Relações com Empregados* (Program to Manage Relations with Employees);
- *Programa de Estágio* (Internship Program);
- *Prover Pessoas* (Providing People);
- *Treinamento Operacional na Área* (Operational Training in Business Areas);
- *Curso Técnico em Celulose e Papel 2012-2015* (Technical Course in Pulp and Paper);
- 2012 schedule for auditing/monitoring sub-contractors; *Relatório de Auditoria* (a sample report for auditing/monitoring sub-contractors); and
- An overview of current work staff (ppt. presentation).

CMPC’s Program to Manage Relations with Employees includes a high-level policy statement and detailed procedures to manage worker relations including:

- Hiring and termination;
- Worker expectations;
- All employee benefits; and

- Union relations;

Employee benefits include medical and dental insurance, overtime and paid time off, training, bus transportation to the mill, daily use of the on-site canteen at the mill, retirement and other benefits.

CMPC's Program to Manage Relations with Employees contains an HR policy statement and, along with sections 1 (Principles) and 2.1 (Relationships with Employees) of its Code of Conduct, may serve as its HR policy. ENVIRON confirms section 1 of the Code of Conduct includes statements of equal opportunity for all workers, prevention of harassment and prevention of child and forced labour.

Recommendation: In addition to its Program to Manage Relations with Employees and Code of Conduct, CMPC should develop a stand-alone Human Resources Policy in compliance with PS 2.

Workers' Organizations

During the site visit meeting with CMPC's HR Manager, ENVIRON was informed that under Brazilian law there is a requirement to have one workers' union per region. However, the union does not get involved in CMPC's hiring of workers and there is no government pressure on unions. CMPC's employees may opt to join the union but it is not a requirement. CMPC encourages workers to go to meetings and participate in the union because they want employees to make a conscience decision on issues after hearing both sides of an issue (from both CMPC and the union).

Workers' Grievance Mechanism

The workers' grievance mechanism was discussed in the meeting with CMPC's HR Manager during the site visit, and the procedure for managing workers' grievances is included in the "*Código de Conduta Celulose Riograndense*". ENVIRON understands that grievances and inquiries can be made to the union representative and/or the employee's supervisor, by email to the team that manages the Code of Conduct or anonymously by submitting complaints in the ballot boxes. CMPC also conducts an annual survey on the worker environment.

Recommendation: The Worker Grievance Mechanism included in the Code of Conduct is too high-level. ENVIRON has not received from CMPC any detailed written procedures for its workers' grievance mechanism, which should include an elevation process to notify senior management of serious grievances, an organizational chart establishing responsibilities, time limits for resolution of grievances and also record keeping.

Employment Contracts

ENVIRON has reviewed the model of an employment contract used for employees hired by CMPC-CRG. The employment contracts of outsiders, as was detailed during the visit, follow the achievement of laws and agreements through the ongoing audit process with service providers.

Recommendation: The employment contract template is not sufficiently detailed and should be revised to be in compliance with PS 2. While the contract template provides for inclusion of the title of the position the person is being hired to fill, it doesn't include the job description for this position, there is no mention of standard weekly work hours, hourly pay for overtime worked, compensation in the event the employee is expected to travel for CMPC business or relocate, benefits (insurance, holidays, sick days and/or vacation), workers' grievance mechanism procedure or retrenchment procedures and compensation. Furthermore, beyond the 45 day trial period, the contract is open-ended; there is no expiration or renewal date.

EPC Contracts

CMPC is developing the Project Manual and the Manual of Construction and Assembly, in which all rules are set to be observed throughout the project. For monitoring compliance with these rules, will be a company hired specifically for the job (Central Services -which is subordinate to RH). ENVIRON is not aware of the status of the EPC Contracts Project Manual and the Manual of Construction and Assembly.

On 30 April 2013, ENVIRON was informed that the following EPCs had been contracted at the beginning of April.

- METSO: Fiber Line, Evaporation, Recovery and Causticizing, NCG and DCS
- DEMUTH: Wood Handling
- VEOLIA: Waste Water Treatment and Water Treatment
- Chemical Plant EPC is still under negotiation.

No additional information was provided on the EPC contractors for other project components.

Recommendations: CMPC to provide Lenders with the status of the EPC Contracts Project Manual and the Manual of Construction and Assembly.

Once all the EPC contractors have been identified, a review will need to be conducted to assess how CMPC plans to supervise the EPC contractors' HR and EHS activities to ensure they are adhering to CMPC's policies, plans and procedures and to finalize assessment of the Project's compliance with IFC PS2 (Labor and Working Conditions).

Worker Hiring Plan

CMPC's current staff level includes about 500 full-time employees and 10 temporary workers. At the peak of construction during the Project's 25-month construction period, the number of local and external workers is estimated at 7,000. An estimated 25,000 workers are projected to be hired during the construction period (both direct and indirect), and the majority will not be direct CMPC employees. CMPC is targeting 75% local workers (from the same region as the Project) and 25% external workers (from other regions of Brazil); CMPC is not considering hiring workers from outside Brazil. The worker hiring plan will be defined after the EPC Contractors, sub-contractors and suppliers are selected.

Refer to recommendation below.

Worker Housing Plan

The extent of housing required for the external workers (expected to all be Brazilian) cannot be determined until all the EPC Contractors have been identified. CMPC does not plan to house external workers in Guaíba. External workers will likely be housed in hotels and apartments in Porto Alegre. CMPC has initiated discussions with the municipality on external worker housing arrangements but a plan has not yet been finalized. The worker housing plan will need to be assessed for compliance with the IFC/EBRD Guidance on Workers' Accommodation.

Refer to recommendation below.

Workers' Training

CMPC encourages worker training and actively promotes workers from within the Company; all members of the CMPC-CRG management team working on the Project were promoted from within. CMPC sponsors workers taking a technical course on Pulp and Paper at Instituto Estadual de Educação Gomes Jardim (the Gomes Jardim State Institute of Education). All courses are given by CMPC staff and they are paid by the institute. This training program was expanded by CMPC in order to improve the course and quality of teachers because of the planned mill expansion but the program has been in place for more than 30 years.

CMPC, through the state-government sponsored Professional Program for Qualification, is striving to identify qualified local workers for the Project. Under this program, the state government has implemented professional training courses through Pronatec in order to meet the worker demand presented by CMPC's mill expansion project. The goal is to identify 6000 qualified workers. There are two stages to the training: in the first stage, 3,600 students will take courses in civil construction and, in the second stage, 2,400 students will take courses in electromechanical assembly.

During the site visit, ENVIRON discussed with CMPC's Community Relations Manager training programs for women in local communities (Guaíba) to gain skills and be eligible for jobs at the Project. When we later requested documentation on these training programs for women in local communities, we were informed by CMPC that no special program for women exists to qualify them for skilled labor at the mill expansion project. CMPC stated that there is no gender discrimination under the current Professional Qualification program; women can apply for these programs.

Recommendation: CMPC to specify what programs do exist under which local women can be trained to qualify for employment at the mill.

According to CMPC, they are taking the following actions to minimize the impact of labor needed to meet the demands of the Project:

1. On-going state-sponsored Professional Program for Qualification of manpower available in the Project region (involving 18 municipalities in Brazil), who are expected to qualify for the 3600 Construction workers and 2,400 workers in electromechanical assembly.

Status: ENVIRON is unaware of the status of the worker hiring plan and what jobs will be available.

2. On-going search for verification of the existence of qualified workers.

Status: ENVIRON has not received any information on the search for available workers or the status of the search.

3. Build a strategy of identifying and hiring a hotel chain in the metropolitan area of Porto Alegre (to accommodate 2,800 workers), after determining the needs of EPCs contractors (2 months' project, scheduled completion date: Feb.2013).

Status: ENVIRON has not received any information on the development of a housing plan or an update on the status of CMPC's identification and engagement of a hotel chain.

4. Construction of housing to meet the demands of EPC contractors, if the hotel chain and existing homes are not sufficient (6 months' project, scheduled completion date: June 2013).

Status: ENVIRON has not received any update on the status of housing construction and location, if already identified. We were never informed how many workers will either live at the hotel or in CMPC housing.

Recommendations: CMPC to develop a worker hiring plan and a worker housing plan once all the EPC contractors have been identified. At that time, the quantity of external workers will be known, and the worker hiring plan and plans for worker accommodations can be better defined.

If workers will come from 18 municipalities, it would be helpful to know how many will live at home and how they will get to the project site. CMPC should also develop a Transportation Plan.

Protecting the Work Force

Prosegur Security Service began providing security services to Aracruz several years ago and is currently under contract to provide CMPC-CRG with the following security services at the mill:

- Lobby services to control the entry and exit of people and materials at all access gates and to buildings on the mill property; and
- Surveillance services (unarmed surveillance, inspectors and firefighter vigilants).

Conclusion: No issues anticipated.

Occupational Health & Safety

A program and implementing procedures are in place for the prevention of H&S risks derived from current CMPC operations (Line 1 and existing plantations), and are part of the existing Integrated Management System for the facility. As part of this program, risk assessments (PPRA) are conducted and updated as necessary, and medical exams are undertaken annually. Additionally, an H&S manual is in place that applies to both CMPC employees and contractors.

Reportedly, these procedures will be updated as necessary to cover Line 2 and the extension of Line 1. However, in the absence of detailed project information and considering that EPC

contractors are still being selected, a detailed analysis of H&S characteristics of the Project could not be conducted.

Based on information provided by CMPC, all new equipment is required to comply with Brazilian H&S norms and regulations (NRs) and this is reportedly a standard clause in the purchase contracts for new equipment, however current procurement policies do not appear to take into consideration other H&S criteria (e.g. ergonomics). The enquiry specifications available for review for the desulphurization system of the coal-fired boiler, prepared by Pöyry in September 2011, do not make any reference to Brazilian NR or international standards (WBG EHS Guidelines). The enquiry specification for the recovery boiler, prepared by Pöyry in April 2011, makes reference to some specific NR (i.e. NR 11 – transport, movement, storage and handling of materials; NR-13, boilers and pressure vessels; and NR18 – environmental and work conditions in the construction industry) but not to international standards (WBG EHS Guidelines).

The construction and installation manual for the Guaíba 2 project (*Manual da Construção e Montagem, ref. 700-O-CRG-00xx*, 23 March 2012) was made available for review by CMPC in draft format. This document describes general information and instructions applicable to all the tenderers and companies directly or indirectly involved with the construction, commissioning, testing and initial operation of the mill, and includes information on the induction training to be provided (comprising environmental, H&S and community care criteria), as well as lodging, emergency and security information amongst others. This document makes reference to some relevant Brazilian NRs (i.e. NR 4 – specialized services in safety engineering and occupational health; NR 10 – electrical installations and services; NR 13 – boilers and pressure vessels; NR18 – environmental and work conditions in the construction industry; NR 24 – sanitary and comfort conditions at the workplace), but does not include a requirement to meet applicable WBG EHS Guidelines.

Recommendation: Ensure a clear requirement to comply with Brazilian NRs and international WBG EHS Sector Guidelines for Pulp and Paper Mills and WBG EHS General Guidelines is included in all contract specifications and other documentation and manuals intended for tenderers and companies directly or indirectly involved with the construction, commissioning, testing and initial operation of the mill.

Workers Engaged by Third Parties and Supply Chain

As we were informed by CMPC, each EPC Contractor selected will be responsible for the EPC-related work under its contracted scope of work which will include all engineering, procurement and construction. As of October 2012, CMPC had about 14 EPC packages to contract including the transmission-line. There will be specific bidding and purchasing processes for the port terminals and access roads (electrical). Other associated facilities such as gates, non-process buildings and other civil constructions, will also be subject to specific bidding processes, as well as the Balance of Plant, which also includes the interconnection of all components. According to CMPC, the EPC contractors and other contractors will be selected in accordance with the Enquiry Specifications. In the Enquiries, CMPC specified the Environmental and Safety Health Procedures applicable to CMPC. As part of the evaluation process, a contractor before being selected must submit an EPC Management Plan of how it will meet the environmental and

safety specifications required by CMPC. The selected contractor(s) EPC Management Plan will be audited during construction by the Environmental Supervision of CMPC.

According to CMPC's response to the gap regarding the selection of contractors mentioned in the Gap Analysis, the selection of contractors was scheduled to be made by March 2013. As stated in section 2.1, three EPC contractors were selected as of April 1, 2013, and one more is in negotiation, but it is unknown what progress has been made to date in regards to selecting the remaining EPC contractors, along with additional contractors and suppliers. ENVIRON has therefore not been able to assess the capacity of the EPC contractors and their Management Plans when they have yet to be selected by CMPC.

CMPC estimates there will be around 7,000 workers at the peak of construction. The total number of workers needed for the Project is projected to be around 25,000 workers over a 25-month construction period. The worker hiring plan will be defined after all of the EPC Contractors, sub-contractors and suppliers are selected. CMPC is targeting that 75% of workers will be local workers (from the same region as the Project). CMPC is also planning initiatives with the Government to prepare, train and qualify workers for this project. For the external workers (estimated at 25% of the total), CMPC does not plan to construct workers' accommodations in Guaíba and are exploring alternative options including the concept that workers coming from other regions will stay in hotels or rent rooms in the Porto Alegre Metropolitan Region. Once the contractors have been identified, the quantity of external workers will be known, and plans for worker accommodations can be better defined. Only then can CMPC's compliance with IFC PS2 and the IFC/EBRD Workers' Accommodation Guidelines be assessed.

Recommendations: CMPC to inform Lenders of the status of the selection of the remaining EPC Contractors, sub-contractors and suppliers; and the status of the worker hiring plan and the worker housing plan. Only after the main contractors are identified and their EPC Management Plans are received, can the contractors' capacity to construct the Project in compliance with the Applicable Standards be assessed.

4.3.3 PS 3 – Pollution Prevention and Abatement

General Requirements

The Line 2 and the extension of Line 1 projects are largely in compliance with WBG EHS Sector Guidelines for Pulp and Paper Mills and the IPPC BAT (2001) guidelines. However, some potential for improvement has been identified (see below). ENVIRON acknowledges that significant water and energy saving measures along with emission reduction measures have been incorporated into the design. See sections 4.3.9 and 4.3.10 below for additional information.

Resource Efficiency

Greenhouse gases

A carbon footprint estimate for the project (2016) was provided in October 2012 that shows a positive balance (9:1) between carbon sequestration (plantations) and carbon emissions (mill).

Reportedly, sequestration estimates only consider eucalyptus plantations and do not incorporate protection areas – Permanent Protection Areas and Legal Reserve Areas.

Based on the available information, the project is considered to be a net absorber, having a positive effect over climate change. However, it should be noted that the documentation provided does not make any reference to the methodology used in the calculation, nor does it indicate whether emissions from the project construction phase have been considered for all the different project components.

Additionally, climate change risks and adaptations opportunities have not been assessed as part of the EIA.

Recommendation: Ensure that the carbon footprint conforms to an Internationally Recognized Greenhouse Gas Emissions Methodology and that both Scope 1 emissions (i.e. direct emissions from the facilities owned or controlled within the physical project boundary, to include the Transmission Line and New Electrical Road) and Scope 2 emissions (i.e. indirect emissions associated with the project's use of energy but occurring outside the project boundary) are included.

Water Consumption

Water for the mill is abstracted from the Guaiba Lagoon. The project design incorporates water reuse and saving measures. Water consumption specifications from the project are as follows:

- Line 2: 27 m³/t
- Extension of Line 1: 34 m³/t (reduced from a previous annual consumption ranging between 38 m³/t in 2009 and 35 m³/t in 2011)

See sections 4.3.9, IPPC BAT, and 4.3.10, EHS Sector Guidelines for Pulp and Paper Mills, for additional information.

Pollution Prevention

Air Emissions

Based on the latest calculations provided (October 2012), process emissions from the project (recovery boiler and lime kiln for extended Line 1 and Line 2) are in compliance with WBG EHS Sector Guidelines for Pulp Paper Mills and Pulp and Paper IPPC BAT.

Improvements to the existing Line 1 process emissions consist of:

- i. Incineration of concentrated non-condensable gases (NCG) from Line1 in the recovery boiler of Line 1, using a flare as a back-up, and decommissioning of the existing incinerator;
- ii. Incineration of gasses from the Line 1 dissolving tank in the Line 1 recovery boiler; and
- iii. Installation of a methanol column for the treatment of gases from the evaporation plant.

Conclusion: No further actions are considered necessary.

Noise

In order to ensure compliance with surrounding noise levels both for current and future operation CMPC prepared two documents, delivered to ENVIRON in December, 2012.

The Procedure 704-L-CRG-0005 Noise abatement project guidelines (Critério de projeto - Medidas mitigatórias de ruídos na expansão da fábrica) was prepared by CMPC. It presents general guidelines to be observed considering the installation of noise abatement devices or the use of noise abatement technologies. According to this procedure these guidelines shall be applied in all stages of the process from wood shredding to the recovery boilers and ovens. There is no information on measures regarding noise abatement during construction phase.

The document - 5000-E-FOR-0001 Noise Prevision Report (*Relatório de previsão de ruídos*) was prepared by Pöyry on behalf of Aracruz Celulose and presents an estimate of noise levels resulting from the plant expansion and full operation. According to a noise modeling presented in this document, noise levels calculated for surrounding, inhabited areas would be between 55dB and 65 dB, considering the plant expanded and in full operation. As the maximum legally accepted noise levels for residential areas range between 55db (night) and 60dB (day), this report proposes a series of noise abatement measures. The noise abatement measures presented in the two documents are coherent although the two reports do not seem related.

It is important to highlight though that none of the documents considers compliance with noise limits established by EHS General Guidelines, which are more stringent than Brazilian regulations (55 dB(A) during daytime and 45 dB(A) during night time for residential areas, or a maximum increase in background levels of 3 dB at the nearest receptor location off-site). Moreover, there is no information on the effective application of those noise abatement measures on the on-going construction project.

Recommendation: Update noise abatement measures to comply with WBG EHS General Guidelines noise emission guideline values; incorporate noise abatement measures into the PBA for the project.

Wastewater Effluents

During the site assessment ENVIRON observed that the water used for washing the logs prior to shredding passes through an oil/water separator and then is discharged (via underground pipelines) into a lagoon located in the northern portion of the site, which in turn discharges into the Guaíba Lagoon. This seemed to be the largest effluent stream discharged by the site and ENVIRON observed a fine layer of oil and foam floating over the surface of this lagoon, especially close to the dam that connects it to the Guaíba Lagoon. It is ENVIRON's understanding that this log washing effluent carries oil from the log conveyors and that the oil/water separator is not being effective as oil was observed on the discharge point.

Recommendation: CMPC should refurbish and re-dimension the oil/water separator and conduct periodic monitoring of the effluent quality prior to and after its discharge into the lagoon.

Potential Soil and Groundwater Contamination

The mill site has a long industrial history (operations started in 1972). The condition of the hardstanding surfaces at the existing facility were noted to vary between good and poor, and some evidence of oil staining was observed in the area around the oil tanks.

ERM, in November 2007, on behalf of Aracruz Celulose, conducted a Phase II site assessment at the industrial site. The assessment was limited to soil, and therefore there is no information on potential groundwater contamination that may have been caused by CMPC's/Aracruz' industrial operations. Additionally, the 28 soil samples collected were analyzed and pollutant concentrations were compared with NBR standard 10004, which is specific for hazardous waste classification. This NBR standard does not provide criteria to evaluate concentrations of contaminants on the sample such as TPH, VOC, SVOC and metals, and it simply provides criteria for the assessment of solubility, leaching capacity and reacting capacity of the sample for its subsequent classification as hazardous or non-hazardous waste. Therefore, whilst this testing method is suitable for identifying the most appropriate waste disposal route, the result is not conclusive from a legal point of view in terms of identifying a potential site contamination.

Moreover, the area for the extension of the new production line includes a petrol station (which is to be relocated); the rest of the area is understood to have been largely residential. No information on the number or condition of underground storage tanks associated to the petrol station, to include the existence of current or historic leaks, was available for review. CMPC reported that a soil and groundwater contamination assessment in compliance with Resolução Conama 420/2010 was intended to be conducted before 31 March 2013 at the petrol station; however no additional information was available for review at the time of preparation of this report.

Recommendation: Given the significant time elapsed since the analysis, soil samples collected during the 2007 soil investigation are very unlikely to have been adequately stored (i.e. sample properties have been adequately maintained and this has been documented) and to have sufficient material for further analysis. Additionally, in the absence of groundwater samples, a new phase II investigation is recommended in order to characterize potential soil and/or groundwater contamination at the existing mill. The scope of the investigation should be extended to include potentially contaminated areas that will be part of the new Line 2, to include the former petrol station, if these have not yet been already characterized. From a Health & Safety point of view, excavations cannot be conducted on a potentially contaminated site risking workers exposure to petroleum product contaminated soil and water.

Wastes

Waste management practices at the existing Line 1 were noted to be generally good.

Waste management operations at the mill were noted to follow good practices, with a view to minimization and recovery in accordance with the waste hierarchy.

CMPC operates a non-hazardous waste treatment center close to the Guaíba pulp mill site which occupies 99.5 ha. It is dedicated to receive, per year, up to 11.200 tons of eucalyptus

bark, 78.120 tons of WWTP sludge, 16.000 tons of dregs and grits, 26.400 tons of lime sludge and 2.400 tons of Class II waste (non-hazardous, non-inertial) from the mill.

Based on the information provided by CMPC, the Guaiba 2 Project will achieve a recycling rate of industrial waste of 99%. The main waste streams in terms of volume and their corresponding use are summarized below:

- Lime mud - pH correction for soils
- Sewage sludge – fertilizer
- Sawdust - plywood and fuel
- Ash - cement manufacturing
- Bark - fertilizer

Organic waste is used for composting then used on eucalyptus plantation or sold as fertilizer. Lime sludge, dregs and grits are used as fertilizer raw material and remaining wastes are landfilled.

Conclusion: No issues anticipated.

Figure 4.3.3.1. View of the non-hazardous waste treatment center (Horto Forestal Lutzenberger)



Hazardous Materials Management

Hazardous material storage and handling procedures are in place. During the site visit, hazardous material management practices were noted to be generally good, and secondary containment was present throughout the facility. Reportedly, CMPC has not identified alternative products to replace the hazardous materials utilized in the process.

During the site visit ENVIRON learned that as part of the new Line 2 CMPC plans to install two above-ground oil storage tanks (ASTs) for the refueling of the barges. However, on 30 April

2013, CMPC indicated that Poyry is currently developing the project, the Barges Terminal, and a decision on the ASTSs had not yet been made.

Recommendation: Should CMPC proceed to the installation of the two ASTs as part of the Guaíba 2 Project, secondary protection shall be in place in accordance with Brazilian regulations, EHS Sector Guidelines for Pulp and Paper Mills and EHS Sector Guidelines for Ports, Harbors and Terminals. Additionally, operating procedures shall be developed and implemented to avoid the accidental release of fuel during tank loading and barge refueling operations.

Pesticide Use and Management

According to CMPC, no pesticides will be used in the mill area. However, it should be noted that pesticides used at the plantations are stored in a designated area within the mill. This issue is further discussed under section 4.4 Existing Plantations, below.

Conclusion: No issues anticipated.

4.3.4 PS 4 – Community Health, Safety and Security

Community Health and Safety

ENVIRON has reviewed the potential impacts from the mill expansion to adjacent communities. Based on a review of an aerial photograph, marking the boundaries of the existing mill site and the expansion, the boundary of the expanded mill site will be very close to the neighbouring residential areas on three sides; the Guaíba Lagoon is to the east of the mill site. While the photograph does not show any buffer between the expanded mill site and the communities, we observed during our site visit that CMPC created the buffer zone inside the fence of the mill site and that they are building a sidewalk and a “green ring” with trees planted on the outside of the fence as an expansion of the buffer. During the site visit, we discussed with CMPC the mill site boundary mitigation measures and potential impacts (noise, odors, and vibration) which are likely to affect these communities.

An assessment of community health and safety impacts in accordance with the WBG EHS Guidelines was not conducted as part of the EIA for the mill. As noted under PS1, from a review of the EIA for the mill it was noted that the impact identification and analysis section does not provide a comprehensive assessment of all the relevant risks and impacts associated to Line 2 and the expansion of Line 1. In particular, the EIA does not include community health and safety risks derived from the expansion of the chlor-alkali plant, increased road transportation of hazardous materials and timber, project’s direct impacts on priority ecosystem services (i.e. impacts on provisioning and regulating ecosystem services such as land use changes or adverse impacts on the quality or quantity of freshwater), and accidents/explosions that may occur during operation of Lines 1 and 2, amongst others.

While the original transportation plan involved transporting logs from the plantation areas to the mill by rivers (40%) and roads (60%), CMPC has revised this plan to now only involve transportation by roads, and, as a result, the volume of trucks carrying timber to the mill is

anticipated to increase substantially when the Project goes into operation. ENVIRON was informed during the site visit that during the harvest season, it is projected that timber truck activity will be a 24-hour per day operation with a truck arriving every 1.5 minutes (40 per hour) for a total of 960 trucks per day. There is the potential for impacts to the urban local communities, especially communities located near the new road and along BR-116 and BR-290, due to the risk of road accidents involving these open timber trucks. This risk also exists for the urban zones and rural communities located within the Project's AOIs in the plantation basins (refer to section 4.4.4 and maps included in Appendix D).

Whilst a formal analysis of risks and impacts on neighboring communities resulting from the new Line 2 and the expansion of Line 1 has not been conducted as part of the EIA, it should be noted that measures to avoid or reduce impacts on neighboring communities are already in place.

- The chlor-alkali plant poses a risk due to the proximity of residential areas. No incidents have been reported since the beginning of operation of the plant. A double wall pipe system equipped with an interstitial air monitoring system is in place for the identification of leaks during transfer of liquid chlorine; and a caustic scrubber system is in place for the abatement of emissions in the event of leak from the chlor-alkali plant.
- The closest residential properties are located approximately 390 m to the northwest of the chlor-alkali plant. According to the HAZOP study for the plant (volumes I and II, dated January 1992 and February 1996, respectively), the vulnerability study showed that the neighboring population is outside of the areas with probability of fatality, although intoxication, discomfort, irritability, muscle weakness or injuries resulting from explosion may occur. However, this assessment has not yet been updated to consider impacts from the increased capacity plant as part of the Guaíba 2 project.
- An emergency response plan is in place (refer to PS 1 above), which depending on the severity of the accident includes responsibilities for notification to external entities such as fire fighters, civil defense, FEPAM, military brigade, Estate and Federal road police, hospitals and emergency centers.
- See section 4.3.3 PS 3 above for information on noise nuisance and air emissions (to include NCG which give rise to odours).

Recommendation: Expand the scope of the EIA to include a comprehensive assessment of risks and impacts to health and safety of neighboring communities during the project lifecycle. Additionally, update the HAZOP for the chlor-alkali plant to assess risks arising from the Guaíba 2 project, considering future distance to neighboring properties.

Ecosystem Services

Refer to section Management of Ecosystem Services under PS6 (section 4.3.6).

Community Exposure to Disease

The mill has been operating in the community for many years and, to the best of our knowledge, there has been no issue to date. Most workers hired for the expansion project will be local, so there should be no risk of community exposure to disease from external workers.

Conclusion: No issues anticipated.

Security Personnel Requirements

In response to the Gap Analysis, CMPC provided copies of the two security service contracts with Prosecur Security Service who provides security for the mill (refer to section 4.3.2).

Conclusion: No issues anticipated.

4.3.5 PS 5 –Land Acquisition and Involuntary Resettlement

General Requirements

All land has already been acquired that will be required for the expansion of the mill. CMPC has considered purchasing land across the street from the mill entrance where a supermarket is currently in operation, but no final decision has been made, as of our last communication with CMPC on this subject.

ENVIRON requested that CMPC provide land acquisition documentation for the supermarket property. According to CMPC, no action needs to be taken because the area of the supermarket, which is within the Project's DIA, is not needed for the mill expansion. The area will be acquired only if the owner decides to sell.

At the time of our August 2012 site visit, the final alignment of the T-line and Electrical Road had not yet been determined so it was not known exactly where land would need to be acquired (refer to sections 4.6 and 4.7),

Recommendation: CMPC to provide an update on the status of the supermarket owner's interest in selling the land. If the land acquisition takes place, Lenders would need to review the land acquisition documentation to assess compliance with PS5.

Physical or Economic Displacement

Based on information received by ENVIRON, the mill expansion will not result in any physical or economic displacement.

Conclusion: No issues anticipated.

Private Sector Responsibilities under Government-Managed Resettlement

Based on information received by ENVIRON, the mill expansion will not result in any involuntary resettlement.

Conclusion: No issues anticipated.

4.3.6 PS 6 – Biodiversity Conservation and Sustainable Management of Living Natural Resources

Protection and Conservation of Biodiversity

No critical habitats were identified in the EIA for the mill. The mill occupies a modified habitat with some natural habitats fragments which present some biodiversity value. These natural areas are present around the coast and are classified as Permanent Preservation Areas (APP) under Brazilian Federal Law 4771 of 15 September 1965, which establishes the new forestal code.

APP are belts of forests and other forms of natural vegetation found in the edges of rivers, lakes, lagoons, hill-tops, slopes, dunes and other environmentally sensitive areas, which are essential to the preservation of water resources, scenery, protect threatened animal and plant species, biodiversity, soil, and/or the environment and the livelihoods of human populations in the area.

This Federal Law states that the total or partial suppression of APP requires prior Federal Authorization and will only be allowed when considered necessary for the execution of works, plans, activities or projects of public or social interest ('public interest' and 'social interest' projects are defined by this law) and no viable alternative has been identified. The social/public interest of the project shall be properly characterized, and will only be authorized when no technical or locational alternative exists to the proposed project. We note that '*utilidade publica*' or public interest activities include infrastructures for public transportation, sanitation and energy, as well as all works, plans, activities or projects listed in a resolution published by CONAMA (the national environmental council).

Suppression of native vegetation in 7 areas was authorized at the new line construction area, in accordance with the information submitted by Aracruz as part of the license application procedure. Additionally, CMPC is required to transplant some native vegetation (*Butia capitata*, *Erythrina crista-galli* and *Ficus* sp) to pre-defined recovery areas. Additionally, CMPC is required to off-set some of the APP, and is required to protect the vegetation not affected by the expansion project.

As stated in section 2.1, the Installation License for the new Line 2 and extension of Line 1 is in the process of being renewed.

Recommendation: Ensure that requirements for biodiversity protection (including adherence to the mitigation hierarchy), conservation and any off-sets for natural habitats are incorporated into the PBA for the mill in line with the requirements of IFC PS 6.

Management of Ecosystem Services

A formal assessment of potential risks and impacts from the new Line 2 and the expansion of Line 1 on ecosystem services has not been conducted as part of the EIA for the mill. Therefore, at present it is unknown whether the project is likely to adversely affect any priority ecosystem services (e.g. freshwater pollution from the discharge of effluents into the Guaíba lagoon, land use change during construction and operation, disturbance to habitats and species during construction and operation, including light and noise impacts, disruption or alteration of landforms and drainage systems, impacts on availability and health of resources due to demographic and economic changes to the influx of people seeking potential employment).

Recommendation: An ecosystem services assessment should be conducted. CMPC should conduct a screening exercise to determine priority ecosystem services present in the project area, followed by an analysis of the potential impacts on ecosystem services resulting from the different project phases. This should include an analysis of project dependence on priority ecosystem services in terms of change in project performance, and the identification of measures to mitigate impacts and manage dependence on priority ecosystem services.

Sustainable Management of Living Natural Resources

This issue is examined under the PS review for the existing plantations. Refer to section 4.4.6 below for additional information.

Supply Chain

This issue is examined under the PS review for the existing plantations. Refer to section 4.4.6 below for additional information.

4.3.7 PS 7 – Indigenous Peoples

Based on information ENVIRON has received to date, the mill expansion will not result in any impacts to indigenous peoples (IP). Refer to section 4.4.7 for an assessment of potential impacts to IP in the plantation basins.

Conclusion: No issues anticipated.

4.3.8 PS 8 – Cultural Heritage

Based on information ENVIRON has received to date, the mill expansion should not result in any impacts to cultural heritage.

Conclusion: No issues anticipated.

4.3.9 IPPC BAT

General Measures

An Integrated Management System (IMS) is in place, covering environmental, health, safety and quality aspects of the mill, nursery and plantations. The IMS is certified by the following internationally recognized standards: ISO 9001/2008 and ISO 14001/2004. Additionally, adequate process control and maintenance procedures are currently in place for Line 1 and will reportedly be followed for Line 2.

See PS 1 under section 4.3.1 above for information on training, education and motivation of staff and operators.

Conclusion: No issues anticipated.

Wastewater Effluents

The following good practices were observed:

- Wood is debarked at the plantation during harvesting operations. Bark and wood waste are used as mulch in the plantations to protect against erosion and recycle nutrients.
- The existing line (Line 1) is equipped with a continuous Lo-solids digester; on 30 April 2013, ENVIRON receive confirmation that CMPC has made a decision on the cooking technology for the new production line (Line 2), and Metso, one of the market leader in cooking, is the EPC contractor selected by CMPC (note that both Lo-solids Cooking (Andritz) and Compact Cooking (G2; Metso) technologies were being considered). It should also be noted that whilst the IPPC guidelines (dated from 2001) consider modified kraft cooking (introduced at the end of 1970s- beginning of 1980s) to be the BAT at the time, CMPC considers both Lo-solids and Compact Cooking to be the BAT at present, their use being widespread. Low-solids or Compact Cooking represent technologies of mid-late 2000s and have been developed based on the experience and lessons learnt from the older BAT technologies. They have been developed to minimize energy use and to improve the process control and paper quality and as a result to reduce emissions and costs. The need for ENVIRON to do further research on the adequacy of the proposed technologies was raised as part of the Gap Analysis prepared by ENVIRON in October 2012 and this issue has been now closed.
- Oxygen delignification is conducted in Line 1 and will be installed in Line 2. Prior to oxygen delignification, washing and purification will be conducted.
- ECF bleaching is currently conducted in Line1 and will be installed in Line2. The bleaching plant in Line 1 has been partially closed, with a recirculation of 25% acidic effluents and 10% of alkaline effluents. During the site visit ENVIRON was informed that whilst these improvements will be implemented in Line 2, they will not be included in the EPC specification but the line will reportedly be adapted internally by CMPC. Therefore, this was identified as a potential issue in the Gap Analysis. Further to the latest

documentation provided by CMPC in October 2012, which confirms the reuse of circulated filtrates from D_1 and E_P stages as washing liquor in the press or as dilution liquor after the pulp is washed, this issue has been closed.

- Condensates from the evaporation and cooking processes in Line 1 are collected in four tanks for reuse; CMPC reported that the following design (presented below) will be followed in Line 2:
 - i. Primary 'clean' condensates from the evaporation plant and digester are reused in the boiler.
 - ii. Clean liquor condensates from the evaporation plant, with low concentration of volatile organic compounds, are used for the washing of cellulose in a closed circuit.
 - iii. Intermediate condensates from the evaporation plant cannot be reused in the process given their high conductivity and are sent to the WWTP for treatment.
 - iv. Contaminated condensates from the evaporation plant and digester are treated in the stripping column and reused in the process for pulp washing.
- The sewer system is designed to 1) Collect diverted or spilled liquor at the highest liquor solids concentration and return of collected liquor and solids to the process at appropriate locations; 2) Isolate critical process areas to avoid concentrated or harmful streams entering the effluent treatment; and 3) Segregate process sewers in two main lines: one that contains suspended solids and the other one that does not contain suspended solids (concentration is below a specified limit). The following areas will reportedly be equipped with process spill recovery systems: cooking and brown stock (common), evaporation, causticizing and lime kiln, recovery boiler – black liquor containing spills, and recovery boiler – green liquor containing spills.
- Effluents generated at the site that have the capacity to upset the wastewater treatment plant (WWTP) will be directed to emergency lagoons. CMPC plans to re-install spills collection systems for the digester and evaporation areas of Line 1 to halve the demand for the current emergency lagoon from 40,000m³ to 20,000m³, thus effectively splitting the current lagoon into two separate chambers and using the second 20,000m³ chamber as a buffer lagoon (i.e. to support maintenance operations). A third lagoon (15,000 m³ to 20,000 m³) will be installed to ensure that a buffering capacity of at least 35,000 m³ is available while one lagoon is being cleaned. An emergency tank with a capacity of 28,000m³ will be installed for Line 2. The three emergency lagoons/tanks will be reportedly interconnected. Based on information presented in the EIA, effluent generation for the new project is expected to be in the order of 99,000m³/day for Line 2 and 48,000m³/day for Line 1. As the basis for calculation of the capacity of the emergency lagoons was not available for review, this was identified as a potential issue in the Gap Analysis. The complementary information provided by CMPC in October 2012 confirmed that the emergency lagoon system will provide a buffer of 6 hours for Lines 1 and 2 and this issue was closed.
- During the site visit, ENVIRON was informed that CMPC was in the process of assessing the means to increase the capacity of the Line 1 recovery boiler from 2,050

Nm³/h of CNCG (concentrated non-condensable gases) burning capacity to 2,250 -2,350 Nm³/h. The EPC enquiry specification provides information on the recovery boiler characteristics [i.e. designed for an annual production of 1,300,000 ADt/a of bleached eucalyptus pulp operating at higher loads than maximum continuous rating (MCR) in each possible operating situation (range of liquor solids content from evaporation 75-80%, although the solids content of the liquor from the evaporation shall normally be 80%); the Line 2 boiler will have a virgin liquor capacity of 5,500 t DS/d, a CNCG burning capacity of 2,700 Nm³/h and a DNCG (diluted non-condensable gases) burning capacity of 50,400 Nm³/h]. The basis for the calculation of the boiler capacity, however, was not available for review and this was identified as an issue in the Gap Analysis. Furthermore, no information on the capacity of the evaporation plant for Line 2 was available for review. Further to this, complementary information was provided by CMPC in October 2012 which allowed ENVIRON to close this issue. CMPC indicated that the capacity of the evaporation plant of Line 2 will be expanded from 1,400 t H₂O/h to 1,530 t H₂O/h based on a production of 1,300,000 ADtB/a. The Line 2 recovery boiler is understood to have a capacity of 5,571 tDS/d, to cope with an estimated daily production of dry solids of 5103 t/d (this includes 248 tDS/d which are transferred from Line 1 and 4855 tDS/d generated in Line 2). The system design allows for the addition of 9% of spills. Additionally, Line 1 will be subject to some upgrades (e.g. incineration of CNCH and MeOH in recovery boiler, replacement of economizer, energy conservation measures). The capacity of the evaporation plant and recovery boiler in Line 1 are 359 tH₂O/h and 575 tDS/d respectively, and as explained above a portion of the dry solids generated in the expanded Line 1 will be managed in the recovery boiler of Line 2.

- Wastewater recycling opportunities are being identified and implemented in Line 1, which in turn will be implemented in Line 2. The incorporation of closed loop cooling towers in Line 2 (a feature not currently present in Line 1). This will allow the reuse of cooling water in a closed loop, significantly reducing water consumption for the facility from 38m³/t in Line 1, of lower capacity, to 27m³/t in Line 2.
- The most significant effluent streams originate from timber washing, ECF, drying, recovery boiler, raw water treatment plant, cooking/brown pulp purification and delignification, causticizing and lime kiln. Effluents from Line 1 are currently treated at the existing wastewater treatment plant (primary, secondary and tertiary treatment) which includes aerobic biological treatment. A similar plant will be implemented for the segregated treatment of effluents from the new Line 2.

The Installation License for the mill (L.I. No 687/2008-DL) establishes limits for liquid effluents discharged into the Guaíba Lagoon, along with monitoring requirements of the mutagenic and cytotoxic activity of the effluent, malformation studies in fish and six-monthly bio-monitoring requirements of dioxins and furans in bivalve mollusks in the vicinity of the discharge point. Should the result of this monitoring suggest the occurrence of negative impacts arising from the discharge of wastewater effluents from the mill, additional measures may be requested by FEPAM that cannot be estimated at this stage.

The hydrological dispersion models prepared by EcoAguas (1) unknown date; 2) September 2008, (ref. 00027.08-A) were reviewed and no issues were anticipated.

Conclusion: No issues anticipated at this stage.

Air Emissions

The following good practices were observed:

- Concentrated non-condensable gases (CNCG) of current Line 1 are currently treated in the stripping column and incinerated. A new burner with the capacity to burn concentrated as well as diluted gases will be installed in the recovery boiler of Line 1 as part of the project extension that will allow collection of the methanol from the condensate for use in the start-up or for the operation of the Line 1 recovery boiler.
- CNCG gases from the evaporation plant and cooking digester of Line 2 will be burned in the recovery boiler and, as a back-up, high efficiency torch type incinerator. Methanol shall be burned in the recovery boiler and as back-up in lime kiln.
- In the future Line 2 diluted non-condensable gases (DNCG) from black and white liquor handling, pulp washing and floor channels with black and white liquor residues will be collected with gas pipelines and blowers for gas transfers and will be incinerated in the recovery boiler of Line 2. Dissolving tank gases will also be burned in the recovery boiler. During emergency situations when the DNCG cannot be burned in the recovery boiler, they shall be automatically directed to the atmosphere. Injection of caustic will be provided in the DNCG coolers; dissolving tank vent gas shall be washed with caustic solution in the scrubber before being sent to atmosphere.
- The recovery boiler will be provided with computerized control and continuous monitoring of CO, along with TRS, O₂, SO_x, NO_x, particulate and opacity monitoring in the flue gases.
- High dry solid concentration black liquor will be burnt in the recovery boiler (range of liquor solids content from evaporation 75-80 %, although the solids content of the liquor shall normally be 80 %). In addition, a flue gas scrubber will be installed.
- Electrostatic precipitators are in place in Line 1 recovery boiler, Line 1 lime kiln and the auxiliary coal boilers; additionally, the coal boiler is also equipped with a bag filter. Electrostatic precipitators will also be installed in the Line 2 recovery boiler and Line 2 lime kiln. It should be noted that the existing coal boiler will remain in operation.
- It is ENVIRON's understanding that control of NO_x emissions from the recovery boilers and lime kiln will be achieved through adequate design along with control of the firing conditions and adequate mixing and division of air in the boiler.

Environmental and Social Due Diligence Report

- IPPC BAT air emission values are expected to be met based on the emission estimates presented by CMPC for the new Line 2 and the extension of Line 1. ENVIRON understands that these limits will be included as guarantees in the EPC contracts.

Conclusion: No issues anticipated.

Solid Waste

Whilst a detailed review of waste management practices could not be conducted given time constraints, the following good practices were observed:

- Separate collection of waste fractions at source and, if necessary, intermediate storage of residuals/waste to enable appropriate handling of remaining waste products.
- CMPC operates a non-hazardous waste treatment center close to the Guaíba pulp mill site which occupies 99.5 ha. It is dedicated to receive, per year, up to 11.200 tons of eucalyptus bark, 78.120 tons of WWTP sludge, 16.000 tons of dregs and grits, 26.400 tons of lime sludge and 2.400 tons of Class II waste (non-hazardous, non-inertial) from the mill. Organic waste is used for composting then used on eucalyptus plantations or sold as fertilizer. Lime sludge, dregs and grits are used as fertilizer raw material and remaining wastes are landfilled.

Conclusion: No issues anticipated.

Energy Saving Measures

Whilst some good practices were noted (e.g. high dry solid content of black liquor, presence of condensing turbines in the design for power production from excess steam), a formal review of energy saving measures could not be conducted in the absence of detailed project documentation.

Recommendations: This issue should be further assessed. Energy efficiency measures should be included in all EPC contracts in order to ensure high heat recovery and low heat consumption, low consumption of electric power, and high generation of electric power.

Chemical Use

The following good practices were observed:

- Material safety sheets for the products currently used at the existing facility are in place.

In terms of the potential substitution of hazardous materials, no changes are currently being considered as the feasibility of substitution of process chemicals is reportedly limited.

Conclusion: No issues anticipated.

4.3.10 EHS Sector Guidelines for Pulp and Paper Mills

A. Environment

Wastewater Prevention and Control Methods

See information under Wastewater Effluents, section 4.3.9 above.

Air Emissions

See information under Air Emissions, section 4.3.9 above.

As noted under PS 3 above (section 4.3.3), based on the latest calculations provided by CMPC (October 2012), process emissions from the project (recovery boiler and lime kiln for extended Line 1 and Line 2) are in compliance with WBG EHS Sector Guidelines for Pulp Paper Mills and Pulp and Paper IPPC BAT.

Conclusion: No issues anticipated.

Residues and Waste

Refer to Solid Waste, section 4.3.9 above.

Noise

Refer to PS 3 above (section 4.3.3).

B. Occupational Health and Safety

Chemical Hazards

Whilst a detail assessment of compliance with WBG EHS Guidelines on chemical hazards could not be conducted in the absence of detailed project documentation, the following good practices were observed:

- Automated pulping and bleaching operations;
- Engineering controls;
- Continuous gas monitors with alarms;
- All employees, contractors and visitors of the current Line 1 in areas where the generation of hazardous gases may occur are provided with emergency escape respirators;
- A database of all chemical currently used at Line 1 is in place.
- Hazardous chemicals in Line 1 are labeled and adequately stored.
- Contract personnel are trained in and follow site safety procedures.

Recommendation: Ensure that a clear requirement to comply with Brazilian NRs and international WBG EHS Sector Guidelines for Pulp and Paper Mills and WBG EHS General Guidelines is included in all contract specifications and other documentation and manuals intended for tenderers and companies directly or indirectly involved with the construction,

commissioning, testing and initial operation of the mill, as well as in CMCP's occupational H&S plans and procedures.

General Physical Hazards

Whilst a detail assessment of compliance with WBG EHS Guidelines on physical hazards, machine safety and log handling activities could not be conducted in the absence of detailed project documentation, the following good practices were observed:

- During the site visit, personnel were noted to be provided with and use appropriate personal protective equipment (PPE).
- Good maintenance practices were noted to be in place.
- H&S procedures are in place (operation of the telescopic access platform, handling, storage and loading of cellulose bailers, which including use of lifting equipment)
- A work permit system is in place at the mill to ensure that all activities are conducted by trained personnel and that risks have been identified and addressed.
- Periodic H&S inspections are conducted at the mill.

Recommendation: Ensure a clear requirement to comply with Brazilian NRs and international WBG EHS Sector Guidelines for Pulp and Paper Mills and WBG EHS General Guidelines is included in all contract specifications and other documentation and manuals intended for tenderers and companies directly or indirectly involved with the construction, commissioning, testing and initial operation of the mill, as well as in CMCP's occupational H&S plans and procedures.

Wood Dust

The risk of explosive atmospheres was identified at the facility (e.g. silo storage and the wood chopping lines). Reportedly coal was not a risk because the facility uses wet coal which does not generate dust. No information on explosive atmospheres prevention measures for the new Line 2 was available for review. Reportedly the single risk protection adopted was a dust collection system installed on the wood chopping lines. In the absence of additional information, ENVIRON could not determine whether risks of explosive atmospheres have been adequately addressed and this issue was identified in the Gap Analysis. Additional documentation was provided by CMPC in October 2012 (General Specification for Fire Protection and Fire Fighting Design prepared by CMPC which provides information on fire fighting protection for all sectors of the plant; and Concept development of the NCG system in lines I1 & I2 prepared by Poyry, which presents specific project details for the NGC system control),

Recommendation: Measures to prevent, minimize and control dust should be included in the EPC specifications in compliance with the WBG EHS Guidelines for Pulp and Paper Mills. These include but are not limited to enclosing and ventilating saws, shredders, dusters and wood chip conveyors; enclose and ventilate areas where dry, dusty additives are unloaded, weighted and mixed. Additionally, as part of the operational H&S procedures, CMPC should ensure that compressed air is not used to clear wood dust and waste paper and that dusty areas are regularly inspected to minimize dust explosion risk.

Biological Agents

A detail assessment of compliance with WBG EHS Guidelines on biological agents could not be conducted in the absence of detailed project documentation.

Recommendation: Ensure a clear requirement to comply with Brazilian NRs and international WBG EHS Sector Guidelines for Pulp and Paper Mills and WBG EHS General Guidelines is included in all contract specifications and other documentation and manuals intended for tenderers and companies directly or indirectly involved with the construction, commissioning, testing and initial operation of the mill, as well as in CMCP's occupational H&S plans and procedures.

Heat

Whilst a detail assessment of compliance with WBG EHS Guidelines on heat could not be conducted in the absence of detailed project documentation, the following good practices were observed:

- Safety procedures are in place in Line 1 to minimize the potential for smelt/water explosions.

Recommendation: Ensure a clear requirement to comply with Brazilian NRs and international WBG EHS Sector Guidelines for Pulp and Paper Mills and WBG EHS General Guidelines is included in all contract specifications and other documentation and manuals intended for tenderers and companies directly or indirectly involved with the construction, commissioning, testing and initial operation of the mill, as well as in CMCP's occupational H&S plans and procedures.

Confined Spaces

A procedure for accessing confined spaces and a work permit system are in place in Line 1. Additionally, confined spaces in the existing Line 1 were noted to be clearly identified. ENVIRON understands that consistent practices will be followed in the new Line 2.

Conclusion: No issues anticipated.

Occupational Noise

A detail assessment of compliance with WBG EHS Guidelines on occupational noise could not be conducted in the absence of detailed project documentation. Collective noise protection measures such as use of control rooms are present in Line 1 and are also expected to be installed in Line 2.

Risks assessment for all the workplaces have been conducted in Line 1 and are expected to be conducted in Line 2 to determine the need for hearing protection PPE.

Recommendation: Ensure a clear requirement to comply with Brazilian NRs and international WBG EHS Sector Guidelines for Pulp and Paper Mills and WBG EHS General Guidelines is

included in all contract specifications and other documentation and manuals intended for tenderers and companies directly or indirectly involved with the construction, commissioning, testing and initial operation of the mill, as well as in CMCP's occupational H&S plans and procedures.

Radiation

A detail assessment of compliance with WBG EHS Guidelines on radiation could not be conducted in the absence of detailed project documentation. A radiological protection procedure is in place at the existing Line 1 (although the documentation which constitutes this procedure was not available for review at the time of preparation of this report) and is also expected to be installed in Line 2.

Risks assessment for all the workplaces have been conducted in Line 1 and are expected to be conducted in Line 2 to determine the need for hearing protection PPE.

Recommendation: Ensure a clear requirement to comply with Brazilian NRs and international WBG EHS Sector Guidelines for Pulp and Paper Mills and WBG EHS General Guidelines is included in all contract specifications and other documentation and manuals intended for tenderers and companies directly or indirectly involved with the construction, commissioning, testing and initial operation of the mill, as well as in CMCP's occupational H&S plans and procedures.

C. Community Health and Safety

Chemical Storage Use and Transport

An assessment of community health and safety impacts in accordance with the WBG EHS Guidelines was not conducted as part of the EIA for the mill. As noted under PS1 (see section 4.3.1 above), from a review of the EIA for the mill it was noted that the impact identification and analysis section does not provide a comprehensive assessment of all the relevant risks and impacts associated to Line 2 and the expansion of Line 1, to include community health and safety risks derived from the expansion of the chlor-alkali plant, increased road transportation of hazardous materials and timber, amongst others.

See section 4.3.11 below for information on the chlor-alkali plant.

Recommendation: Expand the scope of the EIA to include a comprehensive assessment of risks and impacts to health and safety of neighboring communities during the project lifecycle. Additionally, update the HAZOP for the chlor-alkali plant to assess risks arising from the Guaíba 2 project, considering future distance to neighboring properties.

Traffic

See information under the previous section, Chemical Storage Use and Transport.

Odors

See PS 3 above, section 4.3.3, for information on noise nuisance and air emissions (to include NCG, which give rise to odors).

4.3.11 WB Pollution Prevention and Abatement 1996, Chlor-Alkali Industry

Whilst a detailed assessment was not possible in the absence of project details in relation to the expansion of the chlor-alkali plant, the following good practices were observed based on the available information:

- Use of metal anodes to reduce lead and chlorinated organics;
- Use of noncontact condensers to reduce the amount of process water;
- Scrub of chlorine tail gasses to reduce chlorine discharges.
- Treatment of wastewater effluents generated at the chlor-alkali plant along with wastewater treatment plant for Line 1.
- A double wall pipe system equipped with an interstitial air monitoring system is in place for the identification of leaks during transfer of liquid chlorine;
- A caustic scrubber system is in place for the abatement of emissions in the event of leak from the chlor-alkali plant.
- An emergency response plan is in place for the facility.

The following areas of potential improvement were identified:

- As noted above, the chlor-alkali plant poses a risk due to the proximity of residential areas. No incidents have been reported since the beginning of operation of the plant. The closest residential properties are located approximately 390 m to the northwest of the chlor-alkali plant. According to the HAZOP study for the plant (volumes I and II, dated January 1992 and February 1996, respectively), the vulnerability study showed that the neighboring population is outside of the areas with probability of fatality, although intoxication, discomfort, irritability, muscle weakness or injuries resulting from explosion may occur. However, this assessment has not yet been updated to consider impacts from the increased capacity plant as part of the Guaíba 2 project.

Recommendation: Update the HAZOP for the chlor-alkali plant to assess risks arising from the Guaíba 2 project, considering future distance to neighboring properties.

Additionally, ensure that the project for the extension of the chlor-alkali plant complies with WB Pollution Prevention and Abatement 1996, Chlor-Alkali Industry Guidelines and WBG EHS General Guidelines by including this requirement in all contract specifications and other documentation and manuals intended for tenderers and companies directly or indirectly involved with the construction, commissioning, testing and initial operation of the plant.

4.3.12 WBG EHS Sector Guidelines for Thermal Power Plants

See section 4.2.2 above for information on the current performance of the power boiler and the current and potential future classification of the Airshed.

Emission estimates for the power boiler upon implementation of the desulphurization system have been provided by CMPC in terms of kg/ADt, which do not allow for a direct comparison with emission limit values for power boilers established by the WBG EHS Sector Guidelines for Thermal Power Plants, in mg/Nm³.

A comparison of emission limits established in the current Installation License (LI No 687/2008-DL), which is currently under review by FEPAM, and emission limits established by the WBG EHS Sector Guidelines for Thermal Power Plants, is presented in Table 4.3.12.1 below.

Table 4.3.12.1 Compliance with Table 6 (c) – WBG EHS Sector Guidelines for Thermal Power Plants (in mg/Nm³ unless otherwise indicated) for the 125 MW power boiler, measured at dry gas, excess O₂ content of 6%; volatile matter content of coal: 29% - 30% (>10%)

Parameter	WBG EHS Thermal Power Plants Guidelines		Current Installation License (under review)
	Non Degraded Airshed	Degraded Airshed	
TSP (particulates)	50	30	50
SO ₂	900 – 1500	400	400
NO _x	510	200	450
Opacity	-	-	20%

Current emission limits imposed by the Installation License are in compliance with the WBG EHS guideline values for coal-fired boilers for Non-Degraded Airsheds. However, as noted under section 4.2.2 above, should the Airshed be classified as degraded, EHS guideline values for particulate and NO_x would be exceeded.

Recommendation: Confirm the quality of the Airshed in order to determine the air emission guidelines values of application and ensure that the power boiler, through the adequate design of the desulphurization unit, complies with limit values established by the Installation License and WBG EHS Sector Guidelines for Thermal Power Plants, whichever is more stringent.

4.3.13 WBG EHS General Guidelines

A – Environmental

Air Emissions and Ambient Air Quality

Refer to section 4.3.3 and 4.3.9 above.

Energy Conservation

Refer to section 4.3.3.and 4.3.9 above.

Wastewater and Ambient Water Quality

Refer to section 4.3.3.and 4.3.9 above.

Water Conservation

Refer to section 4.3.3 and 4.3.9 above.

Hazardous Materials Management

Refer to section 4.3.3.and 4.3.9 above.

Waste Management

Refer to section 4.3.3.and 4.3.9 above.

Noise

Refer to section 4.3.3, 4.3.9 and 4.3.10 above.

Contaminated Land

Refer to section 4.3.3 and 4.3.9 above.

B – Occupational Health and Safety

General Facility Design and Operation

Refer to section 4.3.2 above.

Communication and Training

Refer to section 4.3.1 above.

Physical Hazards

Refer to section 4.3.10 above.

Chemical Hazards

Refer to section 4.3.10 above.

Biological Hazards

Refer to section 4.3.10 above.

Radiological Hazards

Refer to section 4.3.10 above.

Personal Protective Equipment

Refer to section 4.3.10 above.

Special Hazard Environments

Refer to section 4.3.10 above for information on confined spaces.

Monitoring

CMPC conducts periodic health and safety inspections at the mill and has implemented a medical surveillance program (PCMSO), as part of the occupational health and safety program. Additionally, a comprehensive preventive maintenance program is in place.

Conclusion: No issues anticipated.

C- Community Health and Safety

Water quality and availability

Refer to sections 4.3.3 and 4.3.9 above for information on air emissions, wastewater effluents, oil and hazardous materials and waste management. The project does not consider the delivery of water to the community or to users of facility infrastructure.

Structural Safety of Project Infrastructure

This aspect could not be assessed in the absence of detailed project documentation.

Recommendation: Ensure a clear requirement to comply with Brazilian and/or internationally recognized building safety codes, NRs and international WBG EHS Sector Guidelines for Pulp and Paper Mills and WBG EHS General Guidelines is included in all contract specifications and other documentation and manuals intended for tenderers and companies directly or indirectly involved with the construction, commissioning, testing and initial operation of the mill, as well as in CMCP's occupational H&S plans and procedures.

Life and Fire Safety

This aspect could not be assessed in the absence of detailed project documentation.

Recommendation: Ensure a clear requirement to comply with local building codes, local fire department regulations, local legal/insurance requirements, an internationally accepted life and fire safety (L&FS) standard, international WBG EHS Sector Guidelines for Pulp and Paper Mills and WBG EHS General Guidelines is included in all contract specifications and other documentation and manuals intended for tenderers and companies directly or indirectly involved with the construction, commissioning, testing and initial operation of the mill, as well as in CMCP's occupational H&S plans and procedures.

Recommendation: Upon construction or renovation of buildings and structures, a Life and Fire Safety Master Plan shall be prepared by a qualified professional identifying major fire risks, applicable codes, standards and regulations, and mitigation measures. As part of the project completion test, a qualified professional shall conduct a review at the time of life and fire safety systems testing and commissioning, and shall certify that construction of these systems has been carried out in accordance with the accepted design. The finding and recommendations of the review are the basis for establishing project completion or to establish the conditions of a Pre-Completion Corrective Action Plan and a time frame for implementing changes.

Traffic Safety

Refer to section 4.3.10 above.

Transport of Hazardous Materials

Refer to section 4.3.10 above.

Disease Prevention

Refer to section 4.3.4 above.

Emergency Preparedness and Response

Refer to sections 4.3.1 and 4.3.4 above.

D- Construction and Decommissioning

Environment

Potential impacts on the environment during the decommissioning phase have not been adequately assessed in the EIA for the mill.

Recommendation: CMPC to commit to producing decommissioning plans in good time before decommissioning of the mill is undertaken. Decommissioning plan covering the construction phase (including demobilization of staff from the construction period) shall be developed prior to the end of the construction period.

Occupational Health and Safety

Potential occupational health and safety impacts during the decommissioning phase have not been assessed in the EIA for the mill.

Recommendation: Extend the scope of the EIA for the mill to include a comprehensive analysis of potential risks and impacts on the health and safety of workers during the entire project lifecycle, to include decommissioning.

Community Health and Safety

Potential impacts on community health and safety during construction and decommissioning phases have not been assessed in the EIA for the mill.

Recommendation: Extend the scope of the EIA for the mill to include a comprehensive analysis of potential risks and impacts to communities during the entire project lifecycle, to include decommissioning.

4.4 Guaíba 2 Project Component: Existing Plantations

4.4.1 PS 1 – Social and Environmental Assessment and Management Systems

Environmental and Social Assessment and Management System

An IMS is in place, covering environmental, health, safety and quality aspects of the mill, nursery and plantations. Refer to section 4.3.1 above for additional information.

Policy

Refer to section 4.3.1 above.

Identification of Risks and Impacts: EIAs for the Plantation Basins

Individual EIAs and RIMAs were developed by Rhea in 2007 for each of the four plantation basins which include:

- Basin of Baixo Jacuí;
- Basin of Camaquã;
- Basin of Vacacaí; and
- Basin of Santa Maria

From a review of the EIAs and RIMAs for the plantations it was noted that the impact identification and analysis section does not provide a comprehensive assessment of all the relevant risks and impacts (e.g. flooding risks, climate change adaptation and mitigation, landscape and visual impact, project impact on ecosystem services and community health and safety risks derived from the road transportation of pesticides, the application of pesticides and fire hazards to local communities, amongst others), have not been considered in the EIA. It is acknowledged however that plans and programs are in place to address some of the aforementioned risks (e.g. fire protection and firefighting procedures); however the EIAs do not constitute a comprehensive assessment of all the potential impacts associated with plantations.

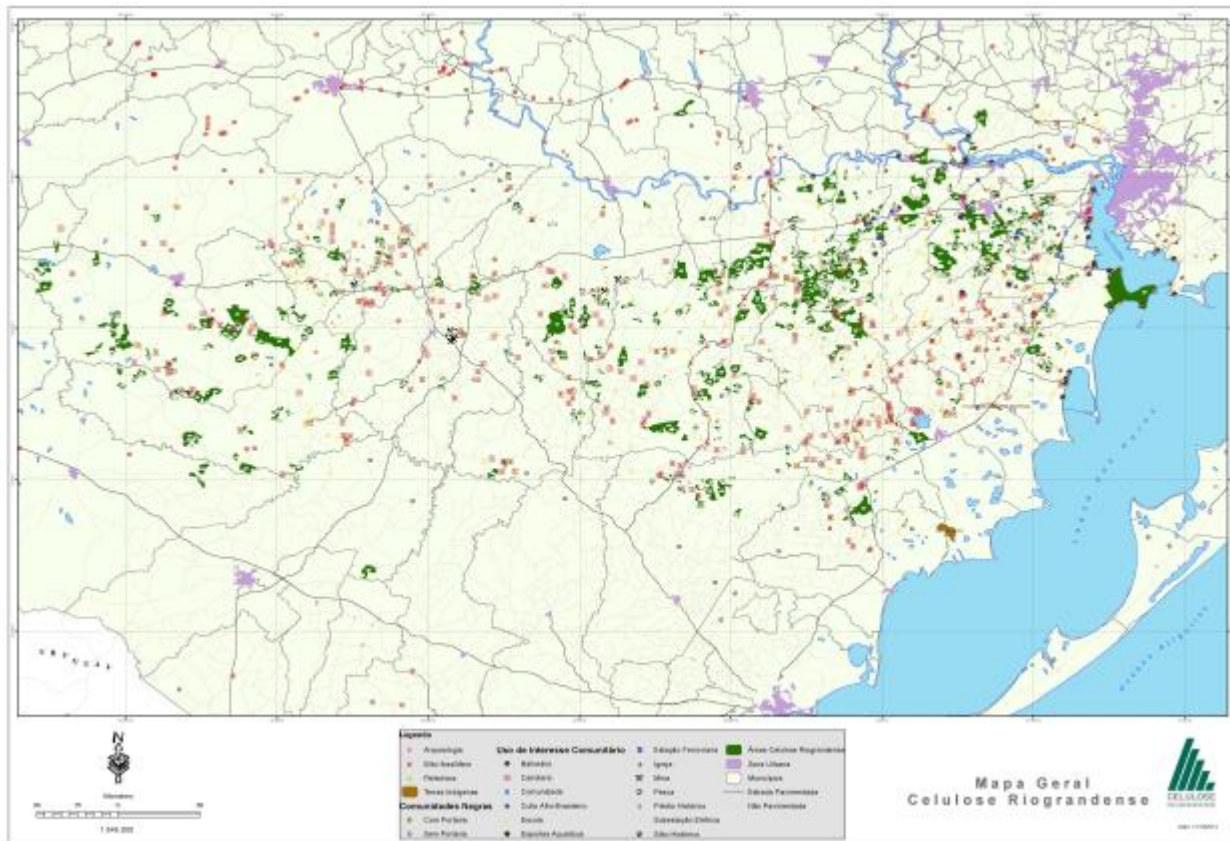
Recommendation: The EIAs and other main Project documents should be updated to reflect current environmental and social baseline conditions, and the scope of the EIAs should be expanded to allow for a comprehensive assessment of all the risks and impacts associated to the plantations in compliance with IFC PS 1.

Area of Influence

Social Areas of Influence and Socioeconomic Baseline Conditions for all plantation areas are included in the four plantation basin EIAs (developed by Rhea in 2007). According to data included in the four EIAs for the plantation basins, there are more than 40 municipalities in the four plantation basins but the number of affected communities in the plantation basins is still uncertain. ENVIRON is not aware of how many are affected due to their proximity to the plantations.

ENVIRON requested CMPC to provide a detailed map of the entire plantation area (the map used during the meeting with CMPC’s Environmental Coordinator for Plantations, Maurem Alves) showing the location of all plantations; communities, including the three indigenous communities/settlements and Quilombolas communities; cemeteries; etc. (electronic version). CMPC responded to ENVIRON’s request (refer to Figure 4.4.1.1) but, unfortunately the map covers such a broad area that it is difficult to read. Therefore, included below are overviews on each of the four plantation basins with maps and tables indicating the name, location, population (as of 2005) and dates of establishment.

Figure 4.4.1.1. Areas of Community Interest.



Basin of Baixo Jacuí

Figure 4.4.1.2 Map of the AOI in the Baixo Jacuí Plantation Basin

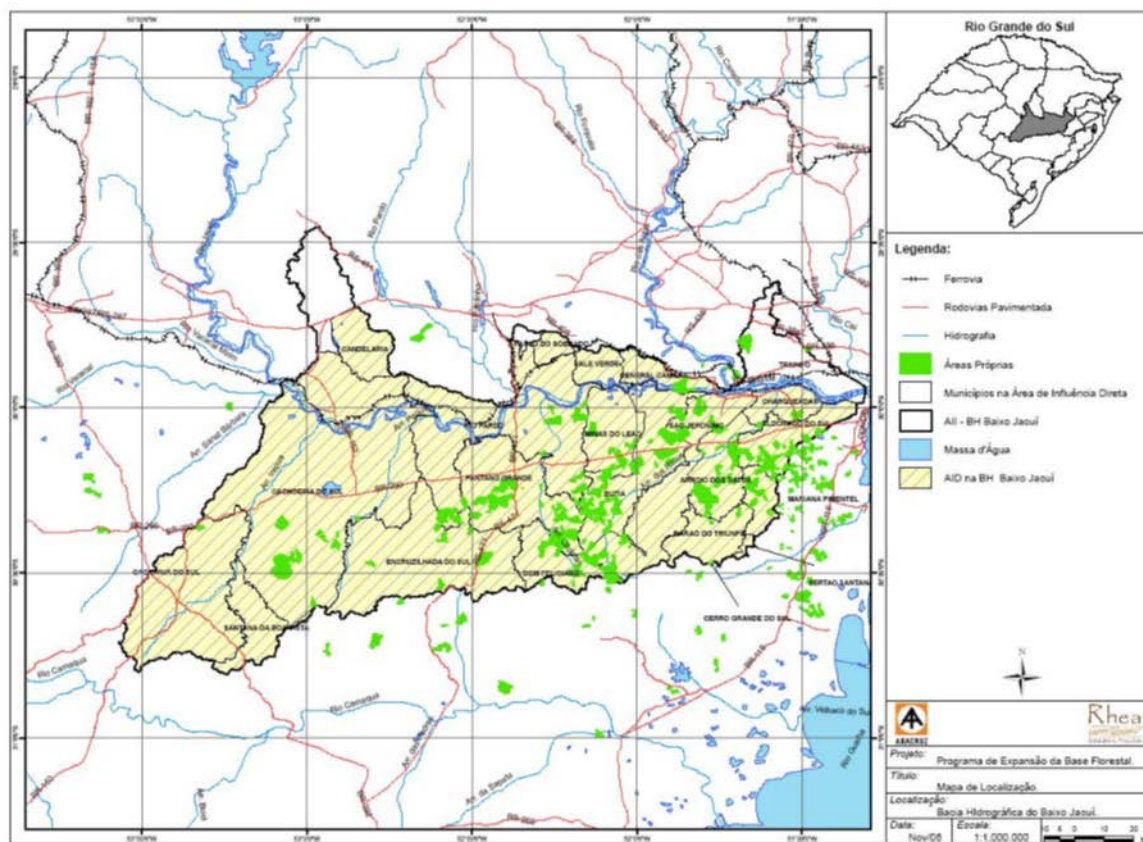


Table 4.4.1.1 Affected Municipalities in the Baixo Jacuí Basin

Baixo Jacuí Plantation Basin			
Municipality	Date Created	Population (2005)	Map
Arroio dos Ratos	1964	13,425	X
Barão do Triunfo	1992	7,590	
Butiá	1963	20,260	X
Caçapava do Sul	1831	34,513	
Cachoeira do Sul	1819	85,678	
Candelária	1925	30,536	
Cerro Grande do Sul	1988	9,166	
Charqueadas	1982	31,823	X
Dom Feliciano	1963	15,124	X
Eldorado do Sul	1988	33,913	X
Encruzilhada do Sul	1849	25,853	X
General Câmara	1881	8,468	X
Mariana Pimental	1992	4,079	X
Minas do Leão	1992	7,122	X
Pântano Grande	1987	11,607	X
Passo do Sobrado	1992	6,326	

Baixo Jacuí Plantation Basin			
Municipality	Date Created	Population (2005)	Map
Rio Pardo	1809	39,295	X
Santana da Boa Vista	1965	8,695	
São Jerônimo	1860	20,690	X
Sertão Santana	1992	5,942	X
Triunfo	1831	24,222	X
Vale Verde	1995	3,553	

Basin of Camaquã

Figure 4.4.1.3 Map of the AOI in the Camaquã Plantation Basin

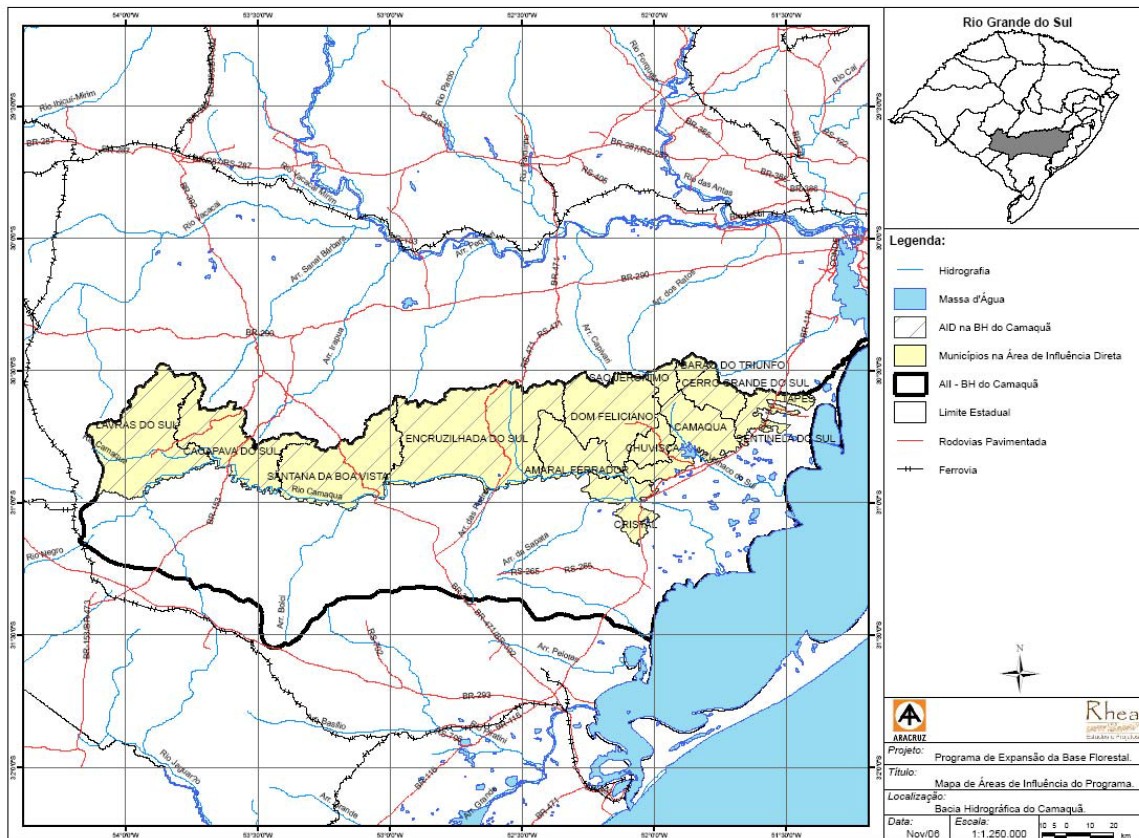


Table 4.4.1.2 Affected Municipalities in the Camaquã Basin

Plantation Basin Camaquã			
Municipality	Date Created	Population (2005)	Map
Amaral Ferrador	1988	5,968	
Arambaré	1992	4,271	
Barão do Triunfo	1992	7,590	
Barra do Ribeiro	1959	12,337	X
Caçapava do Sul	1831	34,513	
Camaquã	1864	64,276	X
Cerro Grande do Sul	1988	9,166	
Chuívisca	1995	4,920	
Cristal	1988	6,852	X
Dom Feliciano	1963	15,124	
Encruzilhada	1849	25,853	
Lavras do Sul	1882	8,025	
Santana da Boa Vista	1965	8,695	
São Jerônimo	1860	20,690	
Sentinela do Sul	1992	5,116	X
Tapes	1857	17,85	X

Basin of Vacacaí

Figure 4.4.1.4 Map of the AOI in the Vacacaí Plantation Basin

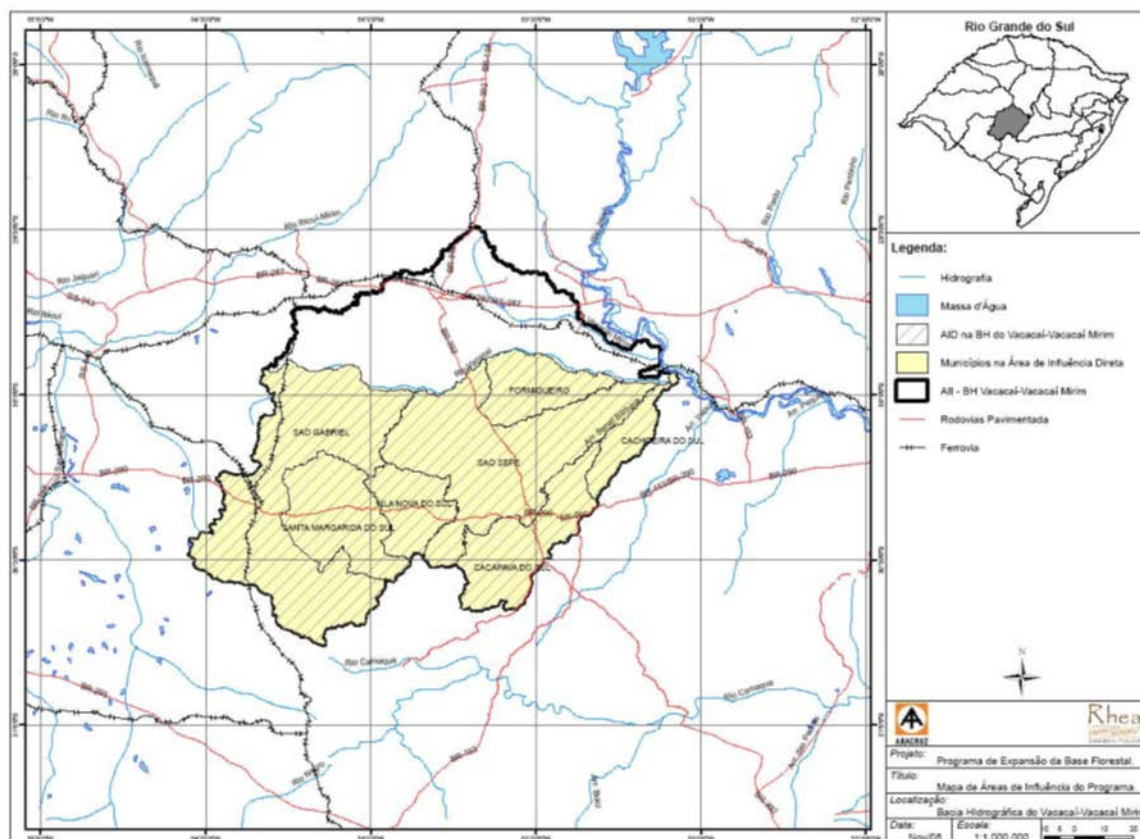


Table 4.4.1.3 Affected Municipalities in the Vacaçaí Basin

Plantation Basin Vacaçaí			
Municipality	Date Created	Population (2005)	Map (none)
Caçapava do Sul	1831	34,513	
Cachoeira do Sul	1819	85,678	
Farmigueiro	1963	7,022	
Lavras do Sul	1882	8,025	
Santa Margarida do Sul	1996	2,270	
São Gabriel	1846	60,515	
São Sepé	1876	24,790	
Vila Nova do Sul	1992	4,256	

Basin of Santa Maria

Figure 4.4.1.5 Map of the AOI in the Santa Maria Plantation Basin

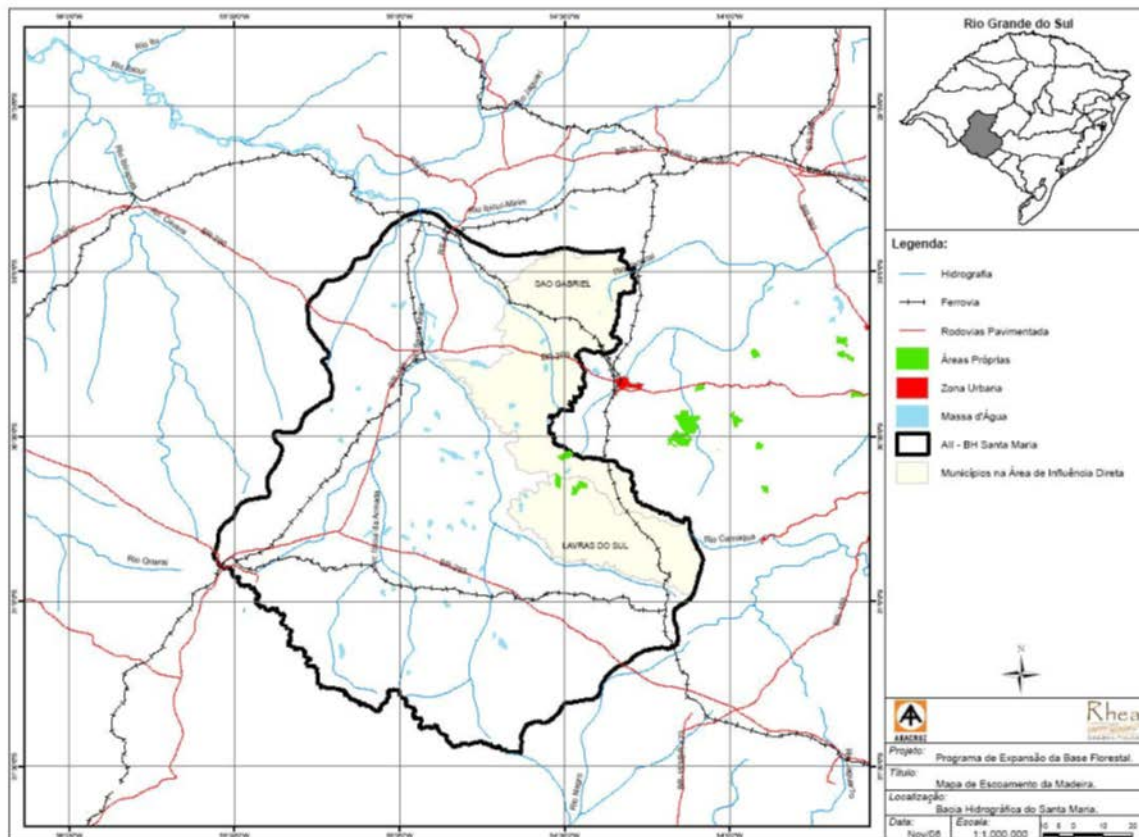


Table 4.4.1.4 Affected Municipalities in the Santa Maria Basin

Plantation Basin Santa Maria			
Municipality	Date Created	Population (2005)	Map (none)
Lavras do Sul	1882	8,025	
São Gabriel	1846	60,515	

In the Gap Analysis, ENVIRON recommended that the four EIAs be updated for compliance with the IFC PSs. According to CMPC, the information is updated in the annual socioeconomic monitoring reports that are delivered to FEPAM and were made available to the Environ (*Monitoramento Socio Economico*). Therefore, according to CMPC, there is no need to make updates to the EIAs, once the licenses have been issued and provided they are in compliance with their conditions (annual monitoring reports). Upon review of the socioeconomic monitoring report that ENVIRON received, we noted that each year only a select number of municipalities are reviewed and updated socioeconomic data included in the monitoring report is limited to these municipalities.

Recommendation: The areas of influence included in the four plantation basin EIAs should be updated after a review of more recent socioeconomic data on the affected municipalities in each basin, and after taking into consideration the locations of all plantations CMPC has acquired since the development of the EIAs in 2007.

Stakeholder Engagement, Public Consultation and Disclosure of Information

CMPC has been involved in community engagement in the plantation areas for the past few years, and outlines of these activities are included in the *PASA 2011* and *Plano de Sustentabilidade 2012*.

As discussed above, CMPC performs an annual socioeconomic assessment on a sampling of 12-20 municipalities (out of the 39) in the plantation basins per year (based on operations planned for that year). In addition to collecting updated socioeconomic data, the assessment monitors (i) how the Company impacts each community and (ii) the communities' impression of CMPC-CRG.

Conclusion: No issues anticipated.

External Communications and Grievance Mechanisms

Ongoing Reporting to Affected Communities

Refer to Stakeholder Engagement section above.

Management Programs

Management and Monitoring Programs are included in the EIAs for the plantations (refer to Appendix E); however an action plan (PBA) for the implementation of such programs has not been prepared.

Whilst it is acknowledged that operating procedures and work instructions are in place for the plantations (a large number of which were reviewed as part of this assessment), from a review of Monitoring Programs included under the Forest Management Plan for 2012 (*Plano de Manejo, refer to Appendix E*) and in the absence of a PBA ENVIRON could not verify whether all the management and monitoring programs included under the EIA have been implemented. This information gap was identified in the Gap Analysis conducted in October 2012, further to which ENVIRON requested CMPC to provide a comprehensive summary of mitigation actions implemented at the plantations in order to address impacts identified in the EIAs, and an updated list of monitoring programs currently in place.

In response to the Gap Analysis, CMPC indicated that all environmental programs in the plantation areas presented and approved by FEPAM were included as conditions of the Installation License and are subject to annual reporting to FEPAM, and that the Forest Management Plan, also provided to Environ, lists all managements implemented; no additional information was presented.

In response to CMPC's comment, it is important to note that Requirements 13.1 to 13.10 from the Installation License 687/2008-DL are related to vegetation suppression and compensatory measures associated with the vegetation located on the industrial site which will be removed for the construction of the new Line 2, and this permit does not include requirements associated with Forestry Management specific for the eucalyptus plantation areas. With regards to the plantation specific permits, there are four Installation Licenses issued per hydrographical basin covering all eucalyptus farms in each basin. Whilst these permits allow plantation, an operation Permit must be issued per farm before each harvesting event. These four Installation Licenses mention that Forestry Management must follow the plans and programs presented on the EIA studies prepared for each hydrographical basin (Baixo Jacuí, Camaquã, Santa Maria and Vacacaí), but do not further identify these programs.

From a review of the Forest Management Plan, ENVIRON could confirm compliance with monitoring programs but could not verify whether all the plantation management programs listed under Appendix E have been implemented.

Therefore, in the absence of additional information, at the time of preparation of this report ENVIRON could not verify whether some programs (e.g. survey of critical areas with respect to population centers; cover of trucks transporting bulk products; gravelling or paving of critical points; watering of roads close to population centers; prior evaluation of transportation routes used by vehicles in order to reduce the risk of accidents; strengthen health programs for forestry workers; set different schedules for the use of more conflicting roads; keep the largest circulation routes of vehicles in good conditions) have been adequately implemented in compliance with the EIAs and the conditions of the Installation Licenses.

Recommendation: CMPC to provide additional information to demonstrate compliance with all the management and monitoring programs included under the EIAs for the plantations (refer to Appendix E).

Organizational Capacity and Competency

Refer to section 4.3.1 above.

Emergency Preparedness and Response

An emergency plan is in place for the plantation (*PO/GSS-001-UG-Plano de Controle de Emergências-PCE Florestal*). Based on a review of the emergency plan and interviews with site representatives conducted during the site visit, the following emergency measures are understood to be in place:

- A fire risk monitoring system, which consists of 15 observation towers with angle meter to calculate distance of fire; upon identification of fire, immediate notification to the Emergency Coordination Department (Central de Emergências), operated on a 24/7 basis is conducted. In addition, the surveillance cars at the plantations are trained to work in the initial evaluation of any type of emergency.
- Fire suppression equipment; resources used to attend emergencies at the forested areas include:
 - Fire extinguishers located in every temporary work front, at the machines used at plantations and at the nursery;
 - A manual alarm system, consisted in a compressed air horn installed at the nursery;
 - Firefighting kits within the buses and vans used in the transportation of the workers to the plantations. These kits are consisted of fire beaters, knapsack sprayers and hoes.
 - Four firefight equipped trucks
- Surveillance cars are constantly on the route to monitor forestry operations. These cars are equipped with first aid and firefighting equipment consisting of a 350 l water tank and pump for 'initial control'; to be supported by fire brigades. Reportedly, of the 300 plantations the most distant one is located 300 km from the mill, thus CMPC estimates that surveillance cars will be able to provide 'first response' for any emergency within 30 minutes.
- On-site first aid equipment and trained personnel/ emergency evacuation procedures:
 - Employees working in small teams (e.g. harvesters) are reportedly trained in first aid. Additionally, surveillance cars are equipped with first aid and a stretcher for the transport of injured workers and are reportedly provided with a map indicating the location of all the hospitals in the area.
 - The nursery operates on one shift; an employee trained in first aid is reportedly present.

Conclusion: No issues anticipated.

Monitoring and Review

Monitoring programs are conducted and included under the Forest Management Plant (*Plano de Manejo*). A copy of the Forest Management Plan for 2012 was available for review. Refer to section Management Programs above.

Conclusion: No issues anticipated.

4.4.2 PS2 – Labor and Working Conditions

Working Conditions and Management of Worker Relationship

See PS 2 under section 4.3.2 above.

CMPC has staff on site at each plantation, on a rotation basis; and the work is a multi-stage process:

- Growing seedlings at the Nursery;
- Planting and Soil Preparation at the plantations;
- Supervision of trees during the seven-year growing period;
- Harvesting; and
- Log transportation to the mill.

CMPC engineers supervise each stage of the process (3 per region except for Region 1, which has 4 due to the Nursery). All engineers work 40 hours per week (Monday thru Friday), and, on average, visit each plantation once per week.

Workers' Grievance Mechanism

See PS 2 under section 4.3.2 above.

Employment Contracts

See PS 2 under section 4.3.2 above.

Protecting the Work Force

See section 4.4.9 below, EHS Guidelines for Forestry Operations.

Occupational Health & Safety

A program and implementing procedures are in place for the prevention of H&S risks derived from current CMPC operations (Line 1 and existing plantations), and are part of the existing Integrated Management System for the facility. As part of this program, risk assessments (PPRA) are conducted and updated as necessary, and medical exams are undertaken annually.

Additionally, an H&S manual is in place which applies to both CMPC employees and contractors.

H&S at the plantation is overseen by 2 CMPC H&S technicians based at the mill, who conduct periodic inspections.

Refer to section 4.3.2 for additional information.

Workers Engaged by Third Parties and Supply Chain

With the exception of the CMPC engineers/supervisors at the plantations, all workers are employed by sub-contractors who have worked with CMPC for many years.

There are six regions within Zones 1 and 2, and for each region there is a sub-contractor who works under a CMPC supervisor.

Two companies, Technoflorest and Nativa, perform soil preparation, fertilization and planting of seedlings.

A third company, Prestadora de Serviços Gaucha, performs two services at a later stage:

- Harvesting: debarking and cutting logs into 3 sections; and
- Forwarding: transferring cut logs to the side of the road where they stay for three months to dry out.

4.4.3 PS 3 – Pollution Prevention and Abatement

General Requirements

The plantations are largely in compliance with resource efficiency and pollution prevention and control principles and techniques established by WBG EHS Sector Guidelines for Forest Harvesting Operations, however some potential for improvement has been identified (see below).

Resource Efficiency

Greenhouse gases

Refer to section 4.3.1 (PS1 for the mill) for information on the carbon footprint estimate for the project (2016).

Water Consumption

The most significant water consumption derives from nursery operations; a groundwater abstraction well is in place for this purpose. No information on other competing uses for groundwater resources in the nursery area (e.g. agriculture) is provided in the EIAs, and a water balance was not available.

Reportedly, irrigation at the plantations is conducted occasionally (if under some circumstances planting cannot be conducted during the wet season) and only during the first year, and uses stormwater captured in water weirs.

An assessment of water uses and resources in the four basins was conducted as part of the EIAs for the plantations, which includes an assessment of hydrogeological and hydrological resources. However, it should be noted that the availability of groundwater resources at the four basins is largely based on 2003 studies published by DRH/FEPAM. The hydrological studies identified the need to conduct further studies in those areas where a significant change in soil use (i.e. pasture to plantation) occurs, particularly for plantations located near riverheads or in areas with low water availability. However, no additional studies were available for review.

Periodic monitoring of surface water sources (flow and quality) is undertaken at the four hydrographic basins where plantations are present; the latest monitoring report (June 2012), did not identify significant impacts on water availability or quality in any of the four basins, inferring that soil use conversion by eucalyptus plantations does not conflict with current water uses and that soil conservation measures implemented by CMPC are efficient. Thus whereas no detailed information was available for review to determine the adequacy of land use planning criteria at the plantations and the incorporation of water use considerations for the location of plantation compartments (e.g. position of plantations in the landscape and planting design), based on the available information, no significant impacts on water quality or availability were identified with regards to the existing plantations. However, it should be noted that CMPC plans to increase the plantation surface by 25% in order to meet increased demand for the Project (by planting in some previously unused areas as opposed to acquiring new land). No additional information on the potential impacts on water resources derived from this expansion was available for review, and no detailed information was available for review to determine the adequacy of land use planning criteria (e.g. incorporation of water use considerations for the location of plantation compartments, planting design) and the cumulative impact of increased plantation areas. Information for the assessment of the effects of nursery operations on water availability in the area was not available for review.

Based on the above, as part of the Gap Analysis conducted in October 2012, ENVIRON recommended that cumulative impacts from increased plantation areas be assessed, particularly in view of current land use planning criteria, and the effects of nursery operations on water availability in the area be analyzed.

In the response to the Gap Analysis provided in October 2012, CMPC indicated that the Nursery is not part of the licensing process of the forest base, and further explained that water consumption is regulated by the groundwater abstraction permits for the wells, in relation to which CMPC submits quarterly monitoring reports. CMPC also noted that although there are recommendations in the EIAs in relation to hydrological studies, both FEPAM as the permitting entity and the Public Prosecutors, who periodically review the ongoing water monitoring, did not understand how to collect data necessary for additional studies, other than the monitoring already in place.

Based on this, ENVIRON would like to note that the Nursery is an associated facility to the project and therefore relevant for the purposes of this study. Furthermore, whilst water usage is

monitored, the cumulative impacts of the nursery operations on water availability in the area are not being analyzed by CMPC. Therefore, this issue remains open.

Recommendation: ENVIRON recommends that cumulative impacts from increased plantation areas be assessed, particularly in view of current land use planning criteria, and that effects of nursery operations on water availability in the area be analyzed in compliance with IFC PS and EIAs for the plantations.

Pollution Prevention

Air Emissions

Emissions to air from the plantations are limited to emissions from machinery and equipment during construction/maintenance of roads and trails, harvesting and transport operations.

Conclusion: No issues anticipated.

Wastewater Effluents

No wastewater effluents are expected to be generated during operation and management of plantations. Effluents generated during pesticide transfer and mixing operations are managed as hazardous wastes. Effluents generated at the nursery mainly consist of sanitary effluents from workers, which are collected in a septic pit and periodically collected for off-site management.

Conclusion: No issues anticipated.

Potential contamination of surface waters

The EIAs for the plantations consider potential impacts to surface water quality resulting from the implantation and management of plantations due to the potential discharge of sediments, nutrients and agrotoxic products into surface water courses present in these areas.

Based on this, preventive and corrective measures are defined in the EIAs to minimize the discharge of sediments, nutrients and agrotoxic products in stormwater runoff in order to avoid eutrophization, contamination and increased turbidity. A monitoring program is also in place to verify the quality of surface water resources in the plantation areas. No issues have been reported or identified based on the available information (monitoring report dated June 2012, issued by the Viçosa University).

Conclusion: No issues anticipated.

Potential Soil and Groundwater Contamination

In terms of soil contamination, procedures are in place to prevent sediment discharge into surface water sources (i.e. through erosion) as well as accidental discharges of hazardous materials and/or wastes in order to prevent contamination in the plantation areas. These

procedures also include a buffer zone from surface water sources for any potentially polluting activities (e.g. machine maintenance, pesticide application).

The Forest Harvesting Guidelines in particular establish instruction in the event of a leak being detected in the equipment; leaks must be immediately contained, either by activating the vacuum pump (when this is in place in the machine) or by placing a containment tray under the leak. The operations manager must be immediately informed to coordinate the disposal of contaminated waste.

However, no detailed information was available on the location of groundwater supply wells and on the presence of wellhead setbacks in or around the plantation areas to protect groundwater resources. This was identified as a potential issue in the Gap Analysis conducted in October 2012, based on which a recommendation was introduced for CMPC to provide detailed information on the location of groundwater supply wells and on the presence of wellhead setbacks in or around plantations areas.

In the response provided in October 2012, CMPC indicated that the company does not use groundwater within or in the immediate surroundings of its plantations (only surface water abstractions are conducted in some areas for irrigation purposes). On the other hand, CMPC advised that “the work of mapping areas of high conservation value indicates areas of drinking water, which are being treated differently.”

There is a surface water monitoring plant to ensure the maintenance of surface water quality. This program is in progress for several years now and surface water monitoring results evaluated during sit visit indicated compliance with legal surface water quality thresholds.

ENVIRON would like to emphasize that the concern raised here is mostly associated with the presence of wellheads for use by local communities (e.g. drinking water, agricultural uses), and whether protection zones have been defined to avoid the contamination of these water resources as result of CMPC’s operations (e.g. pesticide applications). From the documentation reviewed it is understood that procedures are in place during the application of pesticides to prevent the contamination of surface water resources, but no information on the protection of underground water resources was available. Therefore, this issue remains open.

Recommendation: CMPC should provide detailed information on the location of groundwater supply wells and on the presence of wellhead setbacks in or around the plantation areas in order to prevent the contamination of these water resources as result of CMPC’s operations (e.g. pesticide applications).

Wastes

The Forestry Guidelines (*T/PSM-001-UG(19) – Manual de Silvicultura; IT/PSM-033-UG(00)- Tratamiento de Resíduos Sólidos no Manejo Florestal*) provide instructions for the disposal of pesticide containers; these containers should be rinsed three times and the resulting effluent should be returned to the application pump reservoir or transferred to the container where the mixing is being conducted for use. Empty containers should be perforated, to avoid their reuse

for other purposes, and adequately stored for collection by authorized contractor for transportation to the Hazardous Waste Storage Warehouse located at the mill.

During the site visit to the plantations, ENVIRON observed that contaminated PPE's are stored in a dedicated and identified container in the pesticide storage room. Water drained from the area of manipulation of pesticides and rinsing of the bottles is collected in a tank for off-site management as waste. Both the wastewater effluent and contaminated PPEs are periodically collected by FLORESUL.

During the visit, harvesters and forwarders were observed to be refueled by a truck equipped with maintenance tools and devices. The truck contained spill trays and emergency spill containment kits consisting in absorbent mats and socks. Maintenance operations are conducted daily at the plantations and the resulting hazardous wastes, contaminated materials and PPEs are stored within the maintenance truck for their subsequent disposal.

ENVIRON understands that the harvesting companies are sub-contractors retained by CMPC, as identified above, and that the subcontractors are responsible for their own waste management. We are not aware of the final destination of hazardous wastes collected by harvesters.

Recommendation: CMPC to provide the Lenders with information on the final destination(s) of hazardous wastes collected by harvesters.

Hazardous Materials Management

At the nursery, fuels and lubricants used for refueling and maintenance of vehicles and equipment are stored at a separate room, ventilated and properly labeled; no secondary containment is present in this area. About 40l of diesel and 15l of gasoline are used per week. Refueling of tractors and lubricant handling during maintenance operations are conducted outdoors, in a graveled area.

Recommendation: Provide secondary containment for the fuel storage room at the nursery. Install an impervious and secondarily contained area at the nursery for the refueling and maintenance of tractors.

Pesticide Use and Management

Pesticides are stored at the Hazardous Materials Warehouse, located at the mill, and transported by an authorized contractor to temporary storage warehouses at the plantations in small volumes for daily consumption, as and when necessary.

CMPC internal procedures require temporary warehouses at the plantations to be protected from the elements; pesticide are required to be stored in their original containers over spill containment trays, and accompanied by their corresponding identification and emergency labels. Pesticides can only be stored at the plantation for a maximum of 48 hours.

The pesticides storage area located at the nursery was observed during the site visit. This area consists of a properly identified separate room with restricted access; pesticides were noted to be stored in their original containers, however not spill containment trays were present.

During the visit to the Barba Negra property, the area for the mixing and transfer of pesticides was noted to be provided with impervious surface and a closed drainage system that allows the collection of effluents into a storage tank for its subsequent collection by an authorized contractor (FLORESUL).

Recommendation: Ensure that pesticide storage guidelines (e.g. secondary containment) are complied with at all locations. Review hazardous materials and pesticide handling and storage practices as part of the periodic internal inspections conducted at the plantations.

4.4.4 PS 4 – Community Health, Safety and Security

Community Health and Safety

A key concern for ENVIRON is our being able to verify that the current distances between all plantation boundaries and the nearest residential areas are sufficiently safe to protect the inhabitants from any potential adverse impacts to health and safety that may result from such proximity including exposure to pesticides and safety impacts resulting from large trucks loaded with logs passing on narrow roads close to individual houses or through villages.

Pesticide Use

As noted under PS1 (see section 4.4.1 above), from a review of the EIA for the plantations it was noted that the impact identification and analysis section does not provide a comprehensive assessment of all the relevant risks and impacts associated to neighboring communities, to include community health and safety risks derived from the road transportation, harvesting operations and application of pesticides, amongst others, in accordance with the WBG EHS Guidelines.

Refer to Hazardous Materials Management under section 4.4.9 below for information on pesticide application and management practices.

The following aspects could not be verified based on the currently available information:

- CMPC has provided ENVIRON with several maps showing the location of urban areas in relation to the plantations and transportation routes (refer to Appendix D), but, unfortunately, the maps are too high-level to be able to identify households and/or communities in close proximity to borders of plantation where there could be the risk of exposure to pesticides. While we are in receipt of the maps, no detailed information has been received to date on what potential impacts there may be to communities from the use of pesticides.

Recommendation: CMPC to ensure that a buffer zone is defined and implemented at the land planning stage in relation to proximity of plantations to neighbouring communities to prevent and mitigate risks derived from plantation management operations (e.g. pesticide application; timber harvesting).

- No information was available to determine whether a system is in place to warn neighboring communities of the application of pesticides at the plantations.

Recommendation: CMPC to ensure that a system is in place to warn neighboring communities of the application of pesticides at the plantations.

Harvesting Operations

Refer to pesticide use above; from a review of the EIA for the plantations it was noted that the impact identification and analysis section does not provide a comprehensive assessment of all the relevant risks and impacts associated to neighboring communities

From a review of information made available during the site visit, the main types of complaints received from neighbors in the plantation areas relate to damages to property (e.g. fences) during harvesting.

Recommendation: CMPC to ensure that a buffer zone is defined and implemented at the land planning stage in relation to proximity of plantations to neighbouring communities to prevent and mitigate risks derived from plantation management operations (e.g. pesticide application; timber harvesting).

Timber and Hazardous Materials Transportation

Refer to pesticide use above; from a review of the EIA for the plantations, it was noted that the impact identification and analysis section does not provide a comprehensive assessment of all the relevant risks and impacts associated to neighboring communities.

Refer to section 4.4.1 – Management Programs – above. ENVIRON could not verify whether some programs (e.g. survey of critical areas with respect to population centers; cover of trucks transporting bulk products; gravelling or paving of critical points; watering of roads close to population centers; prior evaluation of transportation routes used by vehicles in order to reduce the risk of accidents; set different schedules for the use of more conflicting roads; keep the largest circulation routes of vehicles in good conditions) have been adequately implemented in compliance with the EIAs and the conditions of the Installation Licenses.

As previously mentioned (refer to section 4.3.4), while the original transportation plan involved transporting logs from the plantation areas to the mill by rivers (40%) and roads (60%), CMPC has revised this plan to now only involve transportation by roads. As a result, the volume of trucks carrying timber to the mill is anticipated to increase substantially when the Project goes into operation. There is the potential for impacts to the rural communities located within the Project's AOIs in the plantation basins, especially where the main transportation routes pass

through urban zones and/or close to households along the roads in the rural areas near the plantations.

The Transportation Route Maps (*Rotas de Transporte 2012*) included in Appendix D are maps of 21 municipalities in the Plantation Basins of Baixo Jacuí and Camaquã and show the location of all existing and planned new roads and the Project's planned transportation routes from the plantations to the mill. While the maps identify all transportation routes, along with the locations of plantations and urban zones, they are very high-level and do not give any indication of the potential health and safety impacts to local communities from the open timber trucks passing through urban zones or close by households or businesses. ENVIRON has circled on the maps the areas that appear to have the greatest potential risks.

Recommendation: CMPC to provide additional information in order to determine potential risks to neighbouring communities derived from plantation management operations. Additionally, CMPC should provide additional information to demonstrate compliance with all the management and monitoring programs included under the EIAs (refer to Appendix E).

Ecosystem Services

Refer to section Management of Ecosystem Services under PS6 (section 4.4.6) below.

Community Exposure to Disease

CMPC has been operating in the plantation basins for many years and, to the best of our knowledge, there have been no issues.

Security Personnel Requirements

ENVIRON requested that CMPC provide copies of the contracts/information on the surveillance company contracted to survey the plantations. CMPC advised that the copies of the contracts required were available on site in the Human Resources area at Guaiba.

Recommendation: CMPC to provide the requested information.

4.4.5 PS 5 –Land Acquisition and Involuntary Resettlement

General Requirements

ENVIRON has not yet received information to verify the adequacy of land acquisition assessments for new plantation areas (including flora, fauna and biodiversity assessments) and land use planning considerations (i.e., definition of operational units - plantation areas and roads, legal reserves and permanently protected areas - riparian management zones of APPs, and special interest areas - including fauna corridors, fauna refuges or any other special area).

Recommendation: CMPC to provide land acquisition assessments for new plantation areas and land use planning considerations.

It is ENVIRON's understanding that no physical or economic displacement has been or will be required in the four plantation basins for the Project.

Conclusion: No issues anticipated.

4.4.6 PS 6 – Biodiversity Conservation and Sustainable Management of Living Natural Resources

Protection and Conservation of Biodiversity

A rapid review of the plantation RIMAs revealed the inclusion of many species listed as Endangered or Critically Endangered according to the Rio Grande do Sul (RS) State List of Threatened Fauna (*Decreto No 41.672 de 11 de junho de 2002*) which appears to be based on IUCN criteria for regional assessments. At least two of the species reported as occurring in the RIMA study areas, the giant otter and the Glaucous Macaw, are listed as globally Endangered and Critically Endangered, respectively, by the IUCN Red List and would potentially trigger IFC PS6 critical habitat requirements. However, it appears that these species are regionally extinct and are not known to occur in RS. At least one species reported by the RIMAs, the red-spectacled Amazon parrot, qualifies as a restricted-range species that could also trigger critical habitat requirements.

In 2011, avifauna monitoring was conducted at the Barba Negra property. Among the 194 species identified in the region, 7 are considered endangered species and 10 are rarely seen in RS. Based on this, the area of the plantations is considered critical habitat in accordance with PS6.

As part of the interviews conducted during the site visit, CMPC reported that it has a policy of never converting an area of natural vegetation into plantations, and only those areas previously use for agriculture or pasture have been used as plantations.

Land Use Planning Procedures are in place, and have been implemented prior to the conversion of the area (i.e. prior to planting) or, for those plantations which at the time of acquisition by CMPC were already in operation, after acquisition. Furthermore, land use planning assessments were incorporated into the decision-making process for the acquisition of plantations/selection of 'parceiros', as result of which the Installation Licenses incorporate an action plan for the implementation of corrective measures.

Land Use Planning integrates environmental, operational and legal requirements. Environmental aspects focus on the minimization of erosion, use of existing infrastructures, analysis of the distribution of native vegetation, potential for interconnection of vegetation fragments and recovery of degraded areas; the assessment of environmental conditions in the plantations is based on a desktop review of available information (i.e. aerial photographs) and supported by field data in order to determine the final soil use and vegetation maps. Protected areas are defined for each plantation, namely Permanent Protected Areas (along any water bodies that may be present) and/or Legal Reserve Areas (natural vegetation). It should be noted that a map detailing land uses for the each plantation and including a proposal of Natural

Reserve Area shall be submitted to FEPAM as part of the application process for the issuance of the operating license. Furthermore, to establish the Legal Reserve Area at new properties, a study of the remaining native forest is conducted in order to verify the possibility of connecting those remaining vegetated areas with other areas in the surroundings, allowing the flow of the fauna.

A restoration program of vegetation in protected areas was reportedly implemented for those areas already in operation at the time of acquisition by CMPC in order to meet regulatory requirements on protected areas and legal zoning criteria. It should be noted that flora and fauna monitoring has been ongoing since 1997 under previous ownership. Annual monitoring of birds and the recovery of degraded is conducted and submitted to FEPAM to meet the conditions of the RIMA.

Conclusion: According to information obtained on site during interviews with site personnel and also according to the Land Planning Use Reports analysed, the program is proven to be effective in terms of identifying and protecting natural and critical environments. Local native vegetal cover is highly fragmented and the program has mapped and identified all native vegetation remnants and appropriate protective measures were adopted. No issues anticipated.

Management of Ecosystem Services

A formal assessment of potential risks and impacts from the plantations on ecosystem services has not been conducted as part of the EIAs. Therefore, at present it is unknown whether the project is likely to adverse any priority ecosystem services (e.g. freshwater/groundwater pollution, land use changes, disturbance to habitats and species during road construction/maintenance and harvesting operations, disruption or alteration of landforms and drainage systems).

The FSC certification process started in 2009 and was completed in 2012. As part of this process, it is acknowledged that an assessment of areas of high conservation value (AAVC) was conducted, and that formal management plans for these areas have been implemented. However, this does not constitute a formal assessment of the of the project's impacts on priority ecosystem services (i.e. benefits humans obtain from ecosystems, ES). Consequently, at present the project has not identified the need to implement measures to mitigate impacts and manage dependence on priority ecosystem services in compliance with IFC PS6.

Recommendation: An ecosystem services assessment should be conducted. CMPC should conduct a screening exercise to determine priority ecosystem services present in the project area, followed by an analysis of the potential impacts on ecosystem services resulting from the different project phases. This should include an analysis of project dependence on priority ecosystem services in terms of change in project performance, and the identification of measures to mitigate impacts and manage dependence on priority ecosystem services.

Sustainable Management of Living Natural Resources

Refer to section Protection and Conservation of Biodiversity above for information on land use changes. CMPC plantations in Rio Grande do Sul are FSC certified since 2012.

Supply Chain

CMPC obtains timber from third party plantations under the two following regimes:

- Parceria – CMPC is responsible for establishing the plantations and their operations (planting, monitoring and conducting the harvest) and they are operated by CMPC through subcontractors. Control of subcontractors is conducted through analysts. CMPC currently employs approximately 50 people for the management of forestry operations, including forestry analysts, harvesting analysts and transportation analysts. Analysts conduct periodic environmental and operational inspections.
- Fomento – CMPC is responsible for harvesting operations but the plantation is operated by a third party (e.g. small farm owners under the Fomento Forestal program).

Conclusion: No issues anticipated.

4.4.7 PS 7 – Indigenous Peoples

Indigenous Peoples

ENVIRON understands from the 2007 EIAs that CMPC has acquired or intends to acquire (through lease or parcerias) farms in 36 municipalities located in the southeastern portion of the state. The EIAs also mention that of those 36 municipalities, 3 have Indigenous Lands and 8 have Quilombo Remnants. By law it is impossible to acquire Indigenous Land, so the fact that CMPC is performing an Impact Assessment specific for Indigenous Populations (the Indigenous Peoples' Study indicates that the plantations may be close to the indigenous lands but not in indigenous lands.

ENVIRON discussed with CMPC's Environmental Coordinator the Indigenous Peoples Study that CMPC is developing and the potential impacts to IP in the plantation areas. While the IP Study is not required by FUNAI and FEPAM, it is required for FSC certification. Even though FSC has already provided its certification, they have given CMPC an additional year to complete the study.

ENVIRON was able to view a map that combines farm locations with the Indigenous Lands and Quilombo Remnants locations. Based on a review of this map, there are three small IP communities in the southeast section of Plantation Zone 1 but none of them appear to be close enough to CMPC's plantations to be affected (one is about 3km and two are more than 10km from the closest plantations). In regards to the IP community that is 3km from the nearest plantation, this land was originally a private farm and after the IP began using the land, the farmer donated the land to this informal IP community. The land has since been designated as Indigenous Land by FUNAI. During the site visit, ENVIRON visited this small IP community and observed it from in front of the FUNAI sign stating that entry to the community was prohibited. In regards to the two IP communities located more than 10km from the closest plantation, one community's ethnic origin is Pacheca and Guarani and the other's is Guarani de Aguas Brancas.

CMPC, in responding to ENVIRON's request, provided a copy of the map to include in this report (refer to Figure 4.4.1.1.) but its size has been reduced to fit into the report and is difficult to read.

As of October 2012, the Indigenous Peoples' Study had not yet been completed and, as of the date of this report, the study has not been presented to ENVIRON.

Recommendation: CMPC to complete the Indigenous Peoples study and to ensure that it covers potential impacts to IP in all the forest-based municipalities (39) where CMPC currently operates. The availability of the completed findings from the Indigenous Peoples' Study is essential for Lenders to make adequate evaluations of the Project's potential impacts on indigenous peoples. In the absence of such detailed results from the dedicated studies on indigenous people, ENVIRON could not fully assess the Project's compliance with IFC PS7 (Indigenous Peoples).

Quilombo Remnants

In regards to the Quilombo Remnants, the situation is a bit more complex as land boundaries may be poorly defined.

ENVIRON reviewed CMPC's *Relatório Comunidades Quilombolas/Tradicionais* 2011, a study on the Quilombo communities in the plantation areas, and also the map of the plantation basins which identified the locations of IP and Quilombo communities (refer to Figure 4.4.7.1). As part of this study, which was required for the FSC certification, SIGNI conducted a field survey, concentrating on places where they had previously identified Quilombo communities, prioritizing those closest to CMPC's plantations; 10 communities in 6 municipalities were studied. By the end of the survey, 87 people who self-identify as Quilombola were mapped. Based on the results of the survey, it was determined that the following four communities, located within 5km of CMPC's plantations, were considered Quilombo/Traditional: Cerro do Ouro, Irapuazinho, Macambique and Rincao das Almas. As a result of the study, SIGNI recommended that these four communities be included in CMPC's community relations programs. During the site visit, CMPC mentioned that after conducting the cross impact assessment they concluded that there would be no negative impact to these communities and that they can be treated like any other community.

Figure 4.4.7.1. Location of Quilombo communities



Conclusion: No issues at the present. ENVIRON understands that if CMPC intends to acquire additional farms in municipalities that also have Quilombo Remnants, the company must have a Land Selection Procedure that allows them to identify and avoid such protected area remnants. So far, ENVIRON has received no information about the existence of such a procedure.

4.4.8 PS 8 – Cultural Heritage

Rhea, a Brazilian consultancy experienced in archeology, was engaged to support Aracruz and continues to support CMPC today in its management of potential risks and impacts to cultural heritage in the four plantation basins.

A chance find procedure for archaeological and paleontological materials encountered during project activities in the Project’s areas of direct and indirect influence was developed by Rhea, originally for Aracruz, and was improved by CMPC. The current chance find procedure (PO/PGN-006-UG) includes all of the municipalities where the existing and proposed plantations are located. This procedure includes work stoppage, delimiting the area, evaluation of potential sites/materials by an archaeologist or paleontologist, and reporting the findings to IPHAN. According to CMPC and Rhea this procedure has proven to be very effective since workers have discovered several artifacts and it is compliant with IPHAN’s requirements. If it continues to be properly implemented, the chance find procedure and archaeological surveys of proposed sites (described below) should identify and protect cultural heritage features.

During the site visit we discussed with CMPC the cultural heritage training programs they have in place for personnel involved in the earthworks and procedures related to ground intervention,

clear protocols of communication to the assigned responsible persons, etc., salvage/rescue excavations and the transfer of the finds to the custody of a qualified institution.

During the site visit, ENVIRON had a meeting with CMPC (Maurem Alves) and Christiane Machado from Rhea and learned the history of Rhea's involvement with the Project. In 2006, Rhea conducted an archeological study required for certification by the Programme for the Endorsement of Forest Certification (PEFC); this study was not required by FEPAM. In 2007, Rhea developed the plantation EIAs. In 2009, Rhea began with Aracruz, and has continued with CMPC, a program to conduct on-site research at each plantation for the identification of archeological sites. It is important to note that Rhea is simply identifying artifacts found on the surface of CMPC's properties; they are not doing any archeological digging. Rhea is only using rocks to scratch the surface since the tilling of soil brings artifacts to the surface. The tilling only takes place once every seven years when trees are harvested. Therefore, there is less damage to artifacts than there may be with other methods of agricultural planting. Both prehistoric and historic artifacts have been found on some plantations. Any artifacts found are sent to the Universidade Luterana do Brasil (Lutheran University of Brazil) in Canoas, RS. CMPC is required to pay the university for research and preserving of the artifacts.

Among the cultural heritage-related documents ENVIRON has received are some 30 separate technical reports prepared by Rhea, in 1st semester 2010, and also 6 additional technical reports that were prepared in 2nd semester 2010 (IPHAN requires one report be developed per plantation). A close review of each of these detailed reports would involve a great deal of time, so we reviewed only one as a sample and will consider conducting a closer review of these technical reports, if warranted.

During our meeting with Rhea, we discussed their on-going project to conduct cultural heritage surveys at each of the plantations. As of October, only 113 of the 300 plantations had been surveyed and for which archaeological technical studies have been completed, and, as stated above, only approximately 30 of these studies have been received at ENVIRON. As we were informed by Rhea, the project started in 2009 and the remaining plantation studies will be on-going for some time.

Since the site visit, we have not received any update on Rhea's progress to complete the outstanding Cultural Heritage surveys. The availability of the completed findings from the cultural heritage surveys are essential for ENVIRON to make adequate evaluations of the Project's compliance with the Applicable Standards for cultural heritage. In the absence of such detailed results from the dedicated studies on cultural heritage, ENVIRON could not fully assess the Project's compliance with IFC PS8 (Cultural Heritage).

Recommendation: CMPC to provide the Lenders with an update on Rhea's progress in completing the surveys and technical reports for the remaining forestry sites, and information on significant findings, if any, since ENVIRON's site visit.

4.4.9 WBG EHS Sector Guidelines for Forest Harvesting Operations and WBG EHS General Guidelines (limited assessment)

A - Environmental

Habitat Alteration and Loss of Biodiversity

As noted under PS 6 above (section 4.4.6), CMPC reported to have a policy of never converting an area of natural vegetation into plantations, and only those areas previously use for agriculture or pasture have been used as plantations.

Land Use Planning Procedures are in place, and have been implemented prior to the conversion of the area (i.e. prior to planting) or, for those plantations which at the time of acquisition by CMPC were already in operation, after acquisition. Furthermore, land use planning assessments were incorporated into the decision-making process for the acquisition of plantations/selection of 'parceiros', as result of which the installation licenses incorporate an action plan for the implementation of corrective measures.

Land Use Planning integrates environmental, operational and legal requirements. Environmental aspects focus on the minimization of erosion, use of existing infrastructures, analysis of the distribution of native vegetation, potential for interconnection of vegetation fragments and recovery of degraded areas; the assessment of environmental conditions in the plantations is based on a desktop review of available information (i.e. aerial photographs) and supported by field data in order to determine the final soil use and vegetation maps. Protected areas are defined for each plantation, namely Permanent Protected Areas (along any water bodies that may be present) and/or Legal Reserve Areas (natural vegetation). It should be noted that a map detailing land uses for the each plantation and including a proposal of Natural Reserve Area shall be submitted to FEPAM as part of the application process for the issuance of the operating license. Furthermore, to establish the Legal Reserve Area at new properties, a study of the remaining native forest is conducted in order to verify the possibility of connecting those remaining vegetated areas with other areas in the surroundings, allowing the flow of the fauna.

This is consistent with observations made during the site visits. At the Barba Negra property, the riparian zone around the Araçá Creek (Arroio Araçá) was noted to be fenced, and signs alerting about the importance of preserving the area were observed. At the 'Fomento' property visited (the Eckert's property), CMPC's staff reportedly provided technical support for recovering the riparian zone (APP) before starting the plantation.

A program is in place for the restoration of vegetation in protected areas, with a view to restore of the natural vegetal cover to conserve and restore ecological processes and promote biodiversity in compliance with legal requirements. The restoration program was reportedly implemented in those areas already in operation at the time of acquisition by CMPC in order to meet regulatory requirements on protected areas and legal zoning criteria. The introduction of exotic species is prohibited by the Installation Licenses for the plantations. Additionally, the restoration program includes the control and removal of exotic and invasive species.

It should be noted that flora and fauna monitoring has been ongoing since 1997 under previous ownership. Annual monitoring of birds and the recovery of degraded is conducted and submitted to FEPAM to meet the conditions of the RIMA.

Procedures are in place for the application of pesticides, and their use is restricted to plantation areas. These products are used occasionally, and only during the first year after plantation. In order to preserve biodiversity, the herbicides used to control competing species are applied only to the row of eucalyptus saplings. The application is done with backpack sprayers and tractors.

The following aspects could not be verified based on the currently available information

- Monitoring of birds in the Sabena region, where the majority of plantations are located, reportedly commenced in 2006. Four species included in the IUCN Red List of Threatened Species and one vulnerable specie for the Rio Grande do Sul State were reported. Since the incorporation of new plantation áreas in 2008, specific research on the Papagaio Charao is being conducted since some plantations are located in an Important BirdLife Area. Results from the 2011 avifauna monitoring conducted at the Barba Negra property revealed the presence of 194 bird species in the region, of which 7 are considered endangered species and 10 are rarely seen in Rio Grande do Sul. Although the Management Plan (Plano de Manejo) indicates the need to schedule harvesting activities based on the breeding and nesting seasons of the endangered species, no evidence of the implementation of such measure was available for review.

Recommendation: No information on criteria followed for the scheduling of activities at the plantations was available for review. CMPC shall develop and implement procedures to incorporate breeding and nesting season considerations during the scheduling of activities in order to ensure that impacts to critically endangered or endangered wildlife are minimized.

Additionally, potential for improvement was identified in the following areas:

- In terms of diversity within the plantations (multi-age and multi-species), whilst opportunities to promote variability of species within each 'block' or 'compartment' is limited as eucalyptus species are selected on the basis of climate adaptation, production rates and resistance, harvesting is subject to previous planning, and CMPC reportedly employs a mosaic system at the plantations which avoids the harvesting of the entire property at the same time and allows the animals to move to another area during the harvesting. However, no guidelines for the definition of these compartments (e.g. consideration of natural landscape features) or size limitations were identified within the documentation available for review. This issue was identified in the Gap Analysis conducted on October 2012. In its response to the Gap Analysis, CMPC confirmed that there is no criterion in terms of the block sizes in the documentation, and noted that the guidelines on Environmental Zoning of Forestry in the Rio Grande do Sul State are followed

Recommendation: CMPC to develop and implement planning criteria in compliance with EHS Guidelines for Forest Harvesting Operations, which require compartment (block) areas to be minimized as far as economically practical to reduce the contiguous land area exposed to wind and rain; compartments should typically not exceed 50 hectares.

Water Quality

Riparian zones are classified as Permanent Protection Areas (APP) in accordance with Brazilian regulatory requirements and the operating permits. This is consistent with observations made during the site visits. At the Barba Negra property, the riparian zone around the Araçá Creek (*Arroio Araçá*) was noted to be fenced, and signs alerting about the importance of preserving the area were observed. At the 'Fomento' property visited (the Eckert's property), CMPC's staff reportedly provided technical support for recovering the riparian zone (APP) before starting the plantation.

The location and alignment of roads and trails is determined as part of the environmental land use planning, which identifies plantation areas, preservation areas, roads, trails, fuel break network and water bodies. When water courses are traversed, the Road Guidelines (*Manual de Estradas*) require an assessment to be conducted to minimize impacts; the Harvesting Manual (*Manual de Colheita Florestal*) states that when crossing of drainage channels is necessary, the temporary use of debarked logs is permitted as support for the machinery traffic. However, logs must be removed immediately after crossing, avoiding damming of water course. During the site visit, no road crossing streams were observed. The trails were noted to cross artificial drainage channels, which are not exposed to the crossing of vehicles.

A decommissioning procedure is not currently in place, however CMPC is currently pursuing greater productivity at the plantations and cease of operation for the plots currently operated by CMPC or third parties is not planned in the foreseeable future. Restoration of degraded conservation areas is being conducted by CMPC, and it is understood that similar procedures can be implemented in the event of decommissioning.

Refer to PS 3 (section 4.4.3 above) for information on cumulative impacts on water resources from increased plantation operations, and potential effects of nursery operations on water availability in the area.

Soil Erosion

Planting is performed only in the winter; therefore, the period between harvesting and planting ranges from one to nine months. After harvesting, the soil is covered with the bark, branches and leaves generated during debarking operations, which are allowed to degrade naturally thus protecting the soil from compaction from harvesting machinery and erosion, whilst adding organic matter and nutrients. This is consistent with observations made during the site visits. Stumps are not removed; after evaluating the potential of the area, CMPC technicians decide if the stumps will be allowed to resprout. If this is not the case, new seedlings are planted between the stumps.

100% of the operations are mechanized. Wheeled or caterpillar harvesters are used. Upon being cut down, the logs are debarked, cut into pre-determined sized fragments by the harvester, and subsequently transported and stacked in piles along the trails by timber forwarders. Timber is transported to trucks with timber forwarders or tractors with trailer. The harvesting manual also allows for the use of draught animals in particular circumstances.

The Road Guidelines (*Manual de Estradas*) contains the following instructions and information with relevance for soil erosion minimization:

- Careful consideration of stream crossings is required to minimize impacts on water quality, stability of the terrain and associated vegetation. Preferably, the crossing point must be the one with the less distance to traverse. Crossing structures should preferably be installed in the periods in which the water flow is minimal, reducing machinery operations on the streambed. All the debris from the construction should be removed immediately.
- Crossing over an unprotected streambed is only allowed in areas where the ground is stable, such as rock stream bottom. Guidance for the construction of crossing structures, when necessary, is provided in in order to ensure that peak flows are supported.
- Guidance for road drainage to avoid accumulation and/or reduce the speed of storm water is provided, so as to direct drainage into vegetated areas to minimize the surface runoff.
- Road maintenance procedures included in the manual shall be followed. There is a schedule for road maintenance, and the teams involved in the work within the plantations are trained to request emergency maintenance in case of a problem is detected. Prior to the harvesting operations, a maintenance crew repairs the roads in order to prevent rutting.

During the visit, the use of slash cover on skid trails was observed. The roads are not paved, and gravel is used to stabilize the soil in wet areas.

The following aspects could not be verified based on the currently available information:

- As noted above, the Road Guidelines provide instructions for the construction and maintenance of roads. On the other hand, the layout and alignment of roads and trails is determined as part of the environmental land use planning. Reportedly, planning and operational control are focused on facilitating the transit of machinery and vehicles, whilst preventing erosion and impacts on the water resources. An analysis of the existing road network and utilization of the available structures is conducted to minimize the interventions at new areas. However, no detailed information was available for review on the criteria followed for the layout of roads at the planning stage (e.g. gradients should be less than <10%, cut and fill should be minimized).

Recommendation: CMPC to ensure that layout and alignment of roads and trails meets the WBG EHS Guidelines for Forest Harvesting Operations.

- According to the Management Plan, plantations do not exceed the 45 percent limit established by Brazilian regulations, and are established preferably in predominantly flat areas, suitable for mechanized operations (slopes under 25 percent). Based on the available information, some of the plantations are understood to have slopes greater than 30 percent. The harvesting manual does not provide instructions for harvesting operations on steep slopes, and only considers the use of wheeled or caterpillar

harvesters supported by timber forwarders. Additionally, no detailed information was available for review on the criteria followed for the location and alignment of skid trails and landings at the planning stage.

Recommendation: CMPC should avoid the use of vehicles on slope exceeding 30 percent; the use of cable extraction systems should be considered in those circumstances.

Additionally, potential for improvement was identified in the following areas:

- Harvesting is subject to previous planning but conducted all year round, and only those plantations which due to the characteristics of the soil or their topography are considered at higher risk of erosion are excluded from harvesting during wet seasons.

Recommendation: Ensure the adequacy of the assessments and the criteria for restricting harvesting operations during wet seasons to meet WBG EHS Guidelines for Forest Harvesting Operations.

- Refer to section Habitat Alteration and Loss of Biodiversity for information and recommendations on the mosaic system.

Soil Productivity

The operating licenses for the plantations require site preparation activities to observe the principles of soil preservation and erosion control.

Soil preparation instructions are available in the SIF (Forest Information System) and are based on the predominant soil type, topography and direction of the stormwater flow. Predominant soil types of CMPC's plantations were grouped into 5 categories, based on which specific equipment and procedures are used in the preparation of the soil. Soil preparation procedures could be mechanized or manual, and include the use of subsoilers, ridgers, plows.

Based on this, an evaluation is conducted during the soil preparation to define the kind of equipment to be used, according to the soil characteristics. About 10 days after planting, a NPK fertilizer is applied at a distance of 10 to 15 cm from the seedling in order to provide nutrients in the initial phase of plant life. The dosage varies according to the type of soil. Between 90 and 120 days after planting a second fertilization is carried out using ammonium sulfate, potassium chloride and even ashes from the mill boiler. Subsequent fertilizer applications are conducted between 8 to 12 months from planting.

The Soil Preparation Manual prohibits soil preparation activities in very moist soils, during or immediately after long periods of rainfall, or after prolonged periods of drought. According to site management, forestry operations are conducted during specific windows.

After the harvesting, the soil is covered with the bark, branches and leaves generated during debarking operations, which are allowed to degrade naturally. Stumps are not removed; after evaluating the potential of the area, CMPC technicians decide if the stumps will be allowed to resprout. If this is not the case, new seedlings are planted between the stumps. The period

between harvesting and planting ranges between one to nine months, depending on the season in which harvesting is conducted.

Periodic monitoring of soil conditions is conducted, though the collection and analysis of soil samples. The analytical results feed the “Soils Information System” and are used to improve the production.

The following aspects could not be verified based on the currently available information

- The Fertilizing Instructions require minimizing the stockpiling of fertilizing materials and covering of the stockpiles with plastics in order to prevent runoff or wind erosion. However, no specific instructions in relation to the prevention of contamination of groundwater resources and eutrophication of surface water resources from runoff and leaching of excess nutrients were available for review as part of the fertilizing application procedures.

Recommendation: CMPC to ensure that procedures are developed and implemented to prevent the contamination of groundwater resources and the eutrophication of surface water resources from runoff and leaching of excess nutrients as result of the fertilizing application in compliance with the WBG EHS Guidelines for Forest Harvesting Operations.

Hazardous Materials Management

Refer to PS3 (section 4.4.3 above) for information on hazardous materials management at the plantations, to include pesticide storage and handling practices and waste management procedures.

Pesticides: type and application practices

The use of pesticides in Brazil is highly regulated. During the site visit, the following pesticides were identified:

- **Scout** – A general herbicide formula for Pinnus and Eucalyptus cultures, based in a glyphosate salt, classified as Class III, moderately hazardous;
- **Vertimec** – acaricide/insecticide, used for ant control. Class III (medium toxicity); Class II for environmental hazard (very hazardous for the environment); R22 (harmful if swallowed); R50/53 (very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment); and
- **Domark** – fungicide. Class II (high toxicity); Class II for environmental hazard (very hazardous for the environment); R38 (Irritating to skin); R50/53 (very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment); R65 (Harmful: may cause lung damage if swallowed); R67 (May cause drowsiness and dizziness due to the inhalation of vapors).

Reportedly, the ant killer (Vertimec) and the fungicide (Domark) applied at the plantations fall under the Class II classification for pesticides hazard, in accordance with the WHO

Recommended Classification. The herbicide, a glyphosate salt, falls under Class III, in accordance with Brazilian Health Agency Pesticides Risk Classification.

According to the FEPAM's website, reviewed by ENVIRON on September, 14th 2012, all the manufacturers (Monsanto, Syngenta and Sipcam Agro) comply with the Rio Grande do Sul Environmental Standards.

Procedures are in place for the application of pesticides at the plantations. The following good practices were observed:

- According to the Annual Control Report on the Use of Pesticides, 2011, due to a continuous improvement of pesticide planning and control, such as the restriction of pesticide applications to the tree planted areas, continuous training of workers and use of eucalyptus species more resistant to pests, pesticide use decreased by 30% between the years 2010 and 2011.
- Through the implementation of the "Forest Protection Program for the Integrated Control of Pests and Diseases" (a monitoring system), CMPC is able to speed up the process of evaluation and identification of the pests and diseases, reducing the consumption of pesticides and reducing the stock.
- Pesticides are directly applied to the base of the tree, avoiding the unnecessary spread of pesticides at the area between the contiguous tree rows.
- Pesticides are handled and mixed in accordance with the manufacturers specifications. A label containing the adequate dosages for all the chemicals applied at the plantation is provided and employees have been trained in the application of pesticides and hold the corresponding certification.
- Climatic conditions necessary for the application of the pesticide, which vary for each product, are assessed prior to application.
- Pesticides are applied by subcontractors. Each service provider is required to provide personnel adequately trained in accordance to the job description. Access to pesticide storage areas is restricted and controlled by a trained worker.
- Protective clothing is provided to all workers involved in pesticide handling operations. The jumpsuits are washed daily at the washing area and the rinse water is collected in a tank; effluents are periodically collected for off-site management as hazardous waste by Floresul. Damaged/out of use protective clothing is disposed of as hazardous waste.
- The quality control of each operation is performed by the subcontractor responsible for its application. A logbook is maintained to record pesticide applications on a daily basis, and random inspections are conducted of the preparation, volume, dosage, concentration, and application method, coverage of the application and performance of the equipment. CMPC's technicians conduct monthly inspections of each pesticide application performed, evaluating: recording of pesticide application in the logbook; level

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of compliance with standards and manuals; training of staff; use of PPE; safety conditions of machinery and equipment; calibration of the measuring equipment; and environmental licenses.

- Quarterly checks are performed by the Forest Managers of CMPC. Reportedly, there were no records of non-conformities in the years covered on the report.

Conclusion: No issues anticipated.

Visual Impacts

Harvesting is subject to previous planning. CMPC employs a mosaic system at the plantations, which avoids the harvesting of the entire property at the same time. However, no guidelines for the definition of these compartments (e.g. consideration of natural landscape features) or size limitations are in place. In the absence of additional information, ENVIRON could not verify whether visual criteria are considered for the definition of these compartments.

Recommendation: CMPC to ensure that pre-harvesting planning criteria incorporate strategies into the management procedures for plantations to prevent and/or mitigate visual impacts, in compliance with EHS Guidelines for Forest Harvesting Operations.

The location and alignment of roads and trails is determined as part of the environmental land use planning. However, no detailed information was available for review on the criteria followed for the definition of the road layouts so as to verify whether visual quality considerations are incorporated.

Recommendation: CMPC to ensure that planning criteria for roads and trails incorporates visual impacts considerations (e.g. use road curving to minimize straight visual lines; locate roads and gravel pits to minimize visibility from scenic outlooks or water bodies) in compliance with EHS Guidelines for Forest Harvesting Operations.

B – Occupational Health and Safety

Physical Hazards

An occupational H&S training program is reportedly in place. – refer to Organizational Capacity and Competency under PS1, section 4.3.1 above.

A procedure is in place which regulates the use of PPE in the plantation areas. This procedure identifies specific PPE based on the worker-specific activity (e.g. irrigation of the sapling, cleaning and maintenance of trails, herbicide application, transportation of hazardous materials) and the type of operation (e.g. visual inspections, planting, forest management, harvesting). The procedure also includes a PPE control registry.

The harvesting manual establishes specific EHS requirements which consider aspects such as worker training, safety distance from the trees and stockpiling of timber, amongst others.

According to CMPC, no lone or isolated workers are needed during CMPC forestry operations.

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The emergency plan for the forest plantation areas covers accidents and medical emergencies, environmental accidents (spills of pesticides, fuels, or other chemical products) and road transportation accident involving people, timber, machines/equipment and hazardous chemicals, amongst others.

Conclusion: No issues anticipated.

Noise and Vibrations

Noise emissions from the plantations are mainly limited to emissions from machinery and equipment during construction/maintenance of roads and trails, harvesting and transport operations.

Noise protection PPE is required for workers operating mechanical forestry equipment (refer to section Physical Hazardous above for additional information on PPE).

The following aspects could not be verified based on the currently available information:

- Some logging machinery can subject workers to unsafe levels of vibration leading to work-related injury to internal organs or hands. A risk assessment for the plantations (PPRA) was not available for review in order to assess whether vibration risks have been adequately identified and no information on preventive or mitigation measures was available (e.g. use of vibration limitation devices on chainsaws, work rotation programs to reduce cumulative exposure).

Recommendation: Ensure that the PPRA for the plantations includes a comprehensive assessment of risks for all workers, to include vibration exposure, and that adequate preventive and mitigation measures are defined and implemented based on those risks.

Fire

An emergency plan for the forest plantation areas is in place, which covers fire in the plantations or nursery, explosions involving flammable or combustible products, accidents and medical emergencies, environmental accidents (spills of pesticides, fuels, or other chemical products) and road transportation accident involving people, timber, machines/equipment and hazardous chemicals.

The Road Manual includes instructions for establishing and maintaining a network of cleared land (*'aceiros'*) to slow progress of fire.

Refer to Emergency Preparedness and Response under PS 1 (section 4.4.1 above) for additional information on fire detection and firefighting procedures and equipment in place.

Conclusion: No issues anticipated.

Chemical Hazards

Refer to Hazardous Materials Management under section 4.4.9 above for information on workers protection from pesticide exposure.

C- Community Health and Safety

Water Resources

Refer to section Water Consumption under PS3, section 4.4.3 above.

Fire

Refer to Fire section under B- Occupational Health and Safety above.

Transportation

Refer to section 4.4.4 above – Timber and Hazardous Materials Transportation.

Pesticide Exposure

Refer to section 4.4.4 above – Pesticide Use.

Accidents

Refer to section 4.4.4 above – Forest Harvesting Operations.

4.4.10 The Plant Nursery

The Plant Nursery is located within the Barba Negra plantation in Barra do Ribeiro, about 40km from the mill, and occupies a total of 17 hectares of which 11 hectares are built. The Nursery is owned by CMPC but its operations are sub-contracted to a third-party, Piraflora. The Nursery is certified to ISO 14001, ISO 9001, FSC and the Brazilian National Forest Certification Program (CERFLOR). CMPC has three full-time staff at the nursery (one management, one technical specialist and a community relations/quality control specialist), and Piraflora has a current full-time staff of about 140 (approx. 80% are women), which will increase to 170 when Pulp Line 2 goes into operation (projected in 2015).

The mill expansion will not require any expansion at the Nursery. The Nursery's production capacity is about 30 million seedlings per year, and they are currently only growing 15 million per year, at a cost of about US\$180 per 1000 plants.

The Nursery receives about 2000 visitors per year. Neighbors and students from high schools and universities come to the Nursery for environmental education. In 2001, VIDA organized 170 events at the nursery and as of August 2012, 75 events had taken place in 2012.

Piraflora is required to sell 50% of the seedlings it produces to CMPC (at a lower than market price) and they may sell the remaining seedlings in the open market to small farms in the area that are also producing eucalyptus trees which will ultimately be sold to CMPC under

agreement. Pirafloira pays a fee to CMPC for seedlings sold in the market. The program with small farms, the *Fomento Forestal*, was developed to improve the economic situation in the area. As of the time of ENVIRON's August 2012 site visit, Pirafloira's 2012 production YTD was 16 million plants (11 million sold to CMPC and 5 million sold into the market).

CMPC monitors Pirafloira's activities once or twice per week for their use of PPE and compliance with other H&S and technical procedures, and CMPC feeds data into its monitoring system.

Pirafloira's Operations

The work day at the Nursery include two shifts:

- Group no. 1 from 7:00 am to 4:00 pm; and
- Group no. 2 from 7:30 am to 4:30 pm.

Group no. 1 starts work one half hour ahead of Group no. 2, by cutting in the clonal garden and provides the cuttings to Group no. 2 who then plants the cuttings in containers.

During a meeting with Pirafloira's HR Manager , ENVIRON was informed that Pirafloira provides the workers at the Nursery with free breakfast and lunch, 2 hours of leisure/gym time per week and free bus transportation for workers from the Pirafloira office in Barra do Ribeiro to the Nursery.

Workers' Greivance Mechanism: while Pirafloira has no formal grievance mechanism, its management is considering implementing one. At the Nursery, the current procedure is for workers to register complaints with Pirafloira's HR Manager or with CMPC's Forestry Engineer who is on site several days per week. There is also a ballot box in the cafeteria, provided by the food service company, for the submission of complaints/suggestions specifically on food served.

Pirafloira informs the community of new job opportunities by putting notices in the local newspapers and advertising on the radio in Barra do Ribeiro.

ENVIRON requested and received copies of Pirafloira's Quality Policy and Integrated H&S Manual; labor policies and procedures are still pending.

Pirafloira Quality Policy defines guidelines to monitor and promote continuous improvement in the development of the company and service provided to its customers. Under this policy, Pirafloira commits to:

- Compliance with legislation applicable to the organization and its products, processes and services;
- Adopting principles for making decisions on quality issues, proactivity, speed, flexibility, innovation and creativity;
- Compliance with quality controls with focus on prevention of possible irregularities, the continuous search for improvement in all its activities, ensuring the quality of products, processes and services; and

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- Provide employee benefits including health and life insurance; breakfast and lunch; TV's, microwave and air conditioning in the cafeteria; ambient music in work areas; and a lounge with games and chairs to rest.

The objectives of Piraflora's Integrated H&S Manual are to:

- Improve workers' knowledge of their respective roles;
- Prevent inadequate (i.e. unsafe) actions/working procedures and working conditions;
- Communicate obligations and prohibitions that shall be known and complied with by workers;
- Promote awareness of violations of the Integrated H&S manual subject to sanction; and
- Prevent accidents at the work place.

This manual includes general information in relation to Piraflora's environmental and quality objectives, fire prevention and firefighting, accidents (types, causes, and consequences), PPE, tools, lifting equipment, load handling, venomous animals, general H&C norms, employee obligations and employer obligations.

Recommendation: CMPC to provide Piraflora's labor policies and procedures. Also, CMPC to ensure that Piraflora implement a formal workers' grievance mechanism. The preference would be for Piraflora to adopt CMPC's workers' grievance mechanism

4.4.11 Other Potential Issues

After submittal of the Gap Analysis on October 2, 2013, ENVIRON learned about various press releases published in the Brazilian press in relation to the purchase of forestry assets and lands by CMPC, located in the state of Rio Grande do Sul (*Losango project*) and consisting of approximately 100,000 hectares of owned areas and nearly 39,000 hectares of forestland of eucalyptus in these owned areas and in third parties leased areas, for a total amount of Real 615 million (\$302.7 million).

No information in relation to these new assets was presented to ENVIRON in the course of this assessment, and thus, compliance with international standards from the new plantation areas is not reviewed as part of this report.

Recommendation: Ensure that the new plantations comply with the IFC Performance Standards, WBG EHS Sector EHS Sector Guidelines for Forest Harvesting Operations and WBG EHS General Guidelines.

4.5 Guaíba 2 Project Components: Port and Dredging Maintenance Operations

4.5.1 PS 1 – Social and Environmental Assessment and Management Systems

It should be noted that the port expansion is covered by the Installation License for the mill. Compliance with PS for the port expansion was covered under the PS compliance assessment for the mill (refer to section 4.3.1 above for information on PS1).

The scope of the EIA for the port expansion is considered insufficient. This issue was identified as part of the Gap Analysis conducted in October 2012, and a recommendation was made to extend the scope of the EIA for a comprehensive assessment of all potential impacts associated to the port expansion. It is acknowledged that the EIA for the port expansion is complemented by the DIA for the dredging operations, which includes some additional information (e.g. additional studies of plankton and benthos), however the scope of the DIA is also considered insufficient. We cannot comment on the monitoring program for the port expansion EIA, which has not been provided to ENVIRON.

This issue is discussed in further detail under section 4.5.9 below, and a recommendation to extend the scope of the EIA for the port expansion is not repeated here to avoid duplication.

4.5.2 PS 2 – Labor and Working Conditions

Refer to section 4.3.2 above.

4.5.3 PS 3 – Pollution Prevention and Abatement

Refer to section 4.3.3 above.

4.5.4 PS 4 – Community Health, Safety and Security

Refer to section 4.3.4 above.

4.5.5 PS 5 – Land Acquisition and Involuntary Resettlement

Based on information ENVIRON has received to date, the port expansion and dredging operations will not result in any physical or economic displacement or involuntary resettlement.

4.5.6 PS 6 – Biodiversity Conservation and Sustainable Management of Living Natural Resources

Refer to section 4.3.6 above.

4.5.7 PS 7 – Indigenous Peoples

Based on information ENVIRON has received to date, the mill expansion (to include the port) will not result in any impacts to indigenous peoples.

4.5.8 PS 8 – Cultural Heritage

The port expansion and dredging operations will not result in any impacts to cultural heritage.

4.5.9 WBG EHS Sector Guidelines for Ports, Harbors and Terminals and WBG EHS General Guidelines (limited assessment)

A – Environmental

Dredged Materials Management

As part of the Guaíba 2 project, the port will be extended to increase the pier capacity (extension of existing northern berth and addition of a new southern berth) for the transportation of the increased quantities of cellulose to the Rio Grande port and its subsequent international distribution. Dredging operations will reportedly comprise the removal of 190.329 m³ of sediments to increase the width of the channel in the vicinity of the port in order to allow the maneuvering of barges at the pier. The port expansion (and associated dredging) has been authorized by FEPAM as part of the Installation License for the mill expansion recently renewed (refer to section 4.3.1 above)

Dredging maintenance operations will also be conducted as part of the port expansion to maintain the draft of the existing channel which connects CMPC's pier with the Leitão channel (*canal do Leitão*) at the Guaíba lake, for the transportation of cellulose to the Rio Grande port and its subsequent international distribution. This is a periodic activity as the draft of the channel is reduced by the continuous sedimentation process, which could potentially compromise the barge transportation of pulp. Previous maintenance is understood to have been conducted in 2004. Dredging operations will reportedly be conducted in an approximately 6.0 km channel and will extend over 10 months.

The following opportunities for improvement were identified:

- CMPC plans to use a portion of the dredged sediments for land reclamation during the extension of the port terminal, whereas the redundant material will be disposed of by the company responsible for the execution of the dredging. As part of the complementary EIA/RIMA available for review (2007), a granulometric and a physical-chemical characterization of sediments was conducted at 7 different locations. The analytical results showed sediments in the port area to consist of dark sludge with high organic content. Significant concentrations of the following pollutants were reported:
 - Phosphorous: concentrations above the Brazilian Action Level (2000 mg/kg) were identified at one location - point 3 (17449 mg/kg).
 - Total Kjeldahl Nitrogen: concentrations above the Brazilian Action Level (4800 mg/kg) were identified at three locations – points 1 to 3 (values ranging between 827 7mg/kg and 10051 mg/kg).
 - Chromium: concentrations above Brazilian Level 1 (37.3 mg/kg) but below Level 2 (90.0 mg/kg)

It should be noted that sediment characterization does not comply with international best practice on the characterization of dredge materials; physical properties such as percent solids and density/specific gravity have not been determined, the presence of certain trace metals and organic/organo-metallic compounds and such as cadmium, copper, lead, mercury, nickel, zinc, PCB congeners and Tri-butyl tin compounds/degradation products have not been analyzed; and the need for the assessment of the biological properties of these materials has not been determined.

Additional sediment characterization was conducted as part of DIA for dredging maintenance operations. Based on the environmental diagnosis document available for review, sediments are considered to be clean or to present very low contamination levels. In addition to the review of exiting literature, sediments were sampled at 12 locations across the channel in 2007 for their subsequent physical (granulometric) and chemical analysis (heavy metals and organic compounds, in accordance with CONAMA 344/2004). The granulometric analysis reportedly shows the area to present a medium to low Potential Geochemical Availability Index (IDGP); the chemical analysis showed exceedances of the guideline values for the following parameters:

- Total Kjeldahl Nitrogen: values above the Action Level (4800 mg/kg) identified at three locations (5040, 5126 and 5947 mg/kg);
- Copper: values above Level 1 (25.7 mg/kg) but below Level 2 (197 mg/kg) were identified at two locations (49.0 and 40.0 mg/kg);
- Mercury: values of 0.200 mg/kg, over Level 1 (0.170 mg/kg) were identified at nine locations; Level 2 (0.486 mg/kg) was exceeded at one location (0.800 mg/kg). This is reportedly due to the presence of significant levels of mercury in the Guaiba lake.
- Nickel: Level 1 (18 mg/kg) was reached in one location.
- Phosphorous: the Action Level (2000 mg/kg) was exceeded at all locations, with values ranging between 2678 and 10253 mg/kg. This is reportedly due to the high concentration of phosphorous in the Guaiba lake tributaries due to the discharge of domestic effluents and runoff from agricultural areas.

Recommendation: Additional sediment characterization (physical, chemical and biological, as appropriate) is necessary in order to comply with international standards so as to ensure that the potential impacts of the dredge material are adequately assessed; justify the selection of determinants (e.g. on the basis of known or presumed contamination, total organic carbon content, etc.). Moreover, increased characterization is also considered necessary to meet requirements of CONAMA Resolution 344/2004.

- As noted above, sediment characterization results were provided to FEPAM in 2007 as part of the licensing application process. Results available for review showed concentrations of phosphorous and total Kjeldahl nitrogen above the Brazilian action levels in one and three sampling points respectively; the report recommends further analysis in order to determine the contamination source.

Recommendation: As a good practice, CMPC should identify opportunities to reduce sources of key contaminants in the Guaiba Lake based on the results of the additional sediment characterization (see above). This could include, amongst others, working with the authorities and other facility operators to reduce sources of key contaminants or participating in watershed protection programs.

- No consideration to excavation, dredging and dredge material deposition methods is given in the EIA for the port expansion. Mitigation of impacts derived from re-suspension of sediments in the EIA for the port expansion is focused on the control of the 'sediment suction processes, however, no detailed information is provided as to how this control will be achieved. The Environmental Diagnosis Document for dredging maintenance operations, on the other hand, considers the use of a trailing suction hopper dredger, based on the characteristics of the sediments (non-consolidated material). The report argues that sediment re-suspension caused by hydraulic dredges is lower than that caused by mechanical dredges, and considers the impact to be non-significant. Proposed measures to mitigate re-suspension focus on the operation of the suction pump at a low flow rate. The flow rate will be regulated on the basis of visual observations of water conditions supported by physical and chemical monitoring of the water quality; the need for additional silt barriers and turbidity curtains is not discussed.

Contract documentation for the dredging operations was not available for review to assess whether conditions for the minimisation of adverse impacts from sediment re-suspension are included.

Recommendation: Excavation and dredging methods need to be adequately assessed and implemented in order to minimize suspension of sediments and the destruction of benthic habitat, to increase the accuracy of the operation and maintain the density of the dredge material. Ensure that contract documentation for the port dredging operations include conditions for the minimisation of adverse impacts from the re-suspension of sediments, along with other environmental and HSE conditions in compliance with the WBG EHS Guidelines for Ports, Harbours and Terminals.

- The scope of the EIA for the port expansion is considered insufficient (e.g. the EIA reported 3 vulnerable fish species, 5 endangered species and 2 critical species within the Patos Lagoon system, however, no reference to sensitive areas for such species (e.g. feeding, breeding, and spawning areas) is made to determine whether these can be potentially affected and mitigation measures do not appear to contemplate fish migration or spawning seasons, routes and grounds; a specific monitoring program for the port expansion EIA/RIMA is not included). This issue was identified as part of the Gap Analysis conducted in October 2012, and a recommendation was made to extend the scope of the EIA to include an assessment of sensitive areas for marine life and a comprehensive follow-up and monitoring program to address all the potential impacts arising from the port expansion.

No additional information has been provided to address ENVIRON's comment. It is acknowledged that the EIA for the port expansion is complemented by the DIA for the dredging operations, which includes some additional studies of plankton and benthos. However, ichthyofauna characterization (solely included in the EIA for the port expansion) is based on a review of scientific literature for the entire Patos Lagoon system (i.e. no field monitoring in the project area was conducted) and no further details are provided of whether any of the vulnerable, endangered and critical fish species present within the Patos Lagoon system are likely to be affected by the proposed

operations; the need to prevent potential impacts on fish populations (e.g. avoid works during breeding, spawning seasons of relevant species) is not assessed. If spawning or breeding areas are not present, as indicated by CMPC, this should be clearly stated in the EIA as part of the impact assessment on ichthyofauna in compliance with the IFC PS. We cannot comment on the monitoring program for the port expansion EIA, which has not been provided to ENVIRON. Therefore, our recommendation is still applicable.

Recommendation: Extend the scope of the EIA for the port expansion to include an assessment of sensitive areas for marine life and a comprehensive follow-up and monitoring program to address all the potential impacts arising from the port expansion. If critical habitats are identified as defined in PS 6, the the EIA would need to demonstrate that the requirements of PS 6 paragraph 17 are met; additionally, the Project would need to demonstrate 'net benefits' in line with PS 6 paragraph 18.

PS 6, Paragraph 17: In areas of critical habitat, the client will not implement any project activities unless all of the following are demonstrated:

- *No other viable alternatives within the region exist for development of the project on modified or natural habitats that are not critical;*
- *The project does not lead to measurable adverse impacts on those biodiversity values for which the critical habitat was designated, and on the ecological processes supporting those biodiversity values;*
- *The project does not lead to a net reduction in the global and/or national/ regional population of any Critically Endangered or Endangered species over a reasonable period of time; and*
- *A robust, appropriately designed, and long-term biodiversity monitoring and evaluation program is integrated into the client's management program.*

PS 6, Paragraph 18. In such cases where a client is able to meet the requirements defined in paragraph 17, the project's mitigation strategy will be described in a Biodiversity Action Plan and will be designed to achieve net gains of those biodiversity values for which the critical habitat was designated.

- As part of the Installation License for the new line and the extension of the existing pier, CMPC is required to implement an environmental follow-up program during the construction phase which covers all the environmental and monitoring programs presented in the EIA and shall also include the follow-up of all the construction works for the installation of the industrial units and their corresponding control equipment, the port expansion and additional works conducted as part of this license; the follow-up shall be conducted by a technically competent contractor, who shall prepare and submit to FEPAM quarterly reports indicating all the projects/programs and works conducted in that period. It should be noted that a specific monitoring program for the port expansion EIA/RIMA was not included in the EIA for the port expansion.

A socio-environmental monitoring program has been defined for the continuous evaluation of the efficiency of control and mitigation measures defined in the Environmental Diagnosis Document for dredging maintenance operations, which is limited to monitoring of hydraulic resources, sediments, plankton and benthos in the

dredging and discharge areas; noise monitoring in the vicinity of the lake; and prevention of occupational accidents and does not address all the potential issues associated to the port expansion (i.e. it only addresses impacts from dredging operations but not those associated to additional potential impacts from the port expansion).

Recommendation: As part of the EIA update previously recommended, CMPC shall ensure that a comprehensive follow-up and monitoring program is defined in order to address all the potential impacts arising from the port expansion, not only those associated to maintenance dredging operations. Ensure the adequate implementation of the monitoring and control program, and the need to modify/extend mitigation and control measures on the basis of their effectiveness.

- Dredging operations will reportedly comprise the removal of 190.329 m³ of sediments to increase the width of the channel in the vicinity of the port in order to allow the manouvering of barges at the pier. 60% of the dredge material (117.900 m³) are expected to be used for land reclamation as part of the port expansion, whereas the remaining 72.429 m³ will be managed as waste, and disposed of by the dredging company to its final destination. Although, Environ received no information about the sediments disposal route. As noted above, characterization of sediments does not comply with international best practice; alternatives for the beneficial use of dredge material do not appear to have been considered by CMPC at this stage.

Additionally, the Environmental Diagnosis Document considers the open water discharge of sediments at Lake Guaiba (dredged material would be removed from one spot and discharged into another within the same lake). Alternatives for the beneficial use of dredge material do not appear to have been considered by CMPC at this stage.

This issue was identified in the Gap Analysis submitted in October 2012. In response to the Gap Analysis, CMPC noted that the use of sediment dredging on Lake Guaiba is not permitted for mining at Lake Guaiba until the completion of Zoning Economic Environmental elaboration by FEPAM. Commitments are made for specific uses as a case of the port of Guaiba. The default is the disposal of dredged material in own lake.

ENVIRON understands that final disposal of the sediment will be regulated in the Installation License. We do not know the status of FEPAM'S review of the port expansion EIA and any additional requirements they may have. Information on the Economic Environmental Zoning available on-line was reviewed by ENVIRON as part of the preparation of this report and we could not find anything regarding use (or not) of dredged material. The ZEE –RS webpage mentions a zoning process guided by FEPAM in the northern coast of RS, which does not include Guaíba. Provided that the material is not contaminated, ENVIRON does not anticipate that the existence of ZEE could prevent the sustainable re-use of dredged material. Therefore, in the absence of detailed information, ENVIRON considers that the beneficial use of dredge materials should be considered as best practice in compliance with international guidelines.

Recommendation: Alternatives for the beneficial reuse of uncontaminated dredge material should be assessed based on the results of the additional sediment

characterization (see above). Consideration should be given to technical, environmental and economic feasibility and legal aspects.

Air Emissions

In terms of dredging operations, air emissions from the dredger are considered to be low and temporary in nature; emissions of VOC derived from fuelling of the dredger are considered limited and temporary in nature.

Dust emissions are not considered an issue as port operations do not involve the storage and handling of dry bulk material.

In terms of port operations, the following good practices were observed:

- The port expansion project is designed with a view to reduce loading time, the pulp storage warehouse being adjacent to the port for loading of the barges through a bridge crane.

The following opportunities for improvement were identified with regards to port operations:

- Air quality management procedures are not in place to minimize NO_x and SO_x emissions from combustion sources at the port. It should be noted that operations conducted at the private port operated by CMPC at the industrial facility will be mainly limited to loading of cellulose bales onto barges, unloading of fuel into two above ground storage tanks (ASTs) and fuelling of barges.

Recommendation: Develop and implement air quality management procedures to reduce emissions from combustion sources associated to port operations (e.g. use low-sulfur fuels, navigation of port access areas at partial power).

- Based on information presented in the EIA (2007), which in turn is based on the results of a monitoring campaign conducted in 2002, air quality is considered to comply with regulatory limit values imposed by Brazilian regulations. More recent analyses were not available for review. CMPC is currently installing an air monitoring station approximately 1.5 to 3 km from the site (the location of which has been agreed with FEPAM) as part of the conditions of the installation license.

Recommendation: Conduct monitoring of air quality in the area to determine current conditions. Based on the results of this monitoring, determine the need for air quality management procedures in land based activities at the port, to support air emission abatement measures implemented at the mill.

- Refueling of barges is currently conducted at the Rio Grande Port; however, the port expansion project includes two tanks for the above ground storage of fuel for the barges. The EIAs reviewed do not provide a description of the characteristics of these tanks.

Recommendation: Select fuel storage and transfer equipment to minimize VOC emissions (e.g. floating roof storage tanks or vapor recovery systems).

Wastewater

In accordance with the Installation License for the facility, liquid effluents generated in the port area shall be treated at the industrial wastewater treatment plant.

Ship sewage is reportedly discharged and subsequently managed at the Rio Grande Port Terminal. Wastewater management practices will reportedly remain unchanged as part of the operation of the expanded port terminal. However, in relation to dredging operations, no information on the management of sanitary effluents from the dredger was available for review.

Recommendation: Ensure that dredgers are equipped with recycling or chemical toilets or holding tanks that can be discharged to shore facilities.

Waste Management

Effluents and wastes from the ships are managed at the Rio Grande Port Terminal. These management practices will reportedly remain unchanged for the new Guaiba 2 project

Wastes generated during dredging operations (to include those generated during dredger maintenance) shall be segregated at the source and conditioned in adequate containers in accordance with Brazilian regulations, and will be managed by the dredging contractor.

Recommendation: Ensure the adequate management of general wastes and ship wastes arising from dredging operations.

Hazardous Materials and Oil Management

The port expansion project includes two tanks for the above ground storage of fuel for the barges. The EIAs reviewed do not provide detailed information on the location or a description of the secondary containment for these tanks. Secondary containment requirements for fuel storage and handling areas are included in the Installation License.

Recommendation: Design all fuel storage and tanker truck loading and unloading areas with secondary containment and with consideration of natural drainage systems and road traffic.

Refueling of barges is currently conducted at the Rio Grande Port, thus spill prevention and control measures (e.g. booms or pneumatic barriers) and procedures are not currently in place at the port. A contingency plan is not in place for the prevention and control of fuel spills for the dock area but CMPC has a general spill prevention plan for the whole mill facility.

Recommendation: Develop and implement a prevention, control and countermeasure plan for the prevention of impacts associated with fuel unloading, storage and refueling operations at the port, and ensure that adequate spill response plans and resources are in place.

Maintenance of the dredger and refueling activities pose a risk of oil spills. Spill prevention measures focus on good operating practices, periodic training and daily meetings before the beginning of each shift. No information on fuel dispensing operations was available for review

Recommendation: Ensure that fuel dispensing equipment is provided with emergency shutdown mechanisms and that adequate spill containment equipment is in place.

The dredging contractor is required to develop an emergency and contingency plan approved by FEPAM.

Recommendation: Verify the adequacy of the plan and ensure the dredging personnel receive appropriate periodic training.

Noise

Noise prevention measures during dredging operations consist of monitoring of noise levels in the riverside communities and operation of the suction pump at low flow rate. Encapsulation of the pump for noise abatement will only be conducted if noise levels at the riverside communities are found to exceed regulatory limits.

No information on underwater noise sensitive species was presented to ENVIRON. The fauna survey considered ichthyofauna only, which will be temporarily displaced during dredged activities.

Recommendation: expand the scope of the EIA to include an assessment of the presence of noise sensitive aquatic species that could be potentially affected by the port expansion and dredging maintenance operations. If no noise sensitive species are present, this should be clearly stated in the EIA. Refer to Noise section under 4.3.3 and 4.3.10 above for information on noise in relation to port operations.

Biodiversity

A socio-environmental monitoring program has been defined for the continuous evaluation of the efficiency of control and mitigation measures, which includes monitoring of hydraulic resources, sediments, plankton and benthos in the dredging and discharge areas. The frequency and scope of the monitoring will be established by FEPAM.

Neither the dredger nor the barges require ballast water, thus no issues are anticipated in relation to the introduction of invasive species for cleaning / repair of ballast tanks.

Refer to Protection and Conservation of Biodiversity section under 4.3.6 above for information on biodiversity and APP in the port area.

B - Occupational Health and Safety

No detailed information was available for review to assess compliance of the port expansion with H&S design criteria. Health and safety procedures have been developed and implemented by CMPC at the current port operations (refer to section B- Occupational Health and Safety under 4.3.10 and 4.3.13 above for general information on H&S procedures in place at the mill). However, port design documentation was not available for review to verify whether design considerations comply with H&S standards (e.g. vehicle safety and pedestrian routes, hard-

standing surfaces, safe access for vessels, guarding, etc.). Additionally, as part of the port expansion, new operations such as refueling of barges will be conducted.

Recommendation: Ensure a clear requirement to comply with Brazilian NRs and international WBG EHS Sector Guidelines for Port Harbors and Terminals and WBG EHS General Guidelines is included in all contract specifications and other documentation and manuals intended for tenderers and companies directly or indirectly involved with the dredging, construction, commissioning, testing and initial operation of the port, as well as in CMCP's occupational H&S plans and procedures.

Recommendation: Environmental and Health and Safety Procedures for the port shall be updated to address risks arising from the port expansion, to include fuel storage and barge fueling operations as well as increased traffic.

C – Community Health and Safety

The emergency plan for the facility covers EHS emergencies at the port.

The following areas for improvement were identified:

- The port is accessed through the industrial mill site. CMPC is currently installing a fence around the northern, western and southern site boundaries. The site is currently accessed via a security gate operated by security guards; two additional gates will be installed as part of the project. However, a specific Facility Security Assessment of port operations has not been conducted. This issue was identified in the Gap Analysis conducted in October 2012. ENVIRON has not received an update on the status of the Port Facility Security Assessment at the time of preparation of this report,

Recommendation: Develop and implement a Port Facility Security Assessment in compliance with WBG EHS Guidelines for Ports, Harbors and Terminals and other international guidelines, which shall be followed by the appointment of a Port Facility Security Officer and the preparation of a Port Facility Security plan depending on the outcome of the risk assessment.

- The port is located in the western portion of the industrial site. Visual impacts to the residential areas to the north of the port are limited by the APP present in the northeastern corner of the site. Additionally, in order to comply with the conditions of the Installation License, CMPS is currently installing a green belt around the perimeter of the site. However, it should be noted that the potential impact of excessive night illumination from the industrial site and port expansion on invertebrate flight paths and settlement/breeding partners has not been assessed as part of the EIA for the new line and the complementary EIA for the project extension, and no glare minimization measures are described in the programs reviewed.

Recommendation: Extend the scope of the EIA to include a comprehensive assessment of visual impacts arising from the new line and port expansion, to include night

illumination impacts from the industrial site and port expansion on invertebrate flight paths and settlement/ breeding partners.

4.5.10 MARPOL

Compliance with MARPOL has been partially addressed though the assessment of compliance with the EHS Sector Guidelines for Ports, Harbors and Terminals. A detailed assessment against these regulations can be conducted at a later date.

4.5.11 Australian Guidelines for Dredging 2009

Compliance with Australian Guidelines has been partially addressed though the assessment of compliance with the EHS Sector Guidelines for Ports, Harbors and Terminals. A detailed assessment against these regulations can be conducted at a later date.

4.6 Guaíba 2 Project Component: Transmission Line

4.6.1 PS 1 – Social and Environmental Assessment and Management Systems

EIA for the Transmission Line

An EIA for the transmission line (T-Line) has not been developed as this is not required by Brazilian regulations. A limited assessment of environmental baseline conditions was conducted as part of the preliminary license application process, and construction contractors are required to comply with CMPC EHS procedures. Based on information ENVIRON received, as of October 2012, the T-Line's area of influence has not been defined, environmental and social risks and impacts have not been fully identified in accordance with the IFC PS (e.g. selection of alternatives has not been documented; land acquisition requirements, cumulative electromagnetic impacts on neighboring residential areas and natural hazards and risks to populations, amongst others, have not been assessed), and, consistent with the status of engaging contractors for other project components, the contractor for the T-Line has not yet been selected.

According to CMPC, an EIA is not required and no further action needs to be taken. The design and specification of materials, prepared by Engineering [we assume this is a department within CMPC], satisfies the requirements of the ONS Grid Procedures and ANEEL. Also, all the conditions and restrictions set out in LI 1095/2011-DL issued by FEPAM have been met. In short, all the rules and conditions listed by agencies of Brazil for the construction and operation of this T-Line are being met. For the T-Line, there are Environmental and Technical permits to construction.

ENVIRON understands that initially the plan was for the T-Line to be built by CMPC and handed over to the Energy Supplier Company, who would have been solely responsible for the operation of the T-Line. However, CMPC in responding to our Gap Analysis has informed ENVIRON that there has been a change of plans; the T-Line will not be delivered to the utility after construction. CMPC held a meeting with the national Electricity Generation and Transmission company (*Companhia Estadual de Geração e Transmissão de Energia Elétrica* –

CEEE-GT) and it has no interest in possession of the T-Line. Apparently, the lack of interest by the CEEE-GT is due to the fact the T-Line only supports CMPC. As a result of these developments, CMPC will now be responsible for operations and maintenance of the T-Line and these responsibilities will be sub-contracted to an experienced operator.

Recommendation: Whilst an EIA is not required in accordance with Brazilian regulations as this is considered a low impact project, an ESIA needs to be developed to meet requirements under the IFC PS. Upon identification of the project risks and impacts, prevention and mitigation strategies need to be defined and implemented through management programs and the effectiveness of these measures needs to be monitored. CMPC should ensure that all potential risks derived from the construction and operation of the T-Line, to include cumulative impacts, are identified and prevented/mitigated.

Area of Influence

Based on CMPC's responses to gaps on public consultation that were included in ENVIRON's October 2012 Gap Analysis, it appears that CMPC is not fully taking into consideration the T-Line's area of influence and potential impacts from the T-Line. There will be impacts to the neighboring communities during construction: noise, vibration, dust, traffic, etc. The distance from the T-Line's right-of-way (ROW) to the closest homes/communities needs to be determined.

Recommendation: As part of the EIA for the T-Line, ensure that the area of influence for the T-Line is adequately defined in accordance with the IFC PS.

Stakeholder Engagement, Public Consultation and Disclosure of Information

According to CMPC, due to the size of this T-Line, it is not subject to public consultation, according to Brazilian regulations, which is why it was not done in the environmental licensing process. Besides the layout, it will have no interference with the community, as can be seen in the documents provided.

Recommendation: While public consultation may not be required under Brazilian regulations, it is required under PS1. Members of any individual households and/or communities located within the T-Line project's DIA (once it is determined) need to be made aware of the transmission line project and its potential risks and impacts and any feedback received should be recorded with follow-up where needed. CMPC should ensure that these stakeholders are invited to participate in the upcoming Community Forum meetings.

Recommendation: CMPC to provide information on the following:

- The status of approval of the T-Line construction's environmental and technical permits;
- The status of the T-line project design and scope and if it has been finalized;
- The distance from the T-Line's ROW to the closest households/communities;
- The status of selecting a T-Line EPC Contractor;
- The status of selecting the future operator of the T-Line; and
- If CMPC has considered a maintenance contract for the T-Line.

Organizational Capacity and Competency

Refer to section 4.3.1 above.

4.6.2 PS 2 – Labor and Working Conditions

EPC Contracts

Refer to section 4.3.2 above.

Worker Housing Plan

Refer to section 4.3.2 above

Compliance with additional requirements under PS2 cannot be assessed in the absence of the ESIA and other relevant information for the T-Line.

4.6.3 PS 3 – Pollution Prevention and Abatement

Compliance with PS3 cannot be assessed in the absence of the ESIA and other relevant information for the T-Line.

4.6.4 PS 4 – Community Health, Safety and Security

Compliance with PS4 cannot be assessed in the absence of the ESIA and other relevant information for the T-Line.

4.6.5 PS 5 – Land Acquisition and Involuntary Resettlement

As of October 2012, land acquisition documents for the transmission-line ROW were still pending. A draft contract was available for review, however as of that date, ENVIRON understands the contract had not yet been signed by the parties.

Recommendation: Lenders to be advised of the status of the land acquisition documents for the T-Line ROW.

4.6.6 PS 6 – Biodiversity Conservation and Sustainable Management of Living Natural Resources

Compliance with PS6 cannot be assessed in the absence of the ESIA and other relevant information for the T-Line.

4.6.7 PS 7 – Indigenous Peoples

Compliance with PS7 cannot be assessed in the absence of the ESIA and other relevant information for the T-Line.

4.6.8 PS 8 – Cultural Heritage

Compliance with PS8 cannot be assessed in the absence of the ESIA and other relevant information for the T-Line.

4.6.9 WBG EHS Sector Guidelines for Electric Power Transmission and Distribution and WBG EHS General Guidelines (limited assessment)

Compliance with the WBG EHS Sector Guidelines and the WBG EHS General Guidelines (as applicable) cannot be assessed in the absence of the ESIA and other relevant information for the T-Line.

Recommendation: Ensure a clear requirement to comply with Brazilian regulatory requirements and international standards (i.e. IFC Performance Standards, WBG EHS Sector Guidelines for Electric Power Transmission and Distribution and WBG EHS General Guidelines) is included in all contract specifications and other documentation and manuals intended for tenderers and companies directly or indirectly involved with the construction, commissioning, testing and operation of the T-Line, as well as in CMCP's occupational H&S plans and procedures.

4.7 Guaíba 2 Project Component: New Electrical Road

4.7.1 PS 1 – Social and Environmental Assessment and Management Systems

EIA for the Electrical/Private Road

An EIA for the Electrical/Private Road had not been developed as this is not required by Brazilian regulations for what is considered a low impact project. Whilst an EIA is not required in accordance with Brazilian regulations, an ESIA needs to be developed to meet requirements under the IFC PS. According to CMPC's response to the Gap Analysis, an environmental study of the Electrical/Private Road is being developed together with the engineering design, and was scheduled to be completed by Jan. 15, 2013.

According to information provided by CMPC and by FEPAM, the Permitting process for the Electrical/Private Road (which will connect the mill to BR 290) will be conducted by the municipal government. Reportedly, as of October 2012, the Municipal permit application had not yet been requested; moreover, during the site visit, CMPC informed ENVIRON that the road project alignment would be altered in order to consider a more suitable path which will avoid an area with steep slopes included in the original project.

Recommendation: Whilst an EIA is not required in accordance with Brazilian regulations as this is considered a low impact project, an ESIA needs to be developed to meet requirements under the IFC PS. Upon identification of the project risks and impacts, prevention and mitigation strategies need to be defined and implemented through management programs and the effectiveness of these measures needs to be monitored. CMPC should ensure that all potential risks derived from the construction and operation of the New Electrical Road, to include cumulative impacts, are identified and prevented/mitigated.

Recommendation: CMPC to provide information on the following:

- The status of the environmental study, the final design and alignment for the road.

Area of Influence

Based on CMPC's responses to gaps on public consultation that were included in ENVIRON's October 2012 Gap Analysis, it appears that CMPC is not fully taking into consideration the Electrical Road's area of influence and potential impacts from the Electrical/Private Road. There will be impacts to the neighboring communities during construction: noise, vibration, dust, traffic, etc. The distance from the Electrical/Private Road's ROW to the closest homes/communities needs to be determined.

Recommendation: As part of the EIA for the New Electrical Road, ensure that the area of influence for the Electrical Road is adequately defined in accordance with the IFC PS.

Stakeholder Engagement, Public Consultation and Disclosure of Information

According to CMPC, the area of direct impact of the private road has no interference with communities. By the licensing process, there is no need for a program of public consultation on this road. While Brazil does not require any public consultation for the Electrical/Private Road, it is required under the PSs for the communities in the new road project's DAI (once its alignment is determined). CMPC does plan to disclose plans for the Electrical/Private Road to the Community Forum when the project goes forward.

Recommendation: Disclosure of information concerning the new road to the local community should be done far in advance of the start of construction. The communities in the new road project's DAI (once it is determined) will need to be made aware of the project's potential risk and impacts and any feedback received should be recorded with follow-up where needed.

Organizational Capacity and Competency

Refer to section 4.3.1 above.

4.7.2 PS 2 – Labor and Working Conditions

EPC Contracts

Refer to section 4.3.2 above.

Worker Housing Plan

Refer to section 4.3.2 above.

Compliance with additional requirements under PS 2 cannot be assessed in the absence of the ESIA and other relevant information for the New Electrical Road.

4.7.3 PS 3 – Pollution Prevention and Abatement

Compliance with PS 3 cannot be assessed in the absence of the ESIA and other relevant information for the New Electrical Road.

4.7.4 PS 4 – Community Health, Safety and Security

Compliance with PS4 cannot be assessed in the absence of the ESIA and other relevant information for the New Electrical Road.

4.7.5 PS 5 –Land Acquisition and Involuntary Resettlement

According to CMPC, two parcels of land needed to be acquired for the Electrical/Private Road. The first parcel needed to be acquired to connect the mill property with the private road, and the second parcel was needed to create a connection between the private road and the federal highway BR-116, thereby creating an access road from the mill to BR-116.

At the time of our site visit, land acquisition documents for the new road alignment and ROW were not available for review.

In CMPC's October response to the Gap Analysis, they advised that the first land parcel (from the mill site to the private road) was already acquired and the documentation is available for review at CMPC. The purchase of second land parcel (connecting the private road with federal highway BR-116) was at the time under negotiation with the owner, and the sale was scheduled to close by Dec.31, 2012.

Recommendation: CMPC to provide (i) copies of land purchase documentation for the first parcel and (ii) an update on the land acquisition status for parcel no.2. Once this second parcel of land is acquired, the Lenders should also receive copies of the land acquisition documents.

4.7.6 PS 6 – Biodiversity Conservation and Sustainable Management of Living Natural Resources

Compliance with PS 6 cannot be assessed in the absence of the ESIA and other relevant information for the New Electrical Road.

4.7.7 PS 7 – Indigenous Peoples

Compliance with PS 7 cannot be assessed in the absence of the ESIA and other relevant information for the New Electrical Road.

4.7.8 PS 8 – Cultural Heritage

Compliance with PS 8 cannot be assessed in the absence of the ESIA and other relevant information for the New Electrical Road.

4.7.9 WBG EHS Sector Guidelines for Toll Roads and WBG EHS General Guidelines (limited assessment)

Compliance with the WBG EHS Sector Guidelines for Toll Roads and the WBG EHS General Guidelines (as applicable) cannot be assessed in the absence of the ESIA and other relevant information for the New Electrical Road.

Recommendation: Ensure a clear requirement to comply with Brazilian regulatory requirements and international standards (i.e. IFC Performance Standards, WBG EHS Sector Guidelines for Toll Roads and WBG EHS General Guidelines) is included in all contract specifications and other documentation and manuals intended for tenderers and companies directly or indirectly involved with the construction, commissioning, testing and operation of the T-Line, as well as in CMCP's occupational H&S plans and procedures.

4.8 The Equator Principles

The Equator Principles (EPs) are applicable to the Project. The EPs reference the IFC PS and EHS Guidelines, and the two latter are the primary framework against which an ESIA and ESMS are compared when determining a project's compliance with the EPs. In terms of the review of the Project's EIAs and the programs and subprograms (which form the framework for an ESMS for the Project, refer to Appendix E), for all intents and purposes the EPs coincide with the IFC PS and IFC EHS Guidelines. As of the writing of this report, there is not yet full compliance with the EP, which is mainly due to the Project's current gaps in compliance with the IFC PS and EHS Guidelines.

The status of compliance with each EP is described below.

- The Advisors and prospective Lenders have classified the Project as a Category A as per OECD Common Approaches (2012), the IFC PS and the EPs, and ENVIRON confirms this project categorization (Principle 1).
- CMPC has developed 6 Project EIAs covering the mill, port expansion and four plantation basins (Principle 2); however, there are some impacts that were not adequately assessed in the EIAs, as noted in this report's ESAP (See Section 8).
- The applicable social and environmental standards have been identified and are described in Table 5.1(Principle 3).
- Action Plan and Management System: CMPC does not have a formal EHS management plan that includes the whole expansion project. Current operations are covered by an ISO 14,000 certified Environmental Management System. . An ESAP has been recommended by ENVIRON and is included in this ESDD report (Principle 4).
- A three-phase public consultation process took place in Guaíba and Porto Alegre in 2007 (to assess their impressions of the mill and the planned expansion) in order to obtain the permit. CMPC has not yet implemented its new consultation program, but information on the Project is disclosed on its website. Community engagement has been ongoing for the past few years in the plantation basins (Principle 5).
- A community grievance mechanism is in place but needs to be further developed (see Section 5.3.1 for a summary Principle 6).

Environmental and Social Due Diligence Report

- This environmental and social due-diligence report reflects an independent review (Principle 7).
- The Advisors and prospective Lenders will need to establish applicable covenants for the Project, based in part on this ESDD. ENVIRON recommends that a financial covenant referencing the compliance with the ESAP be included in the financing agreement between CMPC and the Lenders. ENVIRON also recommends that CMPC develop a decommissioning plan (including demobilization of staff from the construction period) prior to the end of the construction period (Principle 8).
- ENVIRON has been retained as the IESC to the Advisors and prospective lenders. We are not aware if an independent consultancy has been engaged to perform monitoring and review post financial close. We recommend quarterly monitoring and review during the Project's site preparation and construction phases and monitoring and review should continue to be performed on an annual basis throughout the operations phase (Principle 9).
- Annual reporting of this project in accordance with the EP is the Lender's responsibility (Principle 10).

5 Project's Compliance with Brazilian Regulations

CMPC holds several valid permits for the following activities:

- Pulp and paper production (Line 1 and paper mill)
- Pulp production capacity increase- installation of a second pulp line (Line 2), including an expansion on the barges loading dock and respective warehouse.
- Waste treatment and disposal facility
- Groundwater monitoring at a former waste disposal area
- A chemicals production (the Chlor-Alkali plant)
- Eucalyptus Plantations

The company has also filed for permits for the following activities related to the plant capacity expansion:

- A road that connects RS 029 with the site
- A 230kV power transmission line
- Dredging activities to be conducted on the channel that leads from Guaíba Lake to the barge loading dock.

A summary of all permits status in terms of validity and compliance is presented on Table 6.1 below.

Table 5.1 Summary of Permit Status

Permit number	Activity	Issuance date	Expiration date
Horto Cascata - contaminated site management			
Operating permit n. ° 7079/2008-dl	Groundwater monitoring on a 237,000m2 area formerly used for waste disposal	Sep22/08	Sep 21/12
Waste treatment central José Lutzemberger			
Operating permit n. ° 7847/2008-dl	CMPC operates a non-hazardous waste treatment center which occupies 99 hectares. It is dedicated to receive, per year, up to 11.200 tons of eucalyptus bark, 78.120 tons of WWTP sludge, 16.000 tons of dregs and grits,26.400 tons of lime sludge and 2.400 tons of class ii waste (non-hazardous, non-inertial). Organic waste is used for composting, lime, dregs and grits are used as fertilizer raw material and remaining wastes are landfilled.	Sep 10/08	Dec 22/13
Installation permit n. ° 977/2008-dl	Waste landfill capacity increase	Sep 9/08	Sep 9/13

Permit number	Activity	Issuance date	Expiration date
Pulp manufacturing			
Installation permit - environmental impact assessment n.º 687/2008-dl	Expansion of the pulp and paper and port terminal	Jul 01/08	Jun 06/13
Operating permit n.º 6561/2009-dl	Pulp manufacturing facility with a total area of 606,433 m ² ; a 9,992 m ² port terminal and a 80 m ² pesticides warehouse.	Sep 23/09	Sep 22/13
Chemicals manufacturing - chlorine – alkali plant			
Operating license n.º 617/2010-dl	Chlorine-alkali production.	Feb 04/10	Dec 15/12
Cleaning and dredging of water bodies			
Operating permit n.º 5691/2001-dl	5,912 m of water body dredging.	Dec 27/01	Jul 18/02
Installation permit n.º 1095 / 2011-dl	Connects the Guaíba 2 substation to the CMPC substation with 230 kV.	Sep 09/11	Sep 08/16
Plantations			
Installation permit n.º 1185/2008-dl	Plantations of 10,000 ha of eucalyptus sp. (eucalyptus) in owned and third parties farms.	Oct 23/08	Oct 22/13
Installation permit n.º 1190/2008-dl	Plantations of 30,000 ha of eucalyptus sp. (eucalyptus) in owned and third parties farms.	Oct 24/08	Oct 23/13
Installation permit n.º 740/2008-dl	Plantations of 30,000 ha of eucalyptus sp. (eucalyptus) in owned and third parties farms.	Oct 24/08	Oct 23/13
Installation permit n.º 1190/2008-dl	Plantations of 30,000 ha of eucalyptus sp. (eucalyptus) in owned and third parties farms.	Oct 24/08	Oct 23/13
Transmission Line			
Installation permit 1095/2011	Allows construction works for the power transmission line that will feed the site	Set 9/2011	Set 8/2016

Comments on each activity are presented below. In general, ENVIRON observed that CMPC is in compliance with legal requirements and permit requirements. Few non-compliances were observed which are mentioned under each item. Mostly concerns are related to the lack of information on permit's renewal status or on missing information regarding compliance of projects that are yet to be started.

Pulp and paper production (Line 1 and paper mill)

An operating license is in place for the existing pulp line (dated September 2009). As part of this ESDD, ENVIRON assessed compliance with the requirements of this license. We received copies of monthly monitoring results for air emissions and effluent discharges and compared air emissions and effluent discharge measurements with the regulatory limits established in the operating license, as well as applicable WBG EHS sector guidelines.

According to documents reviewed by ENVIRON, CMPC is compliant with all permit requirements except one. Although all wastewater and surface water monitoring are in compliance with legal requirements, during the site visit ENVIRON observed that oil containing wastewater from the logs washing machine was being discharged directly on the lagoon that margins CMPC site on the northern portion. This lagoon is connected to Guaíba Lake through a dam in which ENVIRON observed an oily foam to be accumulated, indicating that the oil/water separator used on the logs washing machine may not be efficient.

As there is no wastewater monitoring, on this point it is not possible to ensure that oily water is not being directly discharged into the Guaiba Lake.

Recommendation: It is important to highlight that this permit will expire on September 22, 2013. In order to have extended coverage for the existing license, CMPC must apply for the license renewal 120 days before the expiration date, which would be on May 21st, 2013. There is no information on the status of this permitting update.

Recommendation: In order to be sure that oily water is not being discharged into Guaíba lake, CMPC must perform wastewater analysis at the exit on the oil/water separator located at the logs washing system. Wastewater must be in compliance with CONAMA Resolution 430/11 standards. Additionally, maintenance at the oily water separator should be considered in order to avoid unintentional oil discharge.

Pulp production capacity increase- installation of a second pulp line (Line 2), including an expansion on the barges loading dock and respective warehouse.

An Installation License for the Project was obtained initially by Aracruz Celulose in June 2008 (a change of name – *Declaração de Alteração de Responsabilidade*, dated November 2010, is in place, and thus CMPC is the new operator for this license).

This permit is valid until June 30, 2013 and CMPC is aware of the need to apply for an extension. Reportedly CMPC filed a permit renewal request in submitted in February 2013, 120 days before the expiration date. This ensures that should FEPAM delay the new permit issuance the old one has extended and unlimited validity until the issuance of the new one.

It should be noted that as part of this extension CMPC was required to notify changes in the project scope (the original EIAs submitted as part of this licensing procedure – new production

line and extension of the existing line on the one hand, and the complementary EIA for the extension of the port on the other - date from 2007) and it is therefore understood that the conditions imposed in the Installation License will be modified by FEPAM, although the nature and extent of these changes cannot be anticipated at this stage as some aspects and details of the project are still being finalized.

The duration of the license extension process cannot be estimated at this stage. Additional documentation or an update of documentation previously submitted is likely to be requested by FEPAM as part of this process, given the significance of some of the changes (e.g. the EIA for the port expansion was prepared by Aracruz in 2007 and considers that 40% of the timber will be transported to the mill through barges, however CMPC has confirmed that 100% of the timber will be transported by road).

The Installation License has several requirements, all related to construction works, plant installation and pollution abatement. As the project had not yet started several License requirements were in progress or had not yet started at the time of the visit. There is no updated information regarding current CMPC compliance status regarding the Installation License requirements. Also there is no updated information regarding construction works or the new line installation.

ENVIRON has no information on which documents/information were presented to FEPAM for the permit renewal process.

Recommendation: CMPC should ensure that the information presented to FEPAM for permit renewal (Installation License) includes all project updates informed during the site visit. A new environmental impact assessment may be considered depending on the extent of the alterations, especially considering the dredging activities which were not included in the first assessment.

Waste treatment and disposal facility – Waste treatment central José Lutzemberger

CMPC's operates a non-hazardous waste treatment center which occupies 99.5 ha. It is dedicated to receive, per year, up to 11.200 tons of eucalyptus bark, 78.120 tons of WWTP sludge, 16.000 tons of dregs and grits, 26.400 tons of lime sludge and 2.400 tons of Class II waste (non-hazardous, non-inertial).

Organic waste is used for composting then used on eucalyptus plantations or sold as fertilizer. Lime sludge, dregs and grits are used as fertilizer raw material and remaining wastes are landfilled.

Recommendation: It is important to highlight that the current Operating Permit will expire on September 9, 2013. In order to have extended coverage for the existing license, CMPC must apply for the license renewal 120 days before the expiration date, which should have occurred on May 8, 2013. According to CMPC, the Permit Renewal request should have been delivered to FEPAM on April 30, 2013. There is no information on this permit renewal status.

Groundwater monitoring at a former waste disposal area

From mid 1970's until year 2002, Aracruz Celulose and all former company owners used to dispose waste bare soil in an area known as Horto Cascata. Wastes included coal boilers' heavy ashes, WWTP sludge, Barium contaminated sludge from the Chlorine-Soda process and dregs and grits from the liquor recovery system. As a result, this area presented groundwater

contamination and has been under remediation and monitoring since 2009. After all remedial measures were adopted (wastes removal and soil and vegetation recovery), Aracruz delivered to FEPAM an updated surface and groundwater monitoring plan, aiming at an evaluation of remedial measures effectiveness. The report concludes that all groundwater monitoring wells were destroyed or damaged and should have been reinstalled and that surface water had recovered its original quality conditions, being in compliance with applicable regulations. There is no information on groundwater quality therefore a new sampling campaign was proposed. The 2009 surface and groundwater monitoring plan recommends engaging a consultancy to perform a detailed site assessment and propose an updated monitoring plan. A letter issued on April 18, 2011 by CMPC questions FEPAM about an answer to their pledge, dated 2009. As far as ENVIRON understood during interviews conducted with FEPAM and CMPC staff during the site visit due diligence process, this proposal is still under evaluation. More updated information has not been provided to date.

Recommendation: Before considering de-activating the remediation system, CMPC should perform two new groundwater sampling campaigns, covering dry and wet seasons, in order to understand the current site situation as the last monitoring campaign occurred in 2009 and there is no further updated information.

Chlorine- Alkali Production

As a by-product of cellulose production, CMPC has a Chlor-Alkali chemical plant which operates in reverse osmosis for the production of Chlorine Gas and Caustic Soda. This plant had an Operating Permit which was valid until December 15, 2012 and by the time of the site assessment CMPC was compliant with all permit requirements.

In order to have extended coverage for the existing license, CMPC should have applied for a permit renewal by September 14, 2012. There is no information on the status of this permitting update.

Recommendation: CMPC should present the permit renewal protocol dated September, 2012. If the permit renewal was not requested, it should be immediately requested as the Chlor Alkali plant may be currently operating without a permit.

Eucalyptus Plantations

For eucalyptus plantations, CMPC has two different sets of permits. Until 2007, Aracruz used to ask for Installation Permits for each farm in which a new plantation would be installed. During the site assessment, ENVIRON received approximately 50 permits for eucalyptus farms. Since 2008, in order to optimize the permitting process, CMPC adopted a strategy of asking for permits for clusters of farms, grouped by hydrographic basins. Currently, besides the 50 individual permits CMPC has 4 permits for farms's clusters grouped as the basins of the rivers Vacacaí, Baixo Jacuí, Camaquã and Santa Maria. ENVIRON did not evaluate all the 50 individual permits but did evaluated the 4 most encompassing permits. They are all valid until October 23, 2013 and permit renewal must be asked until July 22, 2013.

All the permits are Installation Permits which allows plantation and culture management. Before each harvesting event an Operating Permit is requested for the area that will be subject to harvesting.

All the permits have several requirements, quite similar, which were grouped by CMPC in a Forestry Monitoring Program which encompasses all requirements including: fauna and flora monitoring, surface water monitoring, agrochemicals application and management, cultural heritage monitoring etc. ENVIRON observed the program to be complete and in compliance with all permit requirements.

Conclusion: No issues anticipated.

The road that connects RS 029 with the site

CMPC intends to install a new road to connect the site with regional main roads in order to avoid crossing urban areas with logs trucks and chemicals trucks. This road would cross the Horto Cascata which already belongs to CMPC and is occupied by eucalyptus plantations. In April 4th, 2012 CMPC presented a permit request to FEPAM and the state environmental agency understood that as the road has local impact the permitting process should be conducted by Municipal Government. By the time of the site assessments CMPC had not yet sent the permit request to the Municipal Government and there is no updated information on this process current status.

Recommendation: CMPC should provide information on the definitive pathway for this road and ensure that the permitting process is being properly conducted by the municipality.

The 230kV power transmission line

A new power transmission line will be installed in order to supply CMPC's new operations. This line will cross the Horto Cascata which already belongs to CMPC and is occupied by eucalyptus plantations. CMPC has already received the Installation Permit for this Transmission Line. It was issued on September 9, 2011 and is valid until 2016. During the site assessment, construction works were not yet started thus it was not possible to verify compliance with this permit's requirements. There is no updated information on this project's construction schedule.

Recommendation: Once CMPC starts to install the T-Line, an environmental monitoring report should be provided presenting evidence of compliance with all permits' requirements.

Dredging activities to be conducted on the channel that leads from Guaíba Lake to the barge loading dock.

In July 2008, CMPC filed a license request for the dredging project and this project is still under analysis. According to information obtained during the interview with FEPAM representatives (performed during ENVIRON's site visit), the dredging services are the responsibility of the State Ports and Waterways Administration (SPH) and cannot be performed by CMPC. FEPAM understands that the permit request must be filed by SPH which will also be responsible for compliance with permit requirements. Questioned about this, both CMPC and FEPAM representatives agreed to discuss the subject and identify the best way to approach SPH in order to ensure full legal compliance of the dredging project.

Questioned about this subject CMPC stated that as the channel would be used for private purposes (access to its docks) the permitting process as well the environmental management of dredging services should be under CMPC's responsibility. There is no updated information on this matter.

Recommendation: CMPC should have meetings with FEPAM, along with the Ports and Waterways authority, in order to identify which of them will be responsible for requesting the dredging permit. Dredging works cannot start unless a permit is issued by FEPAM.

Occupational Health and Safety

CMPC operates three 8-hour shifts, seven days per week. Current staff level includes about 500 full-time employees and 10 temporary workers. At the peak of construction during the Project's 25-month construction period, the number of local and external workers is estimated at 7,000. Based on Table I of the Brazilian Regulatory Rule of the Labor Ministry NR-#4, CMPC's activities are framed within Occupational Risk Category IV.

The company holds valid H&S studies, as the Labor-related risk prevention program (PPRA) and Occupational Health Prevention Program (PCMSO). The activities performed on site require the management of the following risks:

- Noise exposure: all the production areas;
- Chemical agents' inhalations: at the pulp mill and at the plantations due to agrochemicals application;
- Dust inhalation: at the logs shredder and at the wood chip storage silos;
- Biological risks: cleaning personnel;
- Ergonomic risks: all employees; and
- Mechanical risks: all production areas, due to moving parts with special attention to the paper sheets cutting lines and to the log transportation, storage, receiving and washing lines.

All exposure risks are controlled by periodical monitoring and all monitoring results were compliant with regulations.

According to the Brazilian Regulatory Rule NR#4, the activities are classified as Occupational Risk IV, and a Health and Safety Engineering Specialized Service – SESMT (Serviço Especializado em Engenharia de Segurança e em Medicina do Trabalho) is required if the company is presenting more than 101 employees. In CMPC case, the H&S Team is properly domentioned counting on H&S Technicians, H&S Enginners, H&S nurces and a physician.

The site has Accidents Prevention Internal Committees – CIPA (Comissão Interna de Prevenção de Acidentes), in accordance with Brazilian Regulation NR#5. ENVIRON reviewed CIPA meeting records for the site and found them compliant with regulations.

CMPC has good control of accidents and incidents which are distinguished under accidents with and without lost days and near misses, all controlled by the company's H&S Physician, who is also responsible for the employees welfare program including periodical clinical routine exams, besides all legally required screens for chemical exposure.

During the site visit, employees were observed to be using proper PPE, in accordance to their activity. The records of PPE delivered to employees were made available for review.

During the site visit, edifications and work conditions were observed to be good and equipped with the adequate protections. Pavement on production areas were observed to be in good conditions

ENVIRON noted the following issues related to health and safety:

Fire protection: the logs shredding areas and the wood chips conveyors and silos generate large amounts of dust which could create an explosive atmosphere. ENVIRON observed that the silos are equipped with anti-sparkle electrical installations but not the shredding area. Additionally, it was observed that shredding areas, chips conveyors (to and from the silos) and the silos themselves lack a dust removal system that could prevent dust accumulation and a consequent dust induced fire event. Reportedly though, such events never occurred.

Machine safety of Line 1

A machine safety diagnosis was conducted by external consultant (ASTB) but not made available to ENVIRON at the time of preparation of this report. Reportedly, the diagnosis report details the adjustments to Line 1 necessary in order to meet Brazilian NR-12 for rotating equipment safety and requires an initial estimated investment of approximately USD \$6,000,000 (Mechanical and Electrical adjustments). CMPC reported that the necessary investment and corrective activities are being planned by the Engineering department, and are expected to get CMPC Board approval for their implementation.

This risk aspect was addressed for the first time on the last day of the site visit, and ENVIRON has not received any update on CMPC's Board approval of actions recommended under the ASTB study.

Recommendation: Ensure the timely implementation of corrective measures to improve machine safety at the existing Line 1 to minimize H&S risks to workers.

6 ESHS Management Programs

The Project's EIAs include a series of management and monitoring programs which at the time of preparation of this report were at various degrees of implementation (refer to section 4 above for additional information). It should be noted, however, that the scope of the EIAs is deemed insufficient to address all the potential impacts arising from the Guaiba 2 Project, and recommendations have been included in the ESAP to expand the scope of the EIAs for all the project components. Moreover, EIAs for the T-Line and New Electrical Road have not been prepared, and no management and monitoring programs have been defined at present.

A list of programs based on the EIAs for the mill, port dredging operations and plantations is provided as Appendix E.

As noted above, at the time of preparation of this report, an action plan for the implementation of management programs for the Line 2 and extension of Line 1 and port expansion, identifying resources, responsibilities and deadlines for implementation, had not yet been prepared.

7 Environmental and Social Action Plan Action Plan

7.1 Action Plan

ENVIRON has developed an ESAP. The ESAP is intended as a plan for the Project to bridge gaps between the EIA commitments and the Senior Lenders' Environmental and Social Requirements.

It should be noted that the ESAP constitutes a summary of the recommended actions and does not make a distinction between information gaps and non-compliances with International Standards or Brazilian regulatory requirements. Please refer to sections 4 and 5 above for a full description of the findings.

Findings are categorized and color-coded based on their priority, as follows:

HIGH	<p>A material non-compliance that has resulted in significant social/environmental effect, or has created a high risk of significant social/environmental potential effect.</p> <p>Timeframe: Immediate action recommended, and in any case prior to the commencement of construction activities.</p>
MEDIUM	<p>A minor / technical non-compliance causing, or with the potential to cause, minor social/environmental potential effect.</p> <p>Timeframe: Prior to the commencement of construction activities.</p>
LOW	<p>A technical non-compliance with a low risk of causing social/environmental potential effect, or else a recommendation for improvement not specifically linked to a non-compliance but nonetheless worthy of comment and/or improvements in working practices.</p> <p>Timeframe: Prior to the end of the construction phase.</p>

Table 7.1.1 Environmental and Social Action Plan

Ref	Priority	Information Gap/Non-Compliance	Recommendation	Recommended Target Date
1. All Project Components				
1.1	MEDIUM	Environmental and Social Assessment and Management System	CMPC should ensure that the Project is incorporated into the IMS to prevent and mitigate risks and impacts derived from construction and operational phases, to ensure stakeholder engagement and to monitor and review the efficiency of the implemented procedures. Expand the scope of the IMS as necessary based on the recommended actions included under the ESAP to ensure that all environmental, labor and social risks and impacts derived from the project are identified and managed in compliance with IFC PS requirements, robust external stakeholder engagement features are included, and legal and other requirements are revised to incorporate all the objectives of the International Standards of application for the Project.	Prior to the commencement of construction activities.
1.2	MEDIUM	Policy	A social responsibility policy has not been defined. CMPC should extend the scope of the IMS policy to include social objectives and principles to guide the Project.	Prior to the commencement of construction activities.
1.3	MEDIUM	Organizational Capacity and Competency	In order to ensure compliance with international standards, CMPC should ensure that support is provided during the project lifecycle, either through internal personnel or an external subcontractor with practical experience in IFC PS, WBG EHS Guidelines and other international guidelines identified under Table 4.1.	Prior to the commencement of construction activities.
1.4	LOW	Resource Efficiency - <i>Greenhouse gases</i>	Ensure that the carbon footprint conforms to an Internationally Recognized Greenhouse Gas Emissions Methodology and that both Scope 1 emissions (i.e. direct emissions from the facilities owned or controlled within the physical project boundary, to include the Transmission Line and New Electrical Road) and Scope 2 emissions (i.e. indirect emissions associated with the project’s use of energy but occurring outside the project boundary) are included.	Prior to the end of the construction phase.

Ref	Priority	Information Gap/Non-Compliance	Recommendation	Recommended Target Date
1.5	HIGH	EPC Contracts	<p>CMPC to provide Lenders with the status of the EPC Contracts Project Manual and the Manual of Construction and Assembly.</p> <p>Once all the EPC contractors have been identified, a review will need to be conducted to assess how CMPC plans to supervise the EPC contractors' HR and EHS activities to ensure they are adhering to CMPC's policies, plans and procedures and to finalize assessment of the Project's compliance with IFC PS2 (Labor and Working Conditions).</p>	Immediate action recommended, and in any case prior to the commencement of construction activities.
1.6	HIGH	Worker Hiring and Housing Plans	<p>CMPC to develop a worker hiring plan and a worker housing plan once all the EPC contractors have been identified. At that time, the quantity of external workers will be known, and the worker hiring plan and plans for worker accommodations can be better defined.</p> <p>If workers will come from 18 municipalities, it would be helpful to know how many will live at home and how they will get to the project site. Therefore, CMPC should also develop a Transportation Plan.</p>	Immediate action recommended, and in any case prior to the commencement of construction activities.
2. Guaíba 2 Project Component: Line 2 and Extension of Line 1				
2.1	HIGH	Identification of Risks and Impacts: EIA for the mill expansion (2007)	<p>The EIAs and other main Project documents should be updated to reflect current environmental and social baseline conditions, and the scope of the EIAs should be expanded to allow for a comprehensive assessment of all the risks and impacts associated to the Guaíba 2 project in compliance with IFC PS and a cumulative impact study should be performed on the potential cumulative impacts of the plantations, mill and port expansions, new T-Line and road. Stakeholder engagement (see also 2.3 and 2.6 below) will need to play a role in the identification of such risks and impacts.</p>	Immediate action recommended, and in any case prior to the commencement of construction activities.

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Ref	Priority	Information Gap/Non-Compliance	Recommendation	Recommended Target Date
2.2	HIGH	Area of Influence	A supplemental study to the Mill EIA (2007) should be developed and include a review of the boundaries of the Project's DAI and IAI to determine if they are still accurate, taking into consideration changes in the overall project design, including the new T-Line and road ROWs, that may affect the Project's footprint and have the potential to result in environmental and social impacts. Stakeholder engagement (see also 2.3 and 2.6 below) will need to play a role in the identification of the Area of Influence.	Immediate action recommended, and in any case prior to the commencement of construction activities.
2.3	HIGH	Socioeconomic Baseline Conditions	ENVIRON recommended in our Gap Analysis that a supplement to the EIA be developed and include more current socioeconomic baseline data, preferably collected within the past year. While CMPC did not agree to revise the Mill EIA, stating that there was no need within the context of the licensing process under which the Factory Installation License was issued, they did agree to provide updated socioeconomic data on Guaíba, based on 2011 information. ENVIRON has not been informed of the status of this updated socioeconomic data, which was scheduled to be completed in December 2012. It is important to note that this data should be updated for all Areas of Influence, including Porto Alegre and the four plantation regions, and not just for Guaíba.	Immediate action recommended, and in any case prior to the commencement of construction activities.
2.4	HIGH	Management Programs	CMPC confirmed that renewal of the Installation License was requested in February 2013. Based on the latest conditions imposed by the new license, CMPC shall update the management programs for the project and shall subsequently develop and implement an action plan for the mill (PBA), which shall include environmental, social and health and safety monitoring and review programs to assess the effectiveness of the prevention and mitigation measures.	Immediate action recommended, and in any case prior to the commencement of construction activities.
2.5	MEDIUM	Monitoring and Review	Based on the additional documentation submitted as part of the license renewal and further to the development of a PBA, CMPC shall develop and implement a GCA which covers all the environmental and monitoring programs presented in the EIA and shall also include the follow-up of all the construction	Prior to the commencement of construction activities.

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Ref	Priority	Information Gap/Non-Compliance	Recommendation	Recommended Target Date
			works for the installation of the industrial units and their corresponding control equipment, the port expansion, and additional works conducted as part of this license	
2.6	HIGH	Stakeholder Engagement, Public Consultation and Disclosure of Information	<p>CMPC to develop an integrated Stakeholder Engagement Plan to include all of its stakeholder engagement, public consultation and disclosure of information plans, programs and monitoring procedures including the <i>Plano de Comunicação 2010</i> (The Strategic Communication Plan), <i>Plano de Sustentabilidade 2012</i> (The Operational Sustainability Plan), <i>Gerir Relacionamento com Partes Interessadas</i> and <i>Comunicação com Partes Interessadas</i> (Community Grievance Mechanism), Community Forum Program and image monitoring program.</p> <p>CMPC to provide Lenders with an organizational chart of the internal committee for stakeholder engagement.</p> <p>CMPC to immediately implement their new Community Forum Program for the communities in Guaíba and the South Region of Porto Alegre; they should not wait until one month before construction begins to start this program. While the Community Forum Programs for Guaíba and the South Region of Porto Alegre should be launched at the same time, the meetings with the communities in the South Region of Porto Alegre can be less frequent than meetings in Guaíba until six months before the start of operations. Local communities should be advised as soon as possible of upcoming employment opportunities and potential impacts from the Project.</p> <p>In addition, the communities that may be affected by the new T-Line, the Electrical Road and the maintenance dredging operations at the channel connecting CMPC's pier with the Leitão channel at Guaíba Lagoon will need to be made aware through the public consultation process of the projects' potential risk and impacts and any feedback received should be recorded with</p>	Immediate action recommended, and in any case prior to the commencement of construction activities.

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Ref	Priority	Information Gap/Non-Compliance	Recommendation	Recommended Target Date
			follow-up where needed.	
2.7	MEDIUM	Community Grievance Mechanism	The <i>Comunicação com Partes Interessadas</i> should be revised to include detailed procedures for receipt of inquiries and complaints, time deadlines for responding to the submitter of the grievance and record keeping. The revised Grievance Mechanism should be incorporated into the Stakeholder Engagement Plan (SEP) ENVIRON is recommending CMPC produce and the SEP publicly disclosed and copies made available in each community surrounding the mill as soon as possible. CMPC-CRG should also post information on its website about the Grievance Mechanism, along with contact information for the person who is appointed to receive and respond to inquiries from the public.	Prior to the commencement of construction activities.
2.8	HIGH	Ongoing Reporting to Affected Communities	The Community Forum Program should be instituted as soon as possible, far in advance of the commencement of construction.	Immediate action recommended, and in any case prior to the commencement of construction activities.
2.9	MEDIUM	Working Conditions and Management of Worker Relationship	In addition to its Program to Manage Relations with Employees and Code of Conduct, CMPC should develop a stand-alone Human Resources Policy in compliance with PS 2.	Prior to the commencement of construction activities.
2.10	HIGH	Workers' Grievance Mechanism	The Worker Grievance Mechanism included in the Code of Conduct is too high-level. ENVIRON has not received from CMPC any detailed written procedures for its workers' grievance mechanism, which should include an elevation process to notify senior management of serious grievances, an organizational chart establishing responsibilities, time limits for resolution of grievances and also record keeping.	Immediate action recommended, and in any case prior to the commencement of construction activities.

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Ref	Priority	Information Gap/Non-Compliance	Recommendation	Recommended Target Date
2.11	HIGH	Employment Contracts	The employment contract template is not sufficiently detailed and should be revised to be in compliance with PS 2. While the contract template provides for inclusion of the title of the position the person is being hired to fill, it does not include the job description for this position, there is no mention of standard weekly work hours, hourly pay for overtime worked, compensation in the event the employee is expected to travel for CMPC business or relocate, benefits (insurance, holidays, sick days and/or vacation), workers' grievance mechanism procedure or retrenchment procedures and compensation. Furthermore, beyond the 45 day trial period, the contract is open-ended; there is no expiration or renewal date.	Immediate action recommended, and in any case prior to the commencement of construction activities.
2.12	HIGH	Workers' Training	CMPC to specify what programs do exist under which local women can be trained to qualify for employment at the mill.	Immediate action recommended, and in any case prior to the commencement of construction activities.
2.13	HIGH	Occupational Health & Safety	Extend the scope of the EIA for the mill to include a comprehensive analysis of potential risks and impacts on the environment and health and safety of workers during the entire project lifecycle Ensure a clear requirement to comply with Brazilian NRs and international WBG EHS Sector Guidelines for Pulp and Paper Mills and WBG EHS General Guidelines is included in all contract specifications and other documentation and manuals intended for tenderers and companies directly or indirectly involved with the construction, commissioning, testing and initial operation of the mill.	Immediate action recommended, and in any case prior to the commencement of construction activities.

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Ref	Priority	Information Gap/Non-Compliance	Recommendation	Recommended Target Date
2.14	HIGH	Workers Engaged by Third Parties and Supply Chain	CMPC to inform Lenders of the status of the selection of the remaining EPC Contractors, sub-contractors and suppliers; and the status of the worker hiring plan and the worker housing plan. Only after the main contractors are identified and their EPC Management Plans are received can the contractors' capacity to construct the Project in compliance with the Applicable Standards be assessed.	Immediate action recommended, and in any case prior to the commencement of construction activities.
2.15	HIGH	Pollution Prevention – Noise	CMPC to update noise abatement measures to comply with WBG EHS General Guidelines noise emission guideline values; and incorporate noise abatement measures into the PBA for the project.	Immediate action recommended, and in any case prior to the commencement of construction activities.
2.16	HIGH	Pollution Prevention – Wastewater Effluents	CMPC to refurbish and re-dimension the oil/water separator and conduct periodic monitoring of the effluent quality prior to and after its discharge into the lagoon.	Immediate action recommended, and in any case prior to the commencement of construction activities.
2.17	HIGH	Pollution Prevention – Potential Soil and Groundwater Contamination	Given the significant time elapsed since the analysis, soil samples collected during the 2007 soil investigation are very unlikely to have been adequately stored (i.e. sample properties have been adequately maintained and this has been documented) and to have sufficient material for further analysis. Additionally, in the absence of groundwater samples, a new phase II investigation is recommended in order to characterize potential soil and/or groundwater contamination at the existing mill. The scope of the investigation should be extended to include potentially contaminated areas that will be part of the new Line 2, to include the former petrol station, if these have not yet been already characterized. From a Health & Safety point of view, excavations	Immediate action recommended, and in any case prior to the commencement of construction activities.

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Ref	Priority	Information Gap/Non-Compliance	Recommendation	Recommended Target Date
			cannot be conducted on a potentially contaminated site risking workers exposure to petroleum product contaminated soil and water.	
2.18	MEDIUM	Pollution Prevention – <i>Hazardous Materials Management</i>	Should CMPC proceed to the installation of the two ASTs as part of the Guaíba 2 Project, they shall ensure that secondary protection is in place in accordance with Brazilian regulations, EHS Sector Guidelines for Pulp and Paper Mills and EHS Sector Guidelines for Ports, Harbors and Terminals. Additionally, operating procedures shall be developed and implemented to avoid the accidental release of fuel during tank loading and barge refueling operations.	Prior to the commencement of construction activities.
2.19	HIGH	Community Health and Safety	Expand the scope of the EIA to include a comprehensive assessment of risks and impacts to health and safety of neighboring communities during the project lifecycle. Additionally, update the HAZOP for the chlor-alkali plant to assess risks arising from the Guaíba 2 project, considering future distance to neighboring properties.	Immediate action recommended, and in any case prior to the commencement of construction activities.
2.20	HIGH	Land Acquisition and Involuntary Resettlement – General Requirements	CMPC to provide an update on the status of the supermarket owner’s interest in selling the land. If the land acquisition takes place, Lenders would need to review the land acquisition documentation to assess compliance with PS5.	Immediate action recommended, and in any case prior to the commencement of construction activities.
2.21	HIGH	Protection and Conservation of Biodiversity	CMPC to ensure that requirements for biodiversity protection (including adherence to the mitigation hierarchy), conservation and any off-sets for natural habitats are incorporated into the PBA for the mill in line with the requirements of IFC PS 6.	Immediate action recommended, and in any case prior to the commencement of construction activities.

Ref	Priority	Information Gap/Non-Compliance	Recommendation	Recommended Target Date
2.22	HIGH	Management of Ecosystem Services	An ecosystem services assessment should be conducted. CMPC should conduct a screening exercise to determine priority ecosystem services present in the project area, followed by an analysis of the potential impacts on ecosystem services resulting from the different project phases. This should include an analysis of project dependence on priority ecosystem services in terms of change in project performance, and the identification of measures to mitigate impacts and manage dependence on priority ecosystem services.	Immediate action recommended, and in any case prior to the commencement of construction activities.
2.23	HIGH	Energy Saving Measures	This issue should be further assessed. Energy efficiency measures should be included in all EPC contracts in order to ensure high heat recovery and low heat consumption, low consumption of electric power, and high generation of electric power.	Immediate action recommended, and in any case prior to the commencement of construction activities.
2.24	HIGH	General Physical Hazards, Chemical Hazards, Biological Agents, Heat, Occupational Noise, Radiation	CMPC to ensure that a clear requirement to comply with Brazilian NRs and international WBG EHS Sector Guidelines for Pulp and Paper Mills and WBG EHS General Guidelines is included in all contract specifications and other documentation and manuals intended for tenderers and companies directly or indirectly involved with the construction, commissioning, testing and initial operation of the mill, as well as in CMCP's occupational H&S plans and procedures.	Immediate action recommended, and in any case prior to the commencement of construction activities.
2.25	HIGH	Wood Dust	Measures to prevent, minimize and control dust should be included in the EPC specifications in compliance with the WBG EHS Guidelines for Pulp and Paper Mills. These include but are not limited to enclosing and ventilating saws, shredders, dusters and wood chip conveyors; enclose and ventilate areas where dry, dusty additives are unloaded, weighted and mixed. Additionally, as part of the operational H&S procedures, CMPC should ensure that compressed air is not used to clear wood dust and waste paper and that dusty areas are regularly inspected to minimize dust explosion risk.	Immediate action recommended, and in any case prior to the commencement of construction activities.

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Ref	Priority	Information Gap/Non-Compliance	Recommendation	Recommended Target Date
2.26	HIGH	Chemical Storage Use and Transport	<p>Expand the scope of the EIA to include a comprehensive assessment of risks and impacts to health and safety of neighboring communities during the project lifecycle.</p> <p>Additionally, update the HAZOP for the chlor-alkali plant to assess risks arising from the Guaíba 2 project, considering future distance to neighboring properties.</p>	Immediate action recommended, and in any case prior to the commencement of construction activities.
2.27	HIGH	WB Pollution Prevention and Abatement 1996, Chlor-Alkali Industry	<p>Update the HAZOP for the chlor-alkali plant to assess risks arising from the Guaíba 2 project, considering future distance to neighboring properties.</p> <p>Additionally, ensure that the project for the extension of the chlor-alkali plant complies with WB Pollution Prevention and Abatement 1996, Chlor-Alkali Industry Guidelines and WBG EHS General Guidelines by including this requirement in all contract specifications and other documentation and manuals intended for tenderers and companies directly or indirectly involved with the construction, commissioning, testing and initial operation of the plant.</p>	Immediate action recommended, and in any case prior to the commencement of construction activities.
2.28	HIGH	WBG EHS Sector Guidelines for Thermal Power Plants	<p>Confirm the quality of the Airshed in order to determine the air emission guidelines values of application and ensure that the power boiler, through the adequate design of the desulphurization unit, complies with limit values established by the Installation License and WBG EHS Sector Guidelines for Thermal Power Plants, whichever is more stringent.</p>	Immediate action recommended, and in any case prior to the commencement of construction activities.
2.29	HIGH	Structural Safety of Project Infrastructure, Life and Fire Safety	<p>Ensure a clear requirement to comply with Brazilian and/or internationally recognized building safety codes, NRs and international WBG EHS Sector Guidelines for Pulp and Paper Mills and WBG EHS General Guidelines are included in all contract specifications and other documentation and manuals intended for tenderers and companies directly or indirectly involved with the construction, commissioning, testing and initial operation of the mill, as well as in CMCP's occupational H&S plans and procedures.</p>	Immediate action recommended, and in any case prior to the commencement of construction activities.

Ref	Priority	Information Gap/Non-Compliance	Recommendation	Recommended Target Date
2.30	LOW	Life and Fire Safety	Upon construction or renovation of buildings and structures, a Life and Fire Safety Master Plan shall be prepared by a qualified professional identifying major fire risks, applicable codes, standards and regulations, and mitigation measures. As part of the project completion test, a qualified professional shall conduct a review at the time of life and fire safety systems testing and commissioning, and shall certify that construction of these systems has been carried out in accordance with the accepted design. The findings and recommendations of the review are the basis for establishing project completion or to establish the conditions of a Pre-Completion Corrective Action Plan and a time frame for implementing changes.	Prior to the end of the construction phase.
2.31	LOW	Construction and Decommissioning	CMPC to commit to producing decommissioning plans in good time before decommissioning of the mill is undertaken. A decommissioning plan covering the construction phase (including demobilization of staff from the construction period) shall be developed prior to the end of the construction period.	Prior to the end of the construction phase.
3. Guaíba 2 Project Component: Existing Plantations				
3.1	HIGH	Identification of Risks and Impacts: EIAs for the Plantation Basins	The EIAs and other main Project documents should be updated to reflect current environmental and social baseline conditions, and the scope of the EIAs should be expanded to allow for a comprehensive assessment of all the risks and impacts associated to the plantations in compliance with IFC PS 1.	Immediate action recommended, and in any case prior to the commencement of construction activities.
3.2	HIGH	Area of Influence	The areas of influence included in the four plantation basin EIAs should be updated after a review of more recent socioeconomic data on the affected municipalities in each basin, and after taking into consideration the locations of all plantations CMPC has acquired since the development of the EIAs in 2007.	Immediate action recommended, and in any case prior to the commencement of construction activities.

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Ref	Priority	Information Gap/Non-Compliance	Recommendation	Recommended Target Date
3.3	MEDIUM	Management Programs	CMPC to provide additional information to demonstrate compliance with all the management and monitoring programs included under the EIAs for the plantations (refer to Appendix E).	Prior to the commencement of construction activities.
3.4	MEDIUM	Resource Efficiency – <i>Water Consumption</i>	Cumulative impacts from increased plantation areas should be assessed, particularly in view of current land use planning criteria, and that effects of nursery operations on water availability in the area be analyzed in compliance with IFC PS and EIAs for the plantations.	Prior to the commencement of construction activities.
3.5	HIGH	Pollution Prevention - <i>Potential Soil and Groundwater Contamination</i>	CMPC should provide detailed information on the location of groundwater supply wells and on the presence of wellhead setbacks in or around the plantation areas in order to prevent the contamination of these water resources as a result of CMPC's operations (e.g. pesticide applications).	Immediate action recommended, and in any case prior to the commencement of construction activities.
3.6	HIGH	Pollution Prevention – <i>Wastes</i>	CMPC to provide the Lenders with information on the final destination(s) of hazardous wastes collected by harvesters.	Immediate action recommended, and in any case prior to the commencement of construction activities.
3.7	HIGH	Pollution Prevention – <i>Hazardous Materials Management</i>	CMPC to provide secondary containment for the fuel storage room at the nursery. Also, to install an impervious and secondarily contained area at the nursery for the refuelling and maintenance of tractors.	Immediate action recommended, and in any case prior to the commencement of construction activities.
3.8	HIGH	Pollution Prevention	Ensure that pesticide storage guidelines (e.g. secondary containment) are	Immediate action

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Ref	Priority	Information Gap/Non-Compliance	Recommendation	Recommended Target Date
		<i>– Pesticide Use Management</i>	complied with at all locations. Review hazardous materials and pesticide handling and storage practices as part of the periodic internal inspections conducted at the plantations.	recommended, and in any case prior to the commencement of construction activities.
3.9	HIGH	Community Health and Safety – Pesticide Use and Harvesting Operations	CMPC to ensure that a buffer zone is defined and implemented at the land planning stage in relation to proximity of plantations to neighbouring communities to prevent and mitigate risks derived from plantation management operations (e.g. pesticide application; and timber harvesting). CMPC to ensure that a system is in place to warn neighbouring communities of the application of pesticides at the plantations.	Immediate action recommended, and in any case prior to the commencement of construction activities.
3.10	HIGH	Community Health and Safety – Timber and Hazardous Materials Transportation	CMPC to provide additional information in order to determine potential risks to neighbouring communities derived from timber and hazardous materials transportation. Additionally, CMPC should provide additional information to demonstrate compliance with all the management and monitoring programs included under the EIAs (refer to Appendix E).	Immediate action recommended, and in any case prior to the commencement of construction activities.
3.11	MEDIUM	Security Personnel Requirements	CMPC to provide copies of the contracts/information on the surveillance company contracted to survey the plantations.	Prior to the commencement of construction activities.
3.12	HIGH	Land Acquisition	CMPC to provide land acquisition assessments for new plantation areas and land use planning considerations.	Immediate action recommended, and in any case prior to the commencement of construction activities.

Ref	Priority	Information Gap/Non-Compliance	Recommendation	Recommended Target Date
3.13	HIGH	Management of Ecosystem Services	An ecosystem services assessment should be conducted. CMPC should conduct a screening exercise to determine priority ecosystem services present in the project area, followed by an analysis of the potential impacts on ecosystem services resulting from the different project phases. This should include an analysis of project dependence on priority ecosystem services in terms of change in project performance, and the identification of measures to mitigate impacts and manage dependence on priority ecosystem services.	Immediate action recommended, and in any case prior to the commencement of construction activities.
3.14	MEDIUM	Indigenous Peoples	CMPC to complete the Indigenous Peoples study and to ensure that it covers potential impacts to IP in all the forest-based municipalities (39) where CMPC currently operates. The availability of the completed findings from the Indigenous Peoples' Study is needed for Lenders to make adequate evaluations of the Project's potential impacts on IP. In the absence of such detailed results from the dedicated studies on IP, ENVIRON could not fully assess the Project's compliance with IFC PS7 (Indigenous Peoples).	Prior to the commencement of construction activities.
3.15	MEDIUM	Cultural Heritage	CMPC to provide the Lenders with an update on Rhea's progress in completing the surveys and technical reports for the remaining forestry sites, and information on significant findings, if any, since ENVIRON's site visit.	Prior to the commencement of construction activities.
3.16	HIGH	Habitat Alteration and Loss of Biodiversity	No information on criteria followed for the scheduling of activities at the plantations was available for review. CMPC shall develop and implement procedures to incorporate breeding and nesting season considerations during the scheduling of activities in order to ensure that impacts to critically endangered or endangered wildlife are minimized. CMPC to develop and implement planning criteria in compliance with EHS Guidelines for Forest Harvesting Operations, which require compartment (block) areas to be minimized as far as economically practical to reduce the contiguous land area exposed to wind and rain; compartments should typically not exceed 50 hectares.	Immediate action recommended, and in any case prior to the commencement of construction activities.
3.17	HIGH	Soil Erosion	CMPC to ensure that layout and alignment of roads and trails meets the WBG	Immediate action

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Ref	Priority	Information Gap/Non-Compliance	Recommendation	Recommended Target Date
			<p>EHS Guidelines for Forest Harvesting Operations.</p> <p>CMPC should avoid the use of vehicles on slopes exceeding 30 percent; the use of cable extraction systems should be considered in those circumstances.</p> <p>Ensure the adequacy of the assessments and the criteria for restricting harvesting operations during wet seasons to meet WBG EHS Guidelines for Forest Harvesting Operations.</p>	recommended, and in any case prior to the commencement of construction activities.
3.18	MEDIUM	Soil Productivity	<p>CMPC to ensure that procedures are developed and implemented to prevent the contamination of groundwater resources and the eutrophication of surface water resources from runoff and leaching of excess nutrients as a result of the fertilizing application in compliance with the WBG EHS Guidelines for Forest Harvesting Operations.</p>	Prior to the commencement of construction activities.
3.19	HIGH	Visual Impacts	<p>CMPC to ensure that pre-harvesting planning criteria incorporates strategies into the management procedures for plantations to prevent and/or mitigate visual impacts, in compliance with EHS Guidelines for Forest Harvesting Operations.</p> <p>The location and alignment of roads and trails is determined as part of the environmental land use planning. However, no detailed information was available for review on the criteria followed for the definition of the road layouts so as to verify whether visual quality considerations are incorporated.</p> <p>CMPC to ensure that planning criteria for roads and trails incorporates visual impacts considerations (e.g. use road curving to minimize straight visual lines; locate roads and gravel pits to minimize visibility from scenic outlooks or water bodies) in compliance with EHS Guidelines for Forest Harvesting Operations.</p>	Immediate action recommended, and in any case prior to the commencement of construction activities.
3.20	HIGH	Noise and Vibrations	<p>Ensure that the PPRA for the plantations includes a comprehensive assessment of risks for all workers, to include vibration exposure, and that adequate preventive and mitigation measures are defined and implemented based on those risks.</p>	Immediate action recommended, and in any case prior to the commencement

Ref	Priority	Information Gap/Non-Compliance	Recommendation	Recommended Target Date
				of construction activities.
3.21	HIGH	Workers Engaged by Third Parties at the Plant Nursery	CMPC to provide Piraflores labor policies and procedures. Additionally, CMPC to ensure that Piraflores implement a formal workers' grievance mechanism. The preference would be for Piraflores to adopt CMPC's workers' grievance mechanism.	Immediate action recommended, and in any case prior to the commencement of construction activities.
New Plantations				
3.22	HIGH	New Plantations	CMPC should ensure that the new plantations recently acquired from Fibria comply with the IFC Performance Standards, WBG EHS Sector EHS Sector Guidelines for Forest Harvesting Operations and WBG EHS General Guidelines.	Immediate action recommended, and in any case prior to the commencement of construction activities.
4. Guaíba 2 Project Components: Port and Dredging Maintenance Operations				
4.1	HIGH	Dredged Materials Management	Additional sediment characterization (physical, chemical and biological, as appropriate) is necessary in order to comply with international standards so as to ensure that the potential impacts of the dredge material are adequately assessed; justify the selection of determinants (e.g. on the basis of known or presumed contamination, total organic carbon content, etc.). Moreover, increased characterization is also considered necessary to meet requirements of CONAMA Resolution 344/2004. As a good practice, CMPC should identify opportunities to reduce sources of key contaminants in the Guaiba Lake based on the results of the additional sediment characterization. This could include, amongst others, working with the authorities and other facility operators to reduce sources of key	Immediate action recommended, and in any case prior to the commencement of construction activities.

Ref	Priority	Information Gap/Non-Compliance	Recommendation	Recommended Target Date
			<p>contaminants or participating in watershed protection programs.</p> <p>Excavation and dredging methods need to be adequately assessed and implemented in order to minimize suspension of sediments and the destruction of benthic habitat, to increase the accuracy of the operation and maintain the density of the dredge material. Ensure that contract documentation for the port dredging operations include conditions for the minimisation of adverse impacts from the re-suspension of sediments, along with other environmental and HSE conditions in compliance with the WBG EHS Guidelines for Ports, Harbours and Terminals.</p> <p>Extend the scope of the EIA for the port expansion to include an assessment of sensitive areas for marine life and a comprehensive follow-up and monitoring program to address all the potential impacts arising from the port expansion. If critical habitats are identified as defined in PS 6, the EIA would need to demonstrate that the requirements of PS 6 paragraph 17 are met; additionally, the Project would need to demonstrate 'net benefits' in line with PS 6 paragraph 18.</p> <p>As part of the EIA update, CMPC shall also ensure that a comprehensive follow-up and monitoring program is defined in order to address all the potential impacts arising from the port expansion, not only those associated to maintenance dredging operations. Ensure the adequate implementation of the monitoring and control program, and the need to modify/extend mitigation and control measures on the basis of their effectiveness.</p> <p>Alternatives for the beneficial reuse of uncontaminated dredge material should be assessed based on the results of the additional sediment characterization (see above). Consideration should be given to technical, environmental and economic feasibility and legal aspects.</p>	
4.2	MEDIUM	Air Emissions	Develop and implement air quality management procedures to reduce emissions from combustion sources associated to port operations (e.g. use	Prior to the commencement of

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Ref	Priority	Information Gap/Non-Compliance	Recommendation	Recommended Target Date
			<p>low-sulfur fuels, navigation of port access areas at partial power).</p> <p>Conduct monitoring of air quality in the area to determine current conditions. Based on the results of this monitoring, determine the need for air quality management procedures in land based activities at the port, to support air emission abatement measures implemented at the mill.</p> <p>Select fuel storage and transfer equipment to minimize VOC emissions (e.g. floating roof storage tanks or vapor recovery systems).</p>	<p>construction activities.</p>
4.3	MEDIUM	Wastewater	<p>Ensure that dredgers are equipped with recycling or chemical toilets or holding tanks that can be discharged to shore facilities.</p>	<p>Prior to the commencement of construction activities.</p>
4.4	MEDIUM	Waste Management	<p>Ensure the adequate management of general wastes and ship wastes arising from dredging operations.</p>	<p>Prior to the commencement of construction activities.</p>
4.5	MEDIUM	Hazardous Materials and Oil Management	<p>CMPC to design all fuel storage and tanker truck loading and unloading areas with secondary containment and with consideration of natural drainage systems and road traffic.</p> <p>Develop and implement a prevention, control and countermeasure plan for the prevention of impacts associated with fuel unloading, storage and refueling operations at the port, and ensure that adequate spill response plans and resources are in place.</p> <p>Ensure that fuel dispensing equipment is provided with emergency shutdown mechanisms and that adequate spill containment equipment is in place.</p> <p>Verify the adequacy of the dredging contractor’s plan and ensure the dredging personnel receive appropriate periodic training.</p>	<p>Prior to the commencement of construction activities.</p>

Ref	Priority	Information Gap/Non-Compliance	Recommendation	Recommended Target Date
4.6	HIGH	Noise	Expand the scope of the EIA to include an assessment of the presence of noise sensitive aquatic species that could be potentially affected by the port expansion and dredging maintenance operations. If no noise sensitive species are present, this should be clearly stated in the EIA.	Immediate action recommended, and in any case prior to the commencement of construction activities.
4.7	MEDIUM	Occupational Health and Safety	Ensure a clear requirement to comply with Brazilian NRs and international WBG EHS Sector Guidelines for Port Harbors and Terminals and WBG EHS General Guidelines is included in all contract specifications and other documentation and manuals intended for tenderers and companies directly or indirectly involved with the dredging, construction, commissioning, testing and initial operation of the port. CMPC's Environmental and Health and Safety Procedures for the port shall be updated to address risks arising from the port expansion, to include fuel storage and barge fueling operations as well as increased traffic.	Prior to the commencement of construction activities.
4.8	MEDIUM	Community Health and Safety	Develop and implement a Port Facility Security Assessment in compliance with WBG EHS Guidelines for Ports, Harbors and Terminals and other international guidelines, which shall be followed by the appointment of a Port Facility Security Officer and the preparation of a Port Facility Security plan depending on the outcome of the risk assessment. Extend the scope of the EIA to include a comprehensive assessment of visual impacts arising from the new line and port expansion, to include night illumination impacts from the industrial site.	Prior to the commencement of construction activities.
5. Guaíba 2 Project Component: Transmission Line				
5.1	HIGH	EIA for the Transmission Line	CMPC to provide information on the following: the status of approval of the T-Line construction's environmental and technical permits; status of the T-line project design and scope and if it has been finalized; distance from the T-	Immediate action recommended, and in any case prior to

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Ref	Priority	Information Gap/Non-Compliance	Recommendation	Recommended Target Date
			<p>Line's ROW to the closest households/communities; status of selecting a T-Line EPC Contractor; status of selecting the future operator of the T-Line; and if CMPC has considered a maintenance contract for the T-Line.</p> <p>Whilst an EIA is not required in accordance with Brazilian regulations as this is considered a low impact project, an ESIA needs to be developed to meet requirements under the IFC PS. Upon identification of the project risks and impacts, prevention and mitigation strategies need to be defined and implemented through management programs and the effectiveness of these measures needs to be monitored. CMPC should ensure that all potential risks derived from the construction and operation of the T-Line, to include cumulative impacts, are identified and prevented/mitigated.</p>	the commencement of construction activities.
5.2	HIGH	Area of Influence	As part of the EIA for the T-Line, ensure that the area of influence for the T-Line is adequately defined in accordance with the IFC PS.	Immediate action recommended, and in any case prior to the commencement of construction activities.
5.3	HIGH	Stakeholder Engagement, Public Consultation and Disclosure of Information	While public consultation may not be required under Brazilian regulations, it is required under PS1. Members of any individual households and/or communities located within the T-Line project's DIA (once it is determined) need to be made aware of the transmission line project and its potential risks and impacts and any feedback received should be recorded with follow-up where needed. CMPC should ensure that these stakeholders are invited to participate in the upcoming Community Forum meetings.	Immediate action recommended, and in any case prior to the commencement of construction activities.
5.4	HIGH	Land Acquisition and Involuntary Resettlement	Landowners to be advised of the status of the land acquisition documents for the T-Line ROW.	Immediate action recommended, and in any case prior to the commencement

Ref	Priority	Information Gap/Non-Compliance	Recommendation	Recommended Target Date
				of construction activities.
5.5	HIGH	EHS Requirements	Ensure a clear requirement to comply with Brazilian regulatory requirements and international standards (i.e. IFC Performance Standards, WBG EHS Sector Guidelines for Electric Power Transmission and Distribution and WBG EHS General Guidelines) is included in all contract specifications and other documentation and manuals intended for tenderers and companies directly or indirectly involved with the construction, commissioning, testing and operation of the T-Line, as well as in CMCP's occupational H&S plans and procedures.	Immediate action recommended, and in any case prior to the commencement of construction activities.
6. Guaíba 2 Project Component: New Electrical Road				
6.1	HIGH	EIA for the Electrical/Private Road	CMPC to provide the status of the environmental study, the final design and alignment for the road. Whilst an EIA is not required in accordance with Brazilian regulations as this is considered a low impact project, an ESIA needs to be developed to meet requirements under the IFC PS. Upon identification of the project risks and impacts, prevention and mitigation strategies need to be defined and implemented through management programs and the effectiveness of these measures needs to be monitored. CMPC should ensure that all potential risks derived from the construction and operation of the New Electrical Road, to include cumulative impacts, are identified and prevented/mitigated.	Immediate action recommended, and in any case prior to the commencement of construction activities.
6.2	HIGH	Area of Influence	As part of the EIA for the New Electrical Road, ensure that the area of influence for the Electrical Road is adequately defined in accordance with the IFC PS.	Immediate action recommended, and in any case prior to the commencement of construction activities.
6.3	HIGH	Stakeholder	Disclosure of information concerning the new road to the local community	Immediate action

Ref	Priority	Information Gap/Non-Compliance	Recommendation	Recommended Target Date
		Engagement, Public Consultation and Disclosure of Information	should be done far in advance of the start of construction. The communities in the new road project’s DAI (once it is determined) will need to be made aware of the project’s potential risk and impacts and any feedback received should be recorded with follow-up where needed.	recommended, and in any case prior to the commencement of construction activities.
6.4	HIGH	Land Acquisition and Involuntary Resettlement	CMPC to provide (i) copies of land purchase documentation for the first parcel and (ii) an update on the land acquisition status for parcel no.2. Once this second parcel of land is acquired, the Lenders should also receive copies of the land acquisition documents.	Immediate action recommended, and in any case prior to the commencement of construction activities.
6.5	HIGH	EHS Requirements	Ensure a clear requirement to comply with Brazilian regulatory requirements and international standards (i.e. IFC Performance Standards, WBG EHS Sector Guidelines for Toll Roads and WBG EHS General Guidelines) is included in all contract specifications and other documentation and manuals intended for tenderers and companies directly or indirectly involved with the construction, commissioning, testing and operation of the T-Line, as well as in CMCP’s occupational H&S plans and procedures.	Immediate action recommended, and in any case prior to the commencement of construction activities.
7. Brazilian Regulations				
7.1	HIGH	Existing Line 1	It is important to highlight that this permit will expire on September 22, 2013. In order to have extended coverage for the existing license, CMPC must apply for the license renewal 120 days before the expiration date, which would be on May 21, 2013. There is no information on the status of this permitting update.	Immediate action recommended, and in any case 120 days prior to expiry of the permit.
7.2	HIGH	Existing Line 1	In order to be sure that oily water is not being discharged into Guaíba lake, CMPC must perform wastewater analysis at the exit on the oil/water separator located at the logs washing system. Wastewater must be in compliance with	Immediate action recommended, and in any case prior to

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Ref	Priority	Information Gap/Non-Compliance	Recommendation	Recommended Target Date
			CONAMA Resolution 430/11 standards. Additionally, maintenance at the oily water separator should be considered in order to avoid unintentional oil discharge.	the commencement of construction activities.
7.3	HIGH	Line 2- Installation License	CMPC should ensure that the information presented to FEPAM for permit renewal (Installation License) includes all project updates informed during ENVIRON's site visit. A new environmental impact assessment may be considered depending on the extent of the alterations, especially considering the dredging activities which were not included in the first assessment.	Immediate action recommended, and in any case prior to the commencement of construction activities.
7.4	HIGH	Existing Line 1- Waste Treatment Permit	It is important to highlight that the current Operating Permit will expire on September 9, 2013. In order to have extended coverage for the existing license, CMPC must apply for the license renewal 120 days before the expiration date, which should have occurred on May 8, 2013. According to CMPC, the Permit Renewal request should have been delivered to FEPAM on April 30, 2013. There is no information on this permit renewal status.	Immediate action recommended, and in any case 120 days prior to expiry of the permit.
7.5	MEDIUM	Groundwater Monitoring	Before considering de-activating the remediation system, CMPC should perform two new groundwater sampling campaigns, covering dry and wet seasons, in order to understand the current site situation as the last monitoring campaign occurred in 2009 and there is no further updated information.	Prior to the commencement of construction activities.
7.6	HIGH	Chlor Alkali Plant Permit	CMPC should present to the Lenders the permit renewal protocol dated September, 2012. If the permit renewal was not requested, it should be immediately requested as the Chlor Alkali plant may be currently operating without a permit.	Immediate action recommended, and in any case prior to the commencement of construction activities.
7.7	MEDIUM	Road connection to RS 029	CMPC should provide information on the definitive pathway for this road (connection to RS 029) and ensure that the permitting process is being	Prior to the commencement of

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Ref	Priority	Information Gap/Non-Compliance	Recommendation	Recommended Target Date
			properly conducted by the municipality.	construction activities.
7.8	MEDIUM	T-Line	Once CMPC starts to install the T-Line, an environmental monitoring report should be provided presenting evidence of compliance with all permits' requirements.	Prior to the commencement of construction activities.
7.9	HIGH	Dredging Permit	CMPC should have meetings with FEPAM, along with the Ports and Waterways authority, in order to identify which of them will be responsible for requesting the dredging permit. Dredging works cannot start unless a permit is issued by FEPAM.	Immediate action recommended, and in any case prior to the commencement of construction activities.
7.10	HIGH	Line 1- Machine Safety-	Ensure the timely implementation of corrective measures to improve machine safety at the existing Line 1 to minimize H&S risks to workers.	Immediate action recommended, and in any case prior to the commencement of construction activities.

8 Conclusions and Recommendations

Based on our review of available Project information, observations from the site visit and our interaction with CMPC representatives, ENVIRON's main conclusion is that despite the size of the Project investment, likely significant adverse environmental and social impacts can be mitigated through conventional, proven measures. ENVIRON has confidence in the CMPC management team and its organizational capacity at the existing Guaíba mill, the same team who will be involved in the Guaíba 2 Project. The Project benefits from a highly valuable human capital; most members of the management team at the Guaíba mill have been working at the mill for more than 15 years, all take pride in their work and have demonstrated an excellent knowledge of EHS issues and Brazilian regulatory requirements associated to their operations. However, CMPC personnel have had limited exposure to international standards in the past, and it should be noted that compliance with international standards was not an objective of the Guaíba 2 Project prior to this ESDD assessment. This is reflected in the scope of the EIAs, studies, programs and other documentation made available as part of this review and, consequently, in the nature of the findings presented in sections 4 and 5 and summarized in the Environmental and Social Action Plan (ESAP). While the Guaíba 2 Project is largely in compliance with Brazilian Requirements, a number of significant gaps have been identified against International Standards listed under Table 4.1 of this ESDD Report and additional efforts are necessary in order to bring the project into compliance with these standards.

In spite of this limitation, ENVIRON is confident that the current management team will be able to meet International Standards as well as National environmental, social and health and safety requirements for the Guaíba 2 Project *provided* that:

1. Adequate financial support is provided by CMPC to bring the project into compliance with International Standards;
2. A reputable and experienced consultant with demonstrated experience in the compliance with and implementation of International Standards is engaged to support the CMPC team throughout the construction and commissioning process or at a minimum for the purposes of ensuring compliance with the ESAP (refer to section 7 of this report).

It is important to note that included in ENVIRON's October 2012 Gap Analysis were requests for several material Project documents that were never received (refer to Appendix C). It is quite possible that if ENVIRON was to receive and review these documents (under an additional scope of work and budget), many of the outstanding information gaps and/or findings from the Gap Analysis, which are now included in the ESAP, may have already been resolved by CMPC.

Appendix A
2007 Public Consultations

2007 Public Consultations in Guaíba and Porto Alegre

The Social Impact Study (SIS) developed by Ethos in 2007 included public consultations with communities to the west of the Guaíba lagoon (in the vicinity of the mill) and also with communities in the south region of Porto Alegre to assess their impressions of the mill and the planned expansion. Three rounds of consultation were conducted (July, September and December 2007), and the key findings of these consultations are summarized below.

(Note: Percentages are for 1st/2nd/3rd rounds. The 3rd round addressed only the expansion plans.)

The primary perceived “issues/worries” (29%/30% of people believed that the presence of the company/project created some type of issue for people in the region) were:

- Air pollution (55%/53%)
- Water pollution (47%/40%)
- Bad smell (36%/31%)
- Risk of industrial accidents (25%/15%)
- Noise (12%/14%)

The primary perceived risks (21%/24% of people perceived some risk related to the company/project) were:

- Explosions (60%/47%)
- Environmental pollution (48%/46%)
- Leakages (26%/19%)
- Health problems (22%/16%)
- Termites (0.6%/0.0%)

Regarding awareness of plans to expand the plant: 75%/79%/93% was aware.

Perceptions of the expansion:

- Positive impressions (62%/64%/47%)
- More pros than cons (23%/22%/35%)
- No net effect (8%/8%/9%)
- More cons than pros (2%/3%/6%)
- Only had cons (2%/2%/1%)

Positive perceptions of the expansion were:

- More jobs
- Economic development
- More commerce
- Training and use of local labor

Negative perceptions of the expansion were:

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- More air pollution
- More water pollution
- More intense and stronger smell
- More deforestation
- More noise
- More crime

In the 3rd round, 79% of respondents were “in favor or more in favor than against” the project; 15% were indifferent; and 4% were against the project.

Appendix B
Documents Reviewed

Summary of documentation reviewed during this assessment

Permits listed in Table 5.1

EIAs and RIMAs

- Mill expansion: Pulp Line 2 and extension of Pulp Line 1 (EcoAguas, 2007)
- Plantation Basin – Baixo Jacui (Rhea, 2007)
- Plantation Basin – Camaqua (Rhea, 2007)
- Plantation Basin – Santa Maria (Rhea, 2007)
- Plantation Basin – Vacacai (Rhea, 2007)

Additional EIAs

- Port extension (2007)
- Environmental Diagnosis for Dredging Operations (2007)

Social Impact Study

- *Pesquisa de Avaliação de Imagem da Aracruz e Impactos do Plano de Expansão da Produção* (3-part Social Impact Study developed by Ethos, 2007)

Stakeholder Engagement

- *Gerir Relacionamento com Partes Interessadas* (Guide to Relations with Interested Parties, PP/GS-0005-UG);
- *Comunicação com Partes Interessadas* (Communications with Interested Parties, PO/GS-005-UG);
- *Gerir Comunicação Externa- Atendimento a Comunidade* (a flowchart for external communications);
- *Reclamações_rpi_sispart_rel_ocorrendia_area* (a 2011 monitoring report of stakeholders' inquiries on particular CMPC-related subjects of interest).
- *Plano de Comunicação 2010* (The Strategic Communication Plan);
- *Plano de Ação Social e Ambiental 2011* (*Social and Environmental Action Plan, community investment projects*); and
- *Plano de Sustentabilidade 2012* (The Operational Sustainability Plan).

Human Resources

- *Código de Conduta* (Code of Conduct);
- *Desenvolver Pessoas* (Program for Developing Employees);
- *Gerenciar Relações com Empregados* (Program to Manage Relations with Employees);
- *Programa de Estágio* (Internship Program);
- *Prover Pessoas* (Providing People);

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- *Treinamento Operacional na Area*(Operational Training in Business Areas);
- *Curso Tecnico em Celulose e Papel 2012-2015* (Technical Course in Pulp and Paper);
- 2012 schedule for auditing/monitoring sub-contractors; *Relatório de Auditoria* (a sample report for auditing/monitoring sub-contractors);
- An overview of current work staff (ppt. presentation); and
- Plus an additional 10 HR documents.

The Plant Nursery

- Nursery Overview Powerpoint presentation;
- Piraflores's Quality Policy;
- Piraflores's Integrated H&S Manual

Additional documents

- Visitors' presentation
- Drainage plans for L1
- Emergency lagoon considerations
- Effluent dispersion models
- Carbon footprint
- HAZOP for the chlor-alkali plant (various documents)
- Desulphurization system – enquiry specification (4 documents)
- Recovery boiler - enquiry specification (4 documents)
- Air emissions and effluent discharges for L1 (current)
- Air emissions and effluent discharges for L2 and L1 extension (projected)
- Integrated Management System policy and procedures
- Forest management procedures (c. 18 documents)
- FSC documentation
- Health and safety procedures (PPE types and use – 4 documents; health – 7 documents; safety – 32 documents)
- Historical photographs and site layouts
- T-line project (23 folders with numerous files)
- Material handling procedures (3 documents)
- Monitoring reports for plantations (5 documents)
- Horto Cascata information (7 documents)
- Noise monitoring reports (4 documents)
- Pesticide use procedures (4 documents)
- Construction manual
- IPHAN reports on archeological findings (numerous files)
- Emergency plan for the mill (6 documents)

The list below includes documents CMPC submitted to ENVIRON after the date of issuance of our October 2012 Gap Analysis:

- Revised air emission values for the L1 extension and L2
- Map with information on affected communities in the plantation areas

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- Maps (21) indicating transportation routes in the plantation areas and plantation boundaries, and their proximity to the local communities
- Strategic Communication Plan (PLACOM);
- Operational Sustainability Plan (PLASUS);
- Revised carbon footprint for the Project.
- Contracts with the security services sub-contractor engaged for the mill
- Fire-fighting standards and non-condensable gas (NCG) systems design for L1 and L2 to minimize explosion risk
- Noise modeling report
- Noise project design criteria
- Contaminated land assessment study
- Addendum evaporation plant capacity increase line 2 and balance No2. Guaiba mill spreadsheet
- Design criteria for fiberline bleaching and Annex IV- mill water balance

Appendix C
List of Outstanding Documents

CMPC Action Steps included in its Response to ENVIRON's Gap Analysis, October 2012

Action Date	Project Action Steps
Dec. 2012	Updated Socioeconomic baseline data, should be collected for all Areas of Influence (the mill site and surrounding area, South Porto Alegre and the four plantation regions)
Dec. 31, 2012	Buy land connection to BR-116 highway
Jan. 15, 2013	Conclude the Private Road (i.e. Electrical Road) ESIA
Jan. 2013	Information about the Electrical Road project and ESIA will be sent to ENVIRON
Jan. 2013	Develop an Action Plan -PBA (Environmental Basic Program) for impacts identified in the ESIA for the mill
Feb. 2013	Strategy paper for identifying and engaging the hotel chain in the Porto Alegre metropolitan area that will provide accommodations to 2,800 external workers, paper to be developed after establishing the needs of EPC contractors
Until Feb. 28, 2013	Submit Protocol to FEPAM to renew the Project's current Installation License which is valid until June 2013
Mar. 2013	Submit the EPC Management Plan for each EPC contract
Mar. 2013	After obtaining CMPC Board approval, present to FEPAM the Guaíba Terminal Port Expansion Project and request license
Mar. 31, 2013	Request the Dredging maintenance operations license with FEPAM
Mar. 31, 2013	Site assessment study at gas station (Soil and Groundwater), in accordance with Resoluçao Conama 420
June 2013	Construction of housing to meet the demands of EPC contractors, in the event the capacity of the hotel chain and existing homes is not sufficient
June 2013	Information on planned measures to ensure Line 1 is brought up to date with the equipment safety regulatory requirements of NR-12 (Brazilian Health & Safety Norm), and obtain Board approval of budget
Dec. 2013	Monitoring plan and closure information for the sludge barium passive (Horto Cascata), in agreement with FEPAM
On-going	Survey of available workers, skilled and unskilled, in the project area
On-going	Study and classification of stakeholder engagement being conducted by internal committee established by CMPC.
Mar. 2014	Elaborate a Public Consultation Program for the south region of Porto Alegre to start 6 months prior to the start-up of the mill
June 2014	Start the Public Consultation Program in the south region of Porto Alegre
TBD	Project Manual and the Manual of Construction and Assembly to be developed for EPC Contracts

TBD	An internal CMPC committee to be established in order to study and classify the Celulose Riograndense stakeholders' engagement
	ENVIRON's Additional Requests (no action date agreed by CMPC)
	Information on EPC Contractors, labor and EHS policies and procedures
	Extend the scope of the EIA for the Guaíba Terminal Port Expansion Project with additional sediment characterization in order to comply with international standards, and to include an assessment of impacts derived from the excavation and dredging methods selected, a description of the proposed mitigation measures and a monitoring program.
	Extend the scope of the EIA for the Guaíba Terminal Port Expansion Project with additional sediment characterization in order to comply with international standards and CONAMA Resolution 344/2004.
	ESIA for the Transmission Line
	Public consultation programs for the Transmission Line, Electrical Road, CMPC Guaiba Port Expansion and dredging maintenance operations, and Rio Grande Port Terminal. Expand consultations in the plantation areas.
	Land acquisition market surveys and purchase and sale documentation from the Transmission Line right-of-way
	PBAs for all the remaining EIAs
	Analysis of cumulative impacts on water resources from increased plantation areas and effects of nursery operation on water availability in the plantation areas
	Information including maps for the Rio Grande Port Terminal Project
	Rio Grande Port Terminal EIA
	Conduct an assessment of ecosystem services to identify direct and indirect project-related impacts on ecosystem services, taking into account the different values attached to ecosystem services by Affected Communities and other stakeholders as appropriate, and identify any significant residual impacts upon implementation of mitigation and management measures.
	Information on the progress made regarding the land acquisition for the supermarket property across the street from the mill.
	ENVIRON's Additional Requests (not included in October Gap Analysis)
	Information on CMPC's recent acquisition of the Losango Project from Fibria.

Appendix D
Maps of the Plantation Areas

Appendix E
List of Programs and Mitigation Measures

Appendix E. List of Programs and Mitigation Measures for the Guaíba 2 Project.

Programs and measures/ <i>Programas e Medidas</i>	Document in which the program was presented
Line 2 and Extension of Line 1	
Soil Inspection Program / <i>Programa de inspeção de solos</i>	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i>
Erosion control Program / <i>Programa de contenção de possíveis carreamento de solo</i>	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i>
Groundwater monitoring program / <i>Programa de monitoramento de águas subterrâneas</i>	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i>
Environmental awareness for the proper management of waste and hazardous products program / <i>Programa de conscientização ambiental para o manejo adequado de resíduos e produtos perigoso</i>	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i>
Solid wastes monitoring program / <i>Programa de monitoramento de resíduos sólidos</i>	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i>
Soil and wastes contention program / <i>Programa de contenção de solo e resíduos</i>	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i>
Extension of the current wastewater monitoring program / <i>Extensão do atual programa de monitoramento do efluente total bruto e tratado da fábrica de celulose ao efluente bruto e tratado da linha 2 após a sua entrada em operação.</i>	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i>
Losses contention program / <i>Programa de contenção de perdas</i>	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i>
Monitoring program of water quality and biota of Guaiba Lake / <i>Programa de monitoramento da qualidade das águas e da biota do lago Guaíba</i>	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i>
Program of wastewater drainage control in shutdowns / <i>Programa de controle de drenagem de efluentes nas paradas programadas</i>	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i>

Programs and measures/ Programas e Medidas	Document in which the program was presented
Internal program of environmental awareness about the effects of wastewater on water and on the biota of Guaíba Lake / <i>Programa interno de conscientização ambiental sobre os efeitos dos efluentes sobre as águas e sobre a biota do lago Guaíba</i>	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i>
Dust containment Program / <i>Programa de contenção de poeira no sítio das obras do empreendimento</i>	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i>
Monitoring program for emission sources of Reduced Sulfur Compounds, Particulate Materials and Sulfur Dioxide / <i>Programa de monitoramento das fontes de emissão de Compostos Reduzidos de Enxofre (TRS), Material Particulado e Dióxido de Enxofre</i>	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i>
Expansion Odor Perception / <i>Ampliação da Rede de Percepção de Odor (RPO)</i>	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i>
Monitoring Program of noise emissions from the site with line 2 / <i>Programa de monitoramento das emissões de ruído da fábrica com a linha 2</i>	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i>
Air Quality Monitoring Program / <i>Programa de monitoramento da Qualidade do Ar</i>	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i>
Program for monitoring the implementation of the two compensatory measure indicated for irreversible impact and immitigable suppression of terrestrial fauna habitat and the lake from green area inside the site / <i>Programa de acompanhamento da aplicação das duas medida compensatória indicada para o impacto irreversível e não mitigável de supressão de habitat de fauna terrestre e do lago da área verde interna ao sítio da fábrica</i>	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i>
Monitoring program of the new outfall installation in the Guaíba Lake / <i>Programa de acompanhamento da instalação do novo emissário no lago Guaíba</i>	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i>
Monitoring program of aquatic biota of Guaíba Lake under the influence of the project in its influence area / <i>Programa de monitoramento da biota aquática do lago Guaíba sob a influência do empreendimento em sua área de influência</i>	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i>
Program of the project plant expansion of the cellulose pulp mill divulgation / <i>Programa de divulgação do projeto de ampliação da fábrica de celulose da Aracruz</i>	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO</i>

Programs and measures/ <i>Programas e Medidas</i>	Document in which the program was presented
– <i>UG e suas implicações</i>	<i>Águas Engenharia do Meio Ambiente Ltda.</i>
Environmental education and behavior of employees program / <i>Programa de educação ambiental e conduta dos trabalhadores do empreendimento</i>	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i>
Workforce demobilization monitoring program / <i>Programa de monitoramento da desmobilização de mão de obra</i>	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i>
Environmental awareness of the community in the municipality of Guaíba and neighboring municipalities program / <i>Programa de conscientização ambiental de comunidade do município de Guaíba e de municípios vizinhos</i>	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i>
Monitoring program of road transport of cargo and personnel on the highways of arrival / departure from the company / <i>Programa de monitoramento do transporte rodoviário de cargas e pessoal nas rodovias de chegada/saída da empresa</i>	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i>
Training program for workers in the project influence area / <i>Programa de treinamento de trabalhadores da região da área de influência do empreendimento</i>	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i>
Monitoring program of prioritization of purchases and sales in regional trade / <i>Programa de acompanhamento da priorização de compras e vendas no comércio regional</i>	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i>
Program extension of emergency responses for the activities of line 2 from the beginning of its implementation / <i>Extensão do programa de atendimento à emergências, em vigor na fábrica, para as atividade da linha 2, contemplando-a desde o início da sua implantação</i>	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i>
Monitoring Program of the population health situation related to air quality / <i>Programa de acompanhamento da situação da saúde da população relacionada a qualidade do ar.</i>	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i>
Plan the execution of works for moving soil and site preparation preferably outside of rainy periods in order to reduce the possibility of erosive occurrences due to the ground susceptibility; if necessary, construct temporary drainage to prevent siltation of water bodies downstream, with the deployment of containment structures install structures for containment material on the banks of watercourses if necessary, to prevent entrainment of particles and blocks for drainage; carry out supervision and environmental	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i>

Programs and measures/ <i>Programas e Medidas</i>	Document in which the program was presented
<p>monitoring of soil preparation and limiting them strictly to the location defined in the project / <i>Planejar a execução das obras de movimentação de solos e preparação do terreno de preferência fora de períodos chuvosos, a fim de reduzir a possibilidade de ocorrências erosivas devido à suscetibilidade do terreno; construir se necessário drenagem temporária para evitar o assoreamento dos corpos de água a jusante, com a implantação de estruturas de contenção ,se necessárias; instalar estruturas para contenção de material às margens dos cursos de água se necessário, para evitar carregamento de partículas e blocos para a drenagem; realizar supervisão e acompanhamento ambiental do preparo do solo e limitá-las estritamente ao local definido em projeto.</i></p>	
<p>It is planned that all solid waste to be generated by the construction of the building and assembly of Line 2 will be destined to the system used by Aracruz, grouped according to the type that characterizes its origin / <i>Está previsto que todos os resíduos sólidos a serem gerados pela construção do prédio e montagem da Linha 2 serão destinados ao sistema utilizado pela Aracruz, agrupados de acordo com o tipo que caracteriza sua origem.</i></p>	<p><i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i></p>
<p>Utilization of the wastewater treatment system current that has activated sludge system and tertiary treatment. For oily waste should be specified appropriate locations and methods for the maintenance and cleaning of vehicles and equipment, in accordance with CONAMA Resolution 09/93 / <i>Utilização do sistema de tratamento de efluentes atual da fábrica que possui sistema de lodos ativados e tratamento terciário. Para os resíduos oleosos deverão ser especificados locais e métodos apropriados para a manutenção e lavagem de veículos e equipamentos, nos termos da Resolução Conama 09/93.</i></p>	<p><i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i></p>
<p>Periodic wetting of the areas where it has disintegrated soil stationary or moving. Coverage with gravel the unpaved internal roads that are close to soil intervention areas / <i>Umectação periódica das áreas onde se tiver solo desagregado parado ou em movimentação. Cobertura das vias internas não pavimentadas e que passam próximo às áreas de intervenção no solo, com brita grossa.</i></p>	<p><i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i></p>
<p>Maintain the level of efficiency of the wastewater treatment of the line 2 under the conditions specified in the project / <i>Manter o nível de eficiência do sistema de tratamento de efluentes da linha 2 nas condições especificadas no projeto</i></p>	<p><i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i></p>
<p>Maintain the current solid waste management system, working with the standards and efficiency achieved until the present date / <i>Manter seu sistema</i></p>	<p><i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO</i></p>

Programs and measures/ <i>Programas e Medidas</i>	Document in which the program was presented
<i>atual de gerenciamento de resíduos sólidos, atuando com os padrões e eficiência alcançados até a presente data</i>	<i>Águas Engenharia do Meio Ambiente Ltda.</i>
Maintain and operate their emissions control equipments at maximum efficiency to minimize emission rates of air pollutants / <i>Manter e operar os equipamentos de controle de emissões atmosféricas na máxima eficiência, de forma a minimizar as taxas de emissão dos parâmetros poluentes do ar.</i>	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i>
Occurring noise emissions at the plant at levels that cause discomfort to neighbors, the company should proceed the enclosure of noisy equipment and, if necessary, install equipment to absorption or reflection of the noise in order to eliminate the effect of this component / <i>Ocorrendo emissão de ruído na fábrica em níveis que causem desconforto para a população vizinha, a empresa deverá proceder o enclausuramento dos equipamentos ruidosos e, se necessário, também instalar anteparos para absorção ou reflexão orientada do ruído, de forma a eliminar os efeitos deste componente poluidor do ar atmosférico.</i>	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i>
Creation of a conservation unit in external area to be acquired, which will be defined together with FEPAM / <i>Formação de uma unidade de conservação, em área externa a ser adquirida, que serão definidas junto com a FEPAM.</i>	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i>
Adequate control of noise sources in the construction of the new line 2 and, if necessary, the existing line 1, in order to reduce the fauna stress and avoid possible roadkill occur during the project implementation, implementing a program of environmental education for employees / <i>Controle adequado das emissões de ruído nas fontes das obras da nova linha 2 e, se necessário, da linha 1 existente, visando, dentre outros, a redução da stress da fauna e evitar os atropelamentos possíveis de ocorrerem durante as obras de implantação do empreendimento, implementando um programa de educação ambiental para os trabalhadores.</i>	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i>
Install adequate control systems for air emissions from line 2, in accordance with FEPAM emission limits / <i>Implantar os sistemas de controle adequados para as emissões atmosféricas da linha 2, em conformidade com os limites de emissão da FEPAM.</i>	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i>
Environmental awareness and preparation for startup or any scheduled stops training for all operators / <i>Aplicar treinamento de conscientização ambiental preparatório para startup e paradas eventuais ou programadas, destinado a todos os operadores da fábrica</i>	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i>

Programs and measures/ <i>Programas e Medidas</i>	Document in which the program was presented
<p>Implement a Transportation Program in order to avoid the accumulation of bus arrivals and trucks of materials and equipment in the plant facilities / Implementar um Programa de Transporte de forma a se evitar o acúmulo de chegadas de ônibus com caminhões transportadores de materiais e equipamentos nas instalações da fábrica.</p>	<p><i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i></p>
<p>Implementation of a Social and Environmental Communication Program to explain the project and its contracts, preventing people from other regions receive false news that can attract workers not priority / Implementação de um Programa de Comunicação Socioambiental para esclarecimento do projeto e suas contratações, de forma a se evitar que comunidades de outras regiões, ou mesmo outros estados, recebam notícias não verdadeiras capazes de promover a atração de trabalhadores não prioritários para os empregos a serem abertos na fase de implantação do empreendimento.</p>	<p><i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i></p>
<p>Measurements of sound pressure levels on the outside of its walls / Levantamento com medições dos níveis de pressão sonora na parte externa dos seus muros.</p>	<p><i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i></p>
<p>To minimize the negative impact of the flow of heavy vehicles on the pavement of Guaiba roads , recommends the use of roads with dimensions suitable for the heavy traffic / Para minimizar o impacto negativo do fluxo de veículos pesados no pavimento das vias de Guaíba, recomenda-se a utilização de vias com dimensões adequadas para o tráfego de veículos pesados.</p>	<p><i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i></p>
<p>Installation of temporary signage in the surrounding of the work for signaling locations that will interface with the public roads, vehicles and pedestrians and for signaling restriction of access to work in rush hour / Instalação de sinalização provisória no entorno da obra para sinalizar locais que terão interface com as vias públicas, veículos e pedestres, e; restrição dos acessos à obra no horário do pico manhã e horário de trocas de turno, quando estes acessos forem repetidos, de curta duração e freqüentes, como é o caso, por exemplo, do transporte de solos de terraplenagem.</p>	<p><i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i></p>
<p>The executive project of line 2 will include the best available technology which significantly reduces of the reduced sulfur compounds emissions through burning in biomass boiler, to be implanted as part of the project, the non-condensable gases, gas emissions from the dissolving tank and Calcium oxide oven / O projeto executivo da linha 2 contemplará a melhor tecnologia disponível (BAT), que reduz significativamente as emissões dos compostos reduzidos de</p>	<p><i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i></p>

Programs and measures/ <i>Programas e Medidas</i>	Document in which the program was presented
<i>enxofre (gases mau cheirosos) através da queima completa na caldeira de biomassa, a ser implantada como parte integrante do empreendimento, dos gases não condensáveis, das emissões de gases do tanque de dissolução e do forno de cal.</i>	
Duplication of BR-116 road until the Bar Ribeiro Clover / A duplicação da BR-116 até o trevo de Barra do Ribeiro.	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i>
Enlargement of Castelo Branco Avenue and enhanced signaling through which circulates a large population of Guaíba, or implantation of Guaíba highway contour / Alargamento da Av. Castelo Branco e reforço da sinalização por onde circula grande parte da população de Guaíba, ou a implantação da rodovia do contorno de Guaíba.	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i>
Deployment of new vertical road signs and reinforcement in horizontal signaling / Implantação de novas placas de sinalização vertical e reforço na sinalização horizontal.	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i>
Implementation of a traffic light for pedestrians with electronic actuator in the crossing of São Geraldo street in front of the site, working from 6:00 pm to 22:30 pm, some speed reducers, and also strengthening the horizontal and vertical signage / Implantação de um semáforo para pedestres com atuador eletrônico botoeira na travessia da Rua São Geraldo, em frente à fábrica, funcionando das 6:00 hs às 22:30 hs, e alguns redutores de velocidade do tipo tacha ou tachinha e, ainda, reforço na sinalização horizontal e vertical.	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i>
Construction of the viaduct contained on line 2 project, which will connect directly the wood storage external patio to the site across the São Geraldo street / Construção do viaduto constante do projeto da linha 2, o qual ligará diretamente o pátio externo de estoque de madeira e o sítio da fábrica do outro lado da Rua São Geraldo.	<i>Estudo de Impactos Ambientais - EIA : Aracruz S.A. Linha 2, Unidade Guaíba, Rio Grande do Sul, ECO Águas Engenharia do Meio Ambiente Ltda.</i>
Existing Plantations	
Weather Conditions Monitoring Program / Programa de Monitoramento das Condições Climáticas	<i>Estudo de Impactos Ambientais - EIA, Bacia do Baixo Jacui; Estudo de Impactos Ambientais - EIA, Bacia Camaquã; Estudo de Impactos Ambientais - EIA, Bacia Santa Maria; Estudo de Impactos Ambientais - EIA, Bacia Vacacaí</i>
Water quality Monitoring Program / Programa de Monitoramento da Qualidade da	<i>Estudo de Impactos Ambientais - EIA, Bacia do Baixo</i>

Programs and measures/ <i>Programas e Medidas</i>	Document in which the program was presented
<i>Água</i>	<i>Jacui; Estudo de Impactos Ambientais - EIA, Bacia Camaquã; Estudo de Impactos Ambientais - EIA, Bacia Santa Maria; Estudo de Impactos Ambientais - EIA, Bacia Vacacaí</i>
Soil Loss Monitoring Program / <i>Programa de Monitoramento de Perdas de Solo</i>	<i>Estudo de Impactos Ambientais - EIA, Bacia do Baixo Jacui; Estudo de Impactos Ambientais - EIA, Bacia Camaquã; Estudo de Impactos Ambientais - EIA, Bacia Santa Maria; Estudo de Impactos Ambientais - EIA, Bacia Vacacaí</i>
Soil Compaction Monitoring Program / <i>Programa de Monitoramento da Compactação do Solo</i>	<i>Estudo de Impactos Ambientais - EIA, Bacia do Baixo Jacui; Estudo de Impactos Ambientais - EIA, Bacia Camaquã; Estudo de Impactos Ambientais - EIA, Bacia Santa Maria; Estudo de Impactos Ambientais - EIA, Bacia Vacacaí</i>
Soil quality Monitoring Program / <i>Programa de Monitoramento Qualidade do Solo</i>	<i>Estudo de Impactos Ambientais - EIA, Bacia do Baixo Jacui; Estudo de Impactos Ambientais - EIA, Bacia Camaquã; Estudo de Impactos Ambientais - EIA, Bacia Santa Maria; Estudo de Impactos Ambientais - EIA, Bacia Vacacaí</i>
Flora Monitoring Program / <i>Programa de Monitoramento da Flora</i>	<i>Estudo de Impactos Ambientais - EIA, Bacia do Baixo Jacui; Estudo de Impactos Ambientais - EIA, Bacia Camaquã; Estudo de Impactos Ambientais - EIA, Bacia Santa Maria; Estudo de Impactos Ambientais - EIA, Bacia Vacacaí</i>
Fauna Monitoring Program / <i>Programa de Monitoramento da Fauna</i>	<i>Estudo de Impactos Ambientais - EIA, Bacia do Baixo Jacui; Estudo de Impactos Ambientais - EIA, Bacia Camaquã; Estudo de Impactos Ambientais - EIA, Bacia Santa Maria; Estudo de Impactos Ambientais - EIA, Bacia Vacacaí</i>
Socioeconomic Monitoring Program / <i>Programa de Monitoramento Socioeconômico</i>	<i>Estudo de Impactos Ambientais - EIA, Bacia do Baixo Jacui; Estudo de Impactos Ambientais - EIA, Bacia Camaquã; Estudo de Impactos Ambientais - EIA, Bacia Santa Maria; Estudo de Impactos Ambientais - EIA, Bacia Vacacaí</i>

Programs and measures/ <i>Programas e Medidas</i>	Document in which the program was presented
<p>Forest Cover Recovery in Protected Areas Program / Programa de Recuperação da Cobertura Florestal em Áreas Protegidas</p>	<p><i>Estudo de Impactos Ambientais - EIA, Bacia do Baixo Jacui; Estudo de Impactos Ambientais - EIA, Bacia Camaquã; Estudo de Impactos Ambientais - EIA, Bacia Santa Maria; Estudo de Impactos Ambientais - EIA, Bacia Vacacaí</i></p>
<p>Pesticide Packaging Waste Disposal Program / Programa de Disposição Final de Embalagens de Agrotóxicos</p>	<p><i>Estudo de Impactos Ambientais - EIA, Bacia do Baixo Jacui; Estudo de Impactos Ambientais - EIA, Bacia Camaquã; Estudo de Impactos Ambientais - EIA, Bacia Santa Maria; Estudo de Impactos Ambientais - EIA, Bacia Vacacaí</i></p>
<p>Forest Protection Program / Programa de Proteção Florestal</p>	<p><i>Estudo de Impactos Ambientais - EIA, Bacia do Baixo Jacui; Estudo de Impactos Ambientais - EIA, Bacia Camaquã; Estudo de Impactos Ambientais - EIA, Bacia Santa Maria; Estudo de Impactos Ambientais - EIA, Bacia Vacacaí</i></p>
<p>Recovery of Degraded Areas Program / Programa de Recuperação de Áreas Degradadas</p>	<p><i>Estudo de Impactos Ambientais - EIA, Bacia do Baixo Jacui; Estudo de Impactos Ambientais - EIA, Bacia Camaquã; Estudo de Impactos Ambientais - EIA, Bacia Santa Maria; Estudo de Impactos Ambientais - EIA, Bacia Vacacaí</i></p>
<p>Social and Environmental Communication Program / Programa de Comunicação Sócio-Ambiental</p>	<p><i>Estudo de Impactos Ambientais - EIA, Bacia do Baixo Jacui; Estudo de Impactos Ambientais - EIA, Bacia Camaquã; Estudo de Impactos Ambientais - EIA, Bacia Santa Maria; Estudo de Impactos Ambientais - EIA, Bacia Vacacaí</i></p>
<p>Patrimonial, Archaeological and Paleontology Education Program / Programa e Educação Patrimonial de Arqueológico e Paleontologia</p>	<p><i>Estudo de Impactos Ambientais - EIA, Bacia do Baixo Jacui; Estudo de Impactos Ambientais - EIA, Bacia Camaquã; Estudo de Impactos Ambientais - EIA, Bacia Santa Maria; Estudo de Impactos Ambientais - EIA, Bacia Vacacaí</i></p>
<p>Survey of critical areas with respect to population centers; Cover with canvas, the trucks of supplies in bulk; Graveling or paving of critical points; Wetting the roads close to population centers / Levantamento das áreas críticas com relação aos núcleos habitacionais; Cobrir com lona os caminhões que transportam</p>	<p><i>Estudo de Impactos Ambientais - EIA, Bacia do Baixo Jacui; Estudo de Impactos Ambientais - EIA, Bacia Camaquã; Estudo de Impactos Ambientais - EIA, Bacia Santa Maria; Estudo de Impactos Ambientais -</i></p>

Programs and measures/ <i>Programas e Medidas</i>	Document in which the program was presented
<p><i>os insumos a granel; Cascalhamento ou pavimentação dos pontos críticos; Umectação das vias próximo aos núcleos populacionais.</i></p>	<p><i>EIA, Bacia Vacacaí</i></p>
<p>Using mobile workshop equipped with safe structure to perform maintenance and oil change on the field; Adopt strict operating standards at the time of supply of machinery and equipment; Collect all packaging, especially pesticide packaging, disposing properly; Promote the training of workers involved with focus on proper waste management; Provide in the operational areas appropriate containers for waste disposal; Dimensioning machinery and equipment appropriate to the local conditions of soil; Remove contaminated soil and destined for landfills; Routine maintenance of roads; Using subsoiling techniques to reverse compaction / <i>Utilizar oficina móvel dotada de estrutura segura para realizar a manutenção e troca de óleo no campo. Adotar padrões operacionais rígidos por ocasião do abastecimento das máquinas e equipamentos. Recolher todas as embalagens, principalmente as de agrotóxicos, descartando-as adequadamente. Promover o treinamento dos trabalhadores envolvidos com foco no gerenciamento adequado dos resíduos. Disponibilizar nas áreas operacionais recipientes adequados para disposição de resíduos. Dimensionar máquinas e equipamentos adequados as condições locais de solo. Remover a porção de solo contaminado e destinar para aterros controlados. Manutenção rotineira das vias de acesso. Empregar técnicas de subsolagem para reversão da compactação.</i></p>	<p><i>Estudo de Impactos Ambientais - EIA, Bacia do Baixo Jacui; Estudo de Impactos Ambientais - EIA, Bacia Camaquã; Estudo de Impactos Ambientais - EIA, Bacia Santa Maria; Estudo de Impactos Ambientais - EIA, Bacia Vacacaí</i></p>
<p>Perform the plantings and the opening of roads and access roads respecting the contour lines of the land; Avoid formation of cut and fill slopes on the banks of the roads, as well as deep channels on the banks of the access roads and when necessary its implementation provide them with gravel; Build in critical areas, containment boxes on the sides of roads and access roads; Reducing the time of exposure of the soil in its preparation and during forest harvesting; Adopt recovery techniques planned in the program of degraded areas recovery - PRAD / <i>Executar os plantios e abertura de estradas e vias de acesso respeitando-se as curvas de nível do terreno. Evitar a formação de taludes de corte ou aterro nas margens das vias, bem como de canaletas profundas às margens das vias de acesso e quando necessária a sua implantação dotá-las de cascalho; Construir em áreas críticas, camalhões e caixas de contenção nas laterais de estradas e vias de acesso. Reduzir o tempo de exposição do solo no seu preparo e durante a colheita florestal. Adotar as técnicas de recuperação previstas no programa recuperação de áreas degradadas – PRAD.</i></p>	<p><i>Estudo de Impactos Ambientais - EIA, Bacia do Baixo Jacui; Estudo de Impactos Ambientais - EIA, Bacia Camaquã; Estudo de Impactos Ambientais - EIA, Bacia Santa Maria; Estudo de Impactos Ambientais - EIA, Bacia Vacacaí</i></p>

Programs and measures/ <i>Programas e Medidas</i>	Document in which the program was presented
<p>Using products such as Class IV (slightly toxic), strictly control of the distribution, handling and application of these products; Permanently training and recycle of the employees directly responsible for the pesticides and fertilizers application; Store and / or dispose of properly the packaging of pesticides according to current legislation; Keep distance from water bodies during application of the product; Avoid application of pesticides and fertilizers on days of high rainfall / Utilizar produtos do tipo Classe IV, ou seja, pouco tóxico. Controlar rigorosamente a distribuição, manuseio e aplicação desses produtos. Treinar e reciclar permanentemente a mão-de-obra diretamente responsável pela aplicação de pesticidas e fertilizantes. Acondicionar e/ou descartar corretamente as embalagens dos defensivos agrícolas conforme legislação em vigor. Manter a distância dos corpos d'água durante a aplicação dos produtos. Evitar a aplicação de agrotóxicos e fertilizantes em dias de altas precipitações pluviométricas.</p>	<p><i>Estudo de Impactos Ambientais - EIA, Bacia do Baixo Jacui; Estudo de Impactos Ambientais - EIA, Bacia Camaquã; Estudo de Impactos Ambientais - EIA, Bacia Santa Maria; Estudo de Impactos Ambientais - EIA, Bacia Vacacaí</i></p>
<p>Reduce the time of soil exposure in the preparation and after harvest; Adopt soil conservation practices for the reduction of pesticide use as well planting level, terracing and proper arrangement and road design; Adopt conservation practices consistent with the declivity of the land and its high erodibility in the soil erosion areas susceptible; Avoid opening transit routes with high declivity and adopt mechanical practices for retention and subsequent infiltration of roads superficial drainage; Deploy the recovery of vegetation in riparian areas. / Reduzir o tempo de exposição do solo no seu preparo e após a colheita. Adotar práticas de conservação do solo visando à redução do uso de agrotóxicos bem como o plantio em nível, terraceamento e correta disposição e traçado das estradas. Adotar nas áreas de solo suscetíveis a erosão práticas conservacionistas condizentes com a declividade do terreno e sua alta erodibilidade. Evitar a abertura de vias de circulação com declividades elevadas e adotar práticas mecânicas para a retenção e posterior infiltração do escoamento superficial provindo das estradas. Implantar a recomposição da vegetação nas áreas ripárias.</p>	<p><i>Estudo de Impactos Ambientais - EIA, Bacia do Baixo Jacui; Estudo de Impactos Ambientais - EIA, Bacia Camaquã; Estudo de Impactos Ambientais - EIA, Bacia Santa Maria; Estudo de Impactos Ambientais - EIA, Bacia Vacacaí</i></p>
<p>Restrict the opening and expansion of roads strictly in necessary areas, respecting the limits of the permanent preservation areas; Withdrawal and storage of soil organic layer for use in the program of recovery of degraded areas in the case in lending; Open areas of lending in areas with pasture and / or degraded areas; Making the recovery in lending area with vegetation of local occurrence / Restringir a abertura e ampliação de estradas estritamente nas</p>	<p><i>Estudo de Impactos Ambientais - EIA, Bacia do Baixo Jacui; Estudo de Impactos Ambientais - EIA, Bacia Camaquã; Estudo de Impactos Ambientais - EIA, Bacia Santa Maria; Estudo de Impactos Ambientais - EIA, Bacia Vacacaí</i></p>

Programs and measures/ <i>Programas e Medidas</i>	Document in which the program was presented
<p><i>áreas necessárias, observando os limites das áreas de preservação permanente. Retirada e estocagem da camada orgânica do solo para utilização no programa de recuperação de áreas degradadas, no caso das áreas de empréstimos. Abrir as áreas de empréstimos em locais com pastagem e/ou áreas já degradadas. Fazer a recuperação das áreas de empréstimos com vegetação de ocorrência local.</i></p>	
<p>Plan for the occupation of the properties to provide connectivity of permanent preservation areas and legal reserves at the regional level to form ecological corridors; Make forest management in terms of property or set of properties to allow plots of different ages; Promote the corridors created by the implementation of plantations in areas of the field, considering its effect on biota / <i>Planejar a ocupação das propriedades de tal modo a propiciar a conectividade das áreas de preservação permanente e de reserva legal no âmbito regional, formando corredores ecológicos. Fazer o ordenamento florestal em nível da propriedade ou conjunto de propriedades de tal modo a permitir talhões com diferentes idades. Fomentar os corredores criados pela implantação de plantios nas áreas de campo, considerando seu efeito sobre a biota.</i></p>	<p><i>Estudo de Impactos Ambientais - EIA, Bacia do Baixo Jacui; Estudo de Impactos Ambientais - EIA, Bacia Camaquã; Estudo de Impactos Ambientais - EIA, Bacia Santa Maria; Estudo de Impactos Ambientais - EIA, Bacia Vacacaí</i></p>
<p>Evaluate the occurrence of temporarily flooded areas in the properties and delimit to that area are not occupied by plantations; Construction of bridges and drains that allow the continuous flow of water / <i>Avaliar a ocorrência de áreas temporariamente alagadas nas propriedades e delimita-las para que as mesmas não sejam ocupadas por plantios. Construção de pontes e bueiros que possibilitem o fluxo contínuo da água.</i></p>	<p><i>Estudo de Impactos Ambientais - EIA, Bacia do Baixo Jacui; Estudo de Impactos Ambientais - EIA, Bacia Camaquã; Estudo de Impactos Ambientais - EIA, Bacia Santa Maria; Estudo de Impactos Ambientais - EIA, Bacia Vacacaí</i></p>
<p>Provide information to all communities and stakeholders involved in order to mitigate the negative expectations through a Social Communication Program highlighting the importance of the project, its effects on the environment, socio-economic and cultural life of the people residents in the area of influence based on local and regional characteristics and different socioeconomic and environmental aspects of the project / <i>Prestar esclarecimentos para todas as comunidades e atores envolvidos de modo a atenuar as expectativas negativas através de um Programa de Comunicação Social ressaltando a importância do empreendimento, seus efeitos sobre o meio ambiente, a vida sócioeconômica e cultural das populações residentes na área de influência com base nas características locais e regionais e nos diferentes aspectos socioeconômico e ambiental do empreendimento.</i></p>	<p><i>Estudo de Impactos Ambientais - EIA, Bacia do Baixo Jacui; Estudo de Impactos Ambientais - EIA, Bacia Camaquã; Estudo de Impactos Ambientais - EIA, Bacia Santa Maria; Estudo de Impactos Ambientais - EIA, Bacia Vacacaí</i></p>
<p>Implement a program of Archaeological Prospection, as provided in Federal</p>	<p><i>Estudo de Impactos Ambientais - EIA, Bacia do Baixo</i></p>

Programs and measures/ <i>Programas e Medidas</i>	Document in which the program was presented
<p>Ordinance No. 230/02; Deploy a Patrimonial Education Program, as is provided in IPHAN Ordinance No. 230 / Implantar um Programa de Prospecção Arqueológica, conforme previsto na Portaria Federal nº. 230/02 ; Implantar um Programa de Educação Patrimonial, conforme está prevista na Portaria IPHAN nº. 230.</p>	<p><i>Jacui; Estudo de Impactos Ambientais - EIA, Bacia Camaquã; Estudo de Impactos Ambientais - EIA, Bacia Santa Maria; Estudo de Impactos Ambientais - EIA, Bacia Vacacaí</i></p>
<p>Evaluate in advance the routes to be used by vehicles in order to reduce the risk of accidents; Maintaining and continual surveillance of vehicles and equipment used; Keep operators trained and updated on the use of vehicles and equipment; Strengthen health programs for forestry worker / Avaliar antecipadamente os itinerários a serem utilizados pelos veículos visando à redução do risco de acidentes; Fazer a manutenção e fiscalização permanente dos veículos e equipamentos utilizados; Manter os operadores treinados e atualizados na utilização de veículos e equipamentos. Fortalecer programas de saúde do trabalhador florestal.</p>	<p><i>Estudo de Impactos Ambientais - EIA, Bacia do Baixo Jacui; Estudo de Impactos Ambientais - EIA, Bacia Camaquã; Estudo de Impactos Ambientais - EIA, Bacia Santa Maria; Estudo de Impactos Ambientais - EIA, Bacia Vacacaí</i></p>
<p>Provide information to all communities and stakeholders locally in order to mitigate the negative expectations; Prioritize hiring of local workers; Evaluate in advance the steps of harvesting and transport of wood, informing local communities, in addition to signal appropriately places of higher traffic flow and access most used by freight vehicles; Set different schedules for use of the roads more conflicting; Keep the largest circulation routes of vehicles in good condition / Prestar esclarecimentos para todas as comunidades e atores envolvidos localmente de modo a atenuar as expectativas negativas. Priorizar a contratação de mão-de-obra local. Programar antecipadamente as etapas de colheita e transporte da madeira, informando as comunidades locais, além de sinalizar de forma adequada os locais de maior fluxo de veículos e nos acessos mais utilizados pelos veículos de carga; Definir horários diferenciados para utilização das vias mais conflituosas; Manter permanentemente as vias de maior circulação de veículos em bom estado de conservação.</p>	<p><i>Estudo de Impactos Ambientais - EIA, Bacia do Baixo Jacui; Estudo de Impactos Ambientais - EIA, Bacia Camaquã; Estudo de Impactos Ambientais - EIA, Bacia Santa Maria; Estudo de Impactos Ambientais - EIA, Bacia Vacacaí</i></p>
<p>Purchase only properties with areas already converted to agricultural process; Ensure the development of the natural vegetation in the areas of legal reserve and permanent preservation; Perform the harvest mosaic so as not to allow large areas to be harvested at the same time / Adquirir somente propriedades com áreas já convertidas ao processo agropecuário. Garantir o desenvolvimento da vegetação natural nas áreas de reserva legal e de preservação permanente. Realizar a colheita em mosaicos de modo a não permitir que grandes extensões</p>	<p><i>Estudo de Impactos Ambientais - EIA, Bacia do Baixo Jacui; Estudo de Impactos Ambientais - EIA, Bacia Camaquã; Estudo de Impactos Ambientais - EIA, Bacia Santa Maria; Estudo de Impactos Ambientais - EIA, Bacia Vacacaí</i></p>

Programs and measures/ Programas e Medidas	Document in which the program was presented
<i>sejam colhidas na mesma ocasião.</i>	
Yield monitoring of forest products	
Forest yield (monthly, quarterly, biannual) / Rendimentos Florestais (mensal, trimestral, semestral)	<i>Plano de Manejo</i>
Growth rates, regeneration and forest condition studies/monitoring	
Forest growth and dynamics (annual) / Crescimento e dinâmica da floresta (anua)	<i>Plano de Manejo</i>
Studies/monitoring of the composition and observed changes in the flora	
Flora characterization studies (as needed) / Estudos de caracterização da Flora (conforme demanda)	<i>Plano de Manejo</i>
Fauna characterization studies (annual, throughout forest management operations) / Estudos de caracterização da Fauna (anualmente, ao longo de todo o manejo da floresta)	<i>Plano de Manejo</i>
Water resources monitoring (annual, throughout forest management operations) / Recursos Hídricos (anualmente, ao longo de todo o manejo da floresta)	<i>Plano de Manejo</i>
Edaphic resources monitoring / Recursos Edáficos	<i>Plano de Manejo</i>
Climate monitoring (annual) / Clima (annual)	<i>Plano de Manejo</i>
Pest and disease monitoring (throughout the forest growth cycle) / Pragas e doenças (ao longo do crescimento da floresta)	<i>Plano de Manejo</i>
Weed control monitoring (during the first year of forest growth)/ Monitoramento para controle de ervas daninhas (ao longo do primeiro ano de formação da floresta)	<i>Plano de Manejo</i>
Studies/monitoring of environmental and social impacts of harvesting and other operations	
Management for conservation of protected areas (annual) / Manejo para conservação de áreas protegidas (anual)	<i>Plano de Manejo</i>
Community relations (annual) /Relações com a comunidade (anual)	<i>Plano de Manejo</i>
Contingency Plans in case of fire, claims and random events (continuous) / Planos de contingência nos casos de incêndios, sinistros e eventos aleatórios (contínuo)	<i>Plano de Manejo</i>
Forest management costs, productivity, and efficiency studies/monitoring	
Costs Management (monthly) / Custos do Manejo (mensal)	<i>Plano de Manejo</i>
Quality Control management activities (daily) / Controle de Qualidade das atividades de manejo (diário)	<i>Plano de Manejo</i>
Productivity and efficiency of forest management (monthly) / Produtividade e eficiência do manejo florestal (mensal)	<i>Plano de Manejo</i>

Programs and measures/ Programas e Medidas	Document in which the program was presented
Chain of Custody (daily) / Cadeia de Custódia (diário)	<i>Plano de Manejo</i>
Dredging Maintenance Operations	
Program 1. Monitoring of water resources. <i>Programa 1 Monitoramento dos recursos hídricos</i>	<i>Declaração de Impacte Ambiental – Dia Dragagem Canal</i>
Sub-program 1. Monitoring of water resources in the dredging area. <i>Sub-programa 1: Monitoramento dos recursos hídricos na área de dragagem</i>	<i>Declaração de Impacte Ambiental – Dia Dragagem Canal</i>
Sub-program 2. Monitoring of water resources in the dredging material disposal area. <i>Sub-programa 2: Monitoramento dos recursos hídricos na área de descarte de material</i>	<i>Declaração de Impacte Ambiental – Dia Dragagem Canal</i>
Program 2. Sediment monitoring in the sediment discharge area. <i>Programa 2: Monitoramento dos sedimentos de fundo na área de descarte do material dragado</i>	<i>Declaração de Impacte Ambiental – Dia Dragagem Canal</i>
Program 3. Aquatic biota monitoring. <i>Programa 3: Monitoramento da biota aquática</i>	<i>Declaração de Impacte Ambiental – Dia Dragagem Canal</i>
Sub-program 3. Monitoring of plankton community in the port access dredging area. <i>Sub-program 3: Monitoramento da comunidade planctônica na área de dragagem do canal de acesso ao porto</i>	<i>Declaração de Impacte Ambiental – Dia Dragagem Canal</i>
Sub-program 4. Monitoring of benthos community in the port access dredging area. <i>Sub-program 4: Monitoramento da comunidade bentônica na área de dragagem do canal de acesso ao porto</i>	<i>Declaração de Impacte Ambiental – Dia Dragagem Canal</i>
Sub-program 5. Monitoring of plankton community in the sediment discharge area. <i>Sub-program 5: Monitoramento da comunidade planctônica na área de descarte de material dragado</i>	<i>Declaração de Impacte Ambiental – Dia Dragagem Canal</i>
Sub-program 6. Monitoring of benthos community in the sediment discharge area. <i>Sub-program 6: Monitoramento da comunidade bentônica na área de descarte de material dragado</i>	<i>Declaração de Impacte Ambiental – Dia Dragagem Canal</i>
Program 4. Noise monitoring in the community along the Canal. <i>Programa de monitoramento 4: Monitoramento de ruído na comunidade ribeirinha próxima do canal</i>	<i>Declaração de Impacte Ambiental – Dia Dragagem Canal</i>
Program 5. Occupational accident prevention during dredging operations. <i>Programa de monitoramento 5: Prevenção de acidentes do trabalho nas operações de dragagem</i>	<i>Declaração de Impacte Ambiental – Dia Dragagem Canal</i>

Appendix F
General Description of the
Brazilian Permitting Regime

General Description of the Brazilian Permitting Regime at National and State Level

This section provides a summary of environmental regulatory requirements for Environmental Permitting at the national level and Rio Grande do Sul State.

A - Institutional and Regulatory Framework

Brazilian Environmental Institutional Framework

The Ministry of the Environment (MMA) is responsible for developing and implementing environmental protection and conservation policies and strategies regarding natural resources, sustainable development and pollution prevention and control. The MMA is in charge of formulating and reviewing the National Environmental Policy and of ensuring the principles set forth in Chapter VI of the 1988 Federal Constitution are properly applied.

The Federal Environmental Council (CONAMA) is responsible by issuing technical guidelines and specific regulations regarding every environmental aspect such as air emissions, water and wastewater management, hazardous waste management, environmental permitting, contaminated sites management, nuisance, etc.

The *Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis* – IBAMA (Brazilian Environment and Renewable Natural Resources Institute) is the Federal agency in charge of the environmental control and inspection of national or transnational endeavors involving more than one State. IBAMA is also responsible for managing and inspecting Federal Conservation Unities and Natural Resources.

The laws, decrees and standards that make up the Brazilian environmental legislation are enacted by the Federal, State and Municipal governments, and/or by environmental agencies or specific regulatory agencies within the three above spheres. The federal government establishes the regulatory framework and establishes overall environmental standards. The State and Municipal governments implement and enforce the federal requirements, and frequently enact their own environmental acts. The Federal (IBAMA), State and Municipal environmental agencies, and the environmental councils are part of the National Environmental System (SISNAMA) determine standards for general practices and internal regulations (resolutions, administrative rules and normative proceedings) that have power of law and contribute for the effective application of the rules established in the various government spheres. Such regulations must not conflict with the Federal Legislation. The following Hierarchy is generally obeyed at Federal and State levels:

1. Federal or State Constitution
2. Laws
3. Decrees
4. Administrative Rules, Resolutions, Standards, Normative Proceedings

It is important to note, however, that the applicable legislation with the most restrictive environmental quality standards must always be followed, regardless of the above hierarchy.

Additional standards for procedures that are not covered by the existing legislation are issued by *Associação Brasileira de Normas Técnicas* - ABNT (the Brazilian Association for Technical Standardization). These standards are denominated NBRs (*Normas Brasileiras*, or Brazilian Standards).

At the state level, the following institutional framework applies:

- **Rio Grande do Sul** – In the State of Rio Grande do Sul environmental management and environmental regulations are under the responsibility of the State Environmental

Protection Foundation (FEPAM) which is responsible by environmental permitting, pollution abatement and control and environmental enforcement. Water resources and forestry management are controlled by the State Environment Secretariat

Regulatory Framework – General Duty

Brazilian Environmental Legislation has a set of Rules (Laws and Decrees) that apply to all citizens and all potentially pollutant activities, without presenting specific requirements. This set of rules, hereby named General Legal Framework must be considered as the environmental principles to be observed.

The following regulations constitute the **Brazilian General Legal Framework**.

- **Article 225** of Brazilian Federal Constitution establishes that everyone has the right to have an ecologically sound environment, an asset for the common use of the people and essential to a wholesome quality of life. This imposes upon the Public Authorities and the community the obligation to defend and preserve the environment for present and future generations.
- **Federal Law 6938/81** establishes the **National Environment Policy** which presents general procedures for pollution prevention, habitats preservation and natural resources management.
- **Federal Law 9605/98** regulated establishes **Environmental Crimes** typology and penalties.
- **Federal Decree nr 99274/90** provides Regulation on National Environment Policy (Law 6938).
- **Federal Decree Law 1413/75** rules on the control of environmental pollution due to industrial activities. Article 1 requires all installed and planned industries in the national territory have to promote the actions required for the prevention or for the correction of inconveniences and damages resulting from environmental pollution and contamination.
- **Law 7804/89 altered by Law 8028/90** creates the National Environment System - SISNAMA, and establishes the environmental defense registry.

All potentially pollutant activities and all activities that may cause any sort of environmental damage are subject to these regulations, which present general duty requirements. In case of an environmental aspect which lacks regulation or control standards, the General Duty will always enforce pollution abatement and prevention by the principle that no one is allowed to pollute or destroy the environment.

B - Environmental Permitting

The Environmental Permitting Process in Brazil

The **Article 9, Paragraph IV of the National Environment Policy (Federal Law 6938/81)** establishes that the environmental permitting is a tool for environmental control and enforcement by environmental authorities.

The **Chapter IV of the Federal Decree 99.274/90** establishes the Preliminary Permit, the Installation Permit and the Operation Permit, which are mandatory for all potentially pollutant and degrading activities and shall be issued by Federal or State authorities depending on the broadness of the impact.

Projects that may cause international or inter-states transboundary impacts shall receive permits from the Federal Environmental Agency (IBAMA). All other projects shall receive permits issued by state environmental authorities. Municipalities may also issue permits on local projects as long as agreed with state authorities.

The Preliminary Permit indicates that the site location is approved, the Installation permit authorizes the beginning of construction works as long as all requirements presented by the Preliminary Permit are properly fulfilled and the Operation Permit indicates that the site can start operations as the environmental agency agrees with all pollution abatement controls and all impacts mitigation and monitoring measures.

The **CONAMA Resolution 237/97** presents regulation on the permitting process, on permits issuance, on the studies required to support each stage of the permitting process and on environmental agencies and companies/entrepreneurs obligations throughout the process and while the permits are valid or being renewed.

This Resolution also presents a list of all projects whose environmental permitting must be supported by and Environmental Impacts Assessment. This list can be completed and detailed by each state environmental agency.

The **Article 17 of the Federal Law 6938/81** establishes the Technical Federal Register of Potentially Polluting Activities for all potentially pollutant activities regardless of the source of its environmental permitting (state or federal). All registered activities/companies must pay the Environmental Control and Enforcement Fee.

The environmental permitting process regulation is performed by each state which is able to decide about permit expiration dates and categories, required studies and other issues.

Rio Grande do Sul

The environmental permitting process must follow the stages required by Federal Regulation. The Preliminary Permit indicates that the site location is approved, the Installation permit authorizes the beginning of construction works as long as all requirements presented by the Preliminary Permit are properly fulfilled and the Operation Permit indicates that the site can start operations as the environmental agency agrees with all pollution abatement controls and all impacts mitigation and monitoring measures.

Permit application: In order to apply for an environmental permit any new industry must at first require to FEPAM (Rio Grande do Sul State Environmental Agency) the permitting process start up. The company must present all required documents which includes projects, plants, land deed certificates and application forms. Should an Environmental Impact Assessment be required FEPAM will present a Term of Reference for the Environmental Impact Assessment and will also presents guidelines for the continuity of the process.