

## **Environmental and Social Review Summary (ESRS)**

### **Paracel: Sustainable Forestry and Competitive Infrastructure Financing - PARAGUAY**

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#### **1. General Information of the Project and Overview of Scope of IDB Invest's Review**

Paracel S.A. (the Client, the Company or Paracel) is a company involving Girindus Investments (a business group based in Sweden), Zapag group (a local Paraguayan business) and Heinzl Holding GmbH (an Austrian business group), as well as other Paraguayan companies and family investors. Paracel seeks to develop and operate a pulp project, with an industrial component and a forestry component, which will be mainly located in the departments of Concepción and Amambay, Paraguay (the Pulp Project).

The industrial component consists in the construction and operation of an elemental chlorine-free bleached eucalyptus kraft pulp (BEKP) mill<sup>1</sup>, which will have a projected capacity of 1,800,000 metric tons per year, and will be located in the town of Paso Horqueta, on the property known as Zapatero Cue, in the department of Concepción, about 20 km to the north of the city of Concepción. The site is part of a former 1,200-hectare livestock farm that extends from the left bank of the Paraguay River approximately 3 km inland, of which 300 hectares will be taken by the pulp mill and associated facilities.

The forestry component involves the plantation and management of eucalyptus trees across 25<sup>2</sup> properties<sup>3</sup> (or farms) distributed across the departments of Concepción, Amambay and San Pedro, and located on average 130 km away from the pulp mill, which will thus extend over about 203,000 hectares. About 115,000 hectares of the total area will be forest plantations established and managed by Paracel under a continuous harvest system, which will be supported by 100,000 hectares of plantations from local producers under the Forest Development Program.

The Pulp Project also considers the construction of: i) a substation within the mill site; ii) six camps for a total of 7,280 workers (including camp C9) in the city of Concepción; iii) a 32.7-km 220-kW transmission line (TL) to connect the substation at the mill with the national grid; iv) a system to supply the raw water to be used by the pulp mill from the Paraguay River; v) a treated industrial water discharge system from

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<sup>1</sup> This component involves: i) pulp production (wood preparation, fiber processing, drying and baling); ii) chemical recovery (evaporation, recovery boiler, causticizing and lime kiln); iii) utilities (biomass boiler, water treatment plant, boiler feedwater treatment plant and effluent treatment plant); iv) a cogeneration unit with a nameplate capacity of 220 MW; v) an area to unload, handle and store sodium hydroxide, hydrogen peroxide, sulfuric acid, sodium bisulfite, sodium chlorate, magnesium sulfate, aluminum sulfate and methanol; vi) plants for the production of oxygen and chlorine dioxide; vii) diesel storage tanks for boiler start-up; viii) diesel storage tanks for fire pumps and chip loaders; and ix) areas for the industrial solid waste treatment and disposal systems.

<sup>2</sup> The original project involved the use of 19 properties, to which 5 more were added.

<sup>3</sup> The 19 properties considered initially (Cristo Rey, Gavilán, Hermosa, Isla Alta 1, La Blanca, La Paraguaya, Machuca Cué, Mandijú, Rancho Z, Ronaldo, San Liberato, Santa Teresa, Silva, Soledad, Trementina, Villa Sana, Willer, Zanja Moroti, and Zapallo), plus 5 acquired later (Don Gaspar, Isla Alta 2, Recalde Cue, Santa Rosa and Rancho San Carlos), and 1 under a 21-year lease (La Amanda).

the mill into the Paraguay River; vi) a permanent road access to the mill site, to be carried out by the Ministry of Public Works and Communications; vi) a river port terminal for loading and unloading (a) equipment and materials required for the construction works under the Pulp Project, and (b) processed pulp; and (vi) a dedicated berth and warehouse at a maritime export terminal in Uruguay.

The Pulp Project was approved by IDB Invest<sup>4</sup> in December 2022; since then, despite not having reached financial close, it has complied with the requirements of IDB Invest's Environmental and Social Sustainability Policy, and the environmental and social action plan (ESAP) as agreed by the parties after the environmental and the social due diligence (ESDD) process completed for the Project.

Since the transaction was approved, IDB Invest has carried out four follow-up visits<sup>5</sup>, which have covered the same issues that would have been addressed by a formal supervision mission, except that the operation risk was determined at each visit together with corrective plans, whose actions, in the absence of a contract between the parties, were not binding. Nonetheless, Paracel executed the plans in the form and substance that are acceptable for IDB Invest, as if the actions therein had been mandatory.

The main findings from these visits indicate the following, as of July 31, 2025: i) for the industrial component: as the earthworks (6 million m<sup>3</sup> moved) for the platforms where the mill would be built are completed, only about 110 people remain mainly to maintain the platforms; ii) for the forestry component<sup>6</sup>: once complete, it will take up 200,000 hectares, of which 109,000 hectares (54%) will be used for forestry production, about 80,600 hectares (42%) for conservation purposes<sup>7</sup>, while the rest will remain for infrastructure (4%) and other uses (1.2%); as of October 2025, a total of 80,500 hectares were identified as under cultivation, which created over 900 direct jobs in the area; iii) for the social component<sup>8</sup>: Paracel is carrying out the following programs (a) community relations and social investment, (b) infrastructure enhancement, (c) community health, safety and security, (d) local producers development, (e) local employment, (f) social monitoring, (g) support for indigenous peoples, (h) social management, (i) road safety, (j) prevention and handling of social contingencies, (k) grievance, inquiry and suggestion management, (l) women empowerment; (m) cultural heritage management, (n) monitoring and awareness-raising for contractors and workers, and (o) management of land disturbances and risks from external agents; iv) for the environmental component: the Client has been executing 17 management programs, including (a) waste management, (b) hazardous materials management, (c) agrochemicals management, (d) Environmental, Technical, Economic and Social Micro-planning (MATES, in Spanish) to delineate the plantation areas and to set up the conservation areas, (e) degraded areas recovery (forests, savannas and legacy liabilities inherited from previous owners) through active interventions (plantation or restoration), (f) biodiversity net gain, (g) participatory monitoring, (h) training in water

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<sup>4</sup> <https://www.idbinvest.org/es/proyectos/paracel>

<sup>5</sup> One at the beginning of 2023; one at the beginning of 2024; one in mid-2024; and one in mid-2025.

<sup>6</sup> The forestry component has been FSC®-certified since 2024, thus guaranteeing the responsible, sustainable management of the operations.

<sup>7</sup> Tall forest, riparian forest, *cerradón* (open semi-deciduous forest), high savanna, *campo cerrado* (savanna formation), *campo sucio* (shrubby grassland), floodable savanna, and flooded savanna.

<sup>8</sup> As of 2024 year-end, all 14 social programs implemented by Paracel have benefited over 4,000 people directly and almost 18,000 individuals indirectly.

management, (i) water quality monitoring<sup>9</sup>, (j) surface water and ground water modeling<sup>10</sup>, (k) noise monitoring, and (l) obtaining and maintaining permits and authorizations.

Given the fact that financial and market conditions outside the Client's control have prevented the financial close of the Pulp Project, IDB Invest and Paracel agreed to prioritize the execution of some of its components, which are a priority for Paracel, but they will certainly become catalysts for the development of the department of Concepción and the north of Paraguay.

This updated transaction (the Project), which will make it possible to carry out some of the priority components of the Pulp Project, will focus on supporting Paracel to: i) build (a) supporting facilities on the mill site (staff cafeteria, ambulatory care facilities, health services area, firefighting equipment areas, fire brigade area, stormwater drainage systems, internal roads, and domestic wastewater treatment system), (b) the internal 23-kW TL which will supply power for the Construction phase of the future industrial site, (c) the expansion of the Villa Real substation to supply energy to the industrial site, (d) the 32.7-km 220-kW TL to connect the future substation in the industrial site to substation Villa Real, (e) a 220-kW substation in the mill, (f) the river port in Zapatero Cué, which will be used to receive equipment and supplies for the construction of the mill and to transport wood (when the eucalyptus plantations are available) and pulp (once the plant is built) to their final destinations, (g) the final works at camp C9, to accommodate about 2,350 workers<sup>11</sup>, and (h) the enhancement of the access roads between the forest areas and the mill (where the river port will be located).

The Project's ESDD process included: i) several visits to the site<sup>12</sup> starting in 2022; ii) online and in-person meetings with key representatives from Paracel, and its staff engaged in operations, environment, occupational health and safety, forestry, logistics, social affairs and human resources; iv) interviews with leaders and representatives from indigenous communities<sup>13</sup> and farmers groups<sup>14</sup> settled within the Pulp Project area of influence; v) meetings with government officials; vii) meetings with other local stakeholders; and viii) a review of the information in the back-to-office reports, produced after each monitoring visit performed by IDB Invest on the Pulp Project.

The ESDD process also included a review of the following documents: i) environmental and social impact assessment (ESIA) for the pulp mill and the river port (ESIA for the Mill)<sup>15</sup>; ii) the ESIA for the

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<sup>9</sup> Agrochemicals (glyphosate, fipronil, tebuconazole, sulfonamides, glufosinate, flumioxazin, haloxyfop and isoxaflutole) and concentrations of oxygen (O<sub>2</sub>), phosphorus (P), nitrogen (N), ammonia (NH<sub>4</sub>), aluminum (Al) and dissolved iron (Fe), nitrates, coliforms and Escherichia coli in surface water and groundwater.

<sup>10</sup> With the support of the Forest Studies and Research Institute from Brazil.

<sup>11</sup> The camp can currently accommodate 1,680 people and has the corresponding permits in place to operate.

<sup>12</sup> They included: i) the mill site (the riverfront and port area, the locations of future office buildings, the borrow and spoil waste areas, the conservation areas, and the surroundings); ii) the sites for the future workers' camps, including camp C9; iii) the linear structure (access roads, TL); and iv) several of the properties taken by the forestry component (Trementina, San Liberato, Gavillan, Hermosa, etc.).

<sup>13</sup> Indigenous communities of Redención, Vyá Renda, Takuarendyju, Takuarita, Jeguahaty, Cerro Akangué, Arroyo Ka'a, Piquete Cue and Ita Jeguaka, among others.

<sup>14</sup> Farmers' Association of Northern Producers, and San Rafael Farmers' Community, among others.

<sup>15</sup> ESIA; pulp mill, river port, transmission line and substation in Concepción, Paraguay; Poyry, July 2021.

forest plantations (ESIA for the Plantations)<sup>16</sup>; iii) the cumulative impact assessment<sup>17</sup>; iv) the environmental and social management plan (ESMP) for both components of the Pulp Project<sup>18</sup>; v) the preliminary environmental impact assessment for the transmission line; vi) the ESIA for the Villa Real substation; vii) the core environmental programs, approved as part of the corresponding environmental licensing; viii) the environmental and social (E&S) management and monitoring programs prepared for the Pulp Project; ix) the stakeholder engagement plan; x) the indigenous peoples plan; and xi) specifications for equipment delivery and the contracts entered with the Pulp Project's key suppliers and contractors.

In order to make sure the Project is committed to respecting and safeguarding human rights, bears no tolerance to retaliatory actions and is determined to provide and guarantee a safe environment for the affected parties to express their concerns with no fear of retaliation, the ESDD also included a review of the following Client's documents: i) human resources policy; ii) code of ethics; and iii) mechanism to receive and manage inquiries, grievances, complaints and suggestions.

Except for the sections detailed below, the environmental and social review summary (ESRS) completed in 2022 for the Pulp Project is still applicable for the current Project.

## **2. Environmental and Social Categorization, and Rationale**

As the works considered under this transaction are part of the Pulp Project<sup>19</sup>, the Project has been classified as of category A under IDB Invest's Environmental and Social Sustainability Policy, even though its impacts and risks<sup>20</sup> will be specific, of medium intensity and manageable through low-complexity measures that can be implemented within the scope of the Project.

Although the Project will not finance the construction of the mill or the investments associated with the forestry component of the Pulp Project, both the pulp mill and the plantations are considered associated facilities. In this sense, the Performance Standards (PSs) triggered by the Project are: (i) PS1: Assessment and Management of Environmental and Social Risks and Impacts; (ii) PS2: Labor and Working Conditions; (iii) PS3: Resource Efficiency and Pollution Prevention; iv) PS4: Community Health, Safety, and Security; v) PS5: Land Acquisition and Involuntary Resettlement; (vi) PS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources; vii) PS7: Indigenous Peoples; and viii) PS8: Cultural Heritage.

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<sup>16</sup> ESIA; eucalyptus plantation, Poyry, August and October 2021.

<sup>17</sup> Cumulative impact assessment; eucalyptus plantation, pulp mill, transmission line, substation and river port, Poyry, October 2021.

<sup>18</sup> E&S Management System; pulp mill, river port, transmission line and substation, and eucalyptus plantation, October 2021.

<sup>19</sup> According to IDB Invest's Environmental and Social Sustainability Policy, the transaction associated to the Pulp Project was classified as of category A.

<sup>20</sup> Some of them are: i) increased demand for public services; ii) possibly less safety in the neighboring communities; iii) increased community and occupational health and safety risks, including communicable diseases and gender-based violence and harassment; iv) road accidents derived from the transportation of wood and materials; v) generation of air emissions and effluents; vi) possible impacts on the quality of water in the Paraguay River; and vi) changes in the use of the land.

### 3. Environmental and Social Context

Paracel's mill will be set up in the department of Concepción, in a predominantly rural area located on the left bank of the Paraguay River. The earthworks (6 million m<sup>3</sup> moved) are completed for the platforms for the future mill, industrial water treatment system, biomass storage and handling areas, and associated facilities (temporary camps, offices, an entrance security gatehouse, etc.).

The 32.7-km 220-kV TL, running between substation Concepción of the National Electricity Administration (ANDE, in Spanish) and Paracel's substation in the industrial site, has not been built yet. According to the local regulations, the TL safety strip (exclusion strip) will be 6.5-m-wide (5 m on the conductor side and 1.5 m to the other side) and its establishment will not cause any physical or economic displacement of settlers, as it will be aligned with the right-of-way of the existing roads and will not cross any private property.

The river port of the pulp mill will include a terminal building located on the left bank of the Paraguay River and constructed as an elevated platform on a structure made up of an operational pier, an access bridge for vehicles and people, and a roofed structure in the pulp loading area. All structures will be built using reinforced concrete and will have a metallic roof. In order to guarantee safe loading and unloading, and docking and port logistics, the Project considers dredging the Paraguay River, for an estimated volume of 83,000 m<sup>3</sup> initially and further 380,000 m<sup>3</sup> later<sup>21</sup>.

The northeast of Paraguay, where Paracel's forestry component is located, has a reputation as a major producer of cannabis in South America. This region also endures the presence (though not strong) of the Paraguayan Army of the People<sup>22</sup> (EPP, in Spanish), a clandestine guerilla group that operates in the departments of Concepción, Amambay and San Pedro, and that is funded through extortion and kidnapping activities primarily targeting large landowners<sup>23</sup>. The Joint Task Force is a unit of members of the Army and the National Police, and agents of the National Antidrug Agency (SENAD, in Spanish) reporting to the Paraguayan Armed Forces which has been created to fight drug trafficking and the EPP guerilla, and is still operating in the area.

Paracel has entered into agreements with the SENAD, the Ministry of Interior, the National Police and the Internal Defense Operations Command (CODI, in Spanish) to protect the eucalyptus plantations and the natural habitats from encroachment by illicit crops. Paracel has not engaged with the EPP in any way to date.

### 4. Environmental Risks and Impacts and Proposed Mitigation and Compensation Measures

#### 4.1 Assessment and Management of Environmental and Social Risks and Impacts

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<sup>21</sup> About 327,000 m<sup>3</sup> of this volume would be sediment material, whereas the remainder would be rocky material.

<sup>22</sup> The EPP primarily pursues a comprehensive agrarian reform led by the farmers, and involving the expropriation of the "unproductive" land currently held by large landowners.

<sup>23</sup> A recent, notorious case involved the kidnapping of Vice-president Óscar Denis in September 2020 by the EPP; his whereabouts remain unknown.

#### 4.1.a Environmental and Social Management System

Paracel has in place the following documents: i) a revised, improved ESIA for the mill; ii) a separate, consolidated ESIA for the plantations; iii) a cumulative impact analysis for the Pulp Project; and iv) a consolidated set of ESMPs.

As part of the ESAP for the Pulp Project, Paracel updated its environmental, social, and health and safety manual to describe its environmental and social management system (ESMS) in detail, and to list its key components (checklists, inspection plans and key performance indicators).

Nevertheless, Paracel will prepare an ESMS (policies, plans, procedures) for the Project Operation phase, based on the existing environmental management plan (EMP) and will include all additional mitigation measures identified by other future risk and impact assessments.

#### 4.1.b Identification of Risks and Impacts

Some of the main E&S impacts and risks the Project may generate are: i) increased demand for public services; ii) possibly less safety in the neighboring communities; iii) increased community and occupational health and safety risks, including communicable diseases and gender-based violence and harassment; iv) road accidents derived from the transportation of wood and materials; v) generation of air emissions and effluents; vi) possible impacts on the quality of water in the Paraguay River; and vii) changes in the use of the land.

Even though they are considered to be of medium significance, localized in the immediate surroundings of the planned works, and manageable through widely known measures contained in the EMP, Paracel will: i) prepare an E&S risk matrix for all the Project components (associated facilities of the mill, river port, transmission lines, access roads and camps); ii) update it periodically; iii) prepare a hazard and operability (HAZOP) study; and iv) carry out a quantitative risk assessment.

#### 4.1.c Organizational Capacity and Competency

In order to manage the E&S components of the Pulp Project, Paracel has: i) a Forestry Department, made up of different management areas, namely (a) forestry, (b) research and development, (c) harvest and operational development, (d) land planning and management, and (e) forestry development, which are supported by supervisory roles in certification, control and costs, and occupational health and safety; ii) an Environmental Area, with an executive manager, three environmental development technical experts, four conservation and carbon technical experts, one environmental (physical environment) monitoring specialist and three professionals in charge of obtaining licenses and permits; iii) a Social and Communication Department, with one manager, five field officers, one social infrastructure coordinator, one social infrastructure specialist, one social coordinator, one social impact monitoring specialist, and three professionals who make up the communication team (two social communication analysts, one graphic design analyst); iv) a Corporate Security Department, supported by a forestry corporate security coordination unit, and three asset and corporate security supervisors; and v) an occupational health and safety

coordination unit, led by a human talent manager and supported by several technical experts<sup>24</sup> who work on the industrial component (two professionals) and the forestry component (four technical experts and one administrative assistants).

#### 4.1.d Emergency Preparedness and Response

According to the requirements of the ESAP for the Pulp Project, Paracel has prepared an emergency preparedness and response plan for the forestry component (i.e., the plantations), including specific procedures to prevent, control and timely respond to forest fires.

#### 4.1.e Stakeholder Engagement

In line with the content of the ESAP for the Pulp Project, Paracel has updated the Project's stakeholder engagement plan (its community relations and stakeholder engagement plan) to include stakeholders that are specific for the transmission line and the access roads.

#### 4.1.f Community Grievance Mechanism

Based on the requirements in the ESAP for the Pulp Project, Paracel updated its community grievance mechanism (its grievance, suggestion and inquiry management program) to be more accessible for people living in remote areas, who cannot read or write, or who are in a vulnerable or marginal situation (like indigenous communities). The mechanism also includes procedures to guarantee the correct management of gender-based violence and harassment reports, including, to this end, arrangements to ensure anonymity and measures to protect potential victims of such violations.

#### 4.1.g Ongoing Reporting to Affected Communities

In addition to the communication plan included in the ESMS for the Pulp Project, in 2023 Paracel created a monitoring committee with representatives from the civil society; municipal, departmental and national governments; rural and indigenous communities; multilateral organizations; and the academia, among others, in order to develop a participatory monitoring system with regional and national stakeholder groups.

### 4.2 Labor and Working Conditions

#### 4.2.a Working Conditions and Terms of Employment

Considering that (a) the forestry component is currently employing 940 workers, (b) at peak demand the implementation of the Project will require hiring about 1,700 additional people, and (c) the construction of the mill (outside the scope of this Project, but part of the Pulp Project) will need about 4,000 workers, Paracel, in compliance with the requirements in the ESAP for the Pulp Project, has updated the workers' accommodation plan with procedures to carry out periodic inspections of the workers' accommodation and address any detected noncompliances.

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<sup>24</sup> The amount of technical experts vary depending on the Project needs.

Additionally, Paracel will continue implementing its monitoring and awareness-raising program for contractors and workers to guarantee compliance with: i) the mandatory requirements of the applicable E&S regulations; and ii) the required workers' training on (a) key policies and procedures, (b) human resources procedures (for instance, code of ethics and conduct, workers' grievance mechanism) and (c) protocols to prevent and address gender-based violence (GbV) cases.

#### 4.2.b Grievance Mechanism

In line with the requirements in the ESAP for the Pulp Project, Paracel has developed and implemented an independent workers' grievance mechanism, which is applicable to all employees, contractors and subcontractors, and includes specific procedures for GbV reports and provisions for vulnerable people.

#### 4.2.c Workers Engaged by Third Parties

As the construction works under the Project will require hiring external workers, Paracel will prepare a contractor management and assurance plan which will describe the controls to be secured that guarantee the E&S and safety risks and impacts are properly managed from the mobilization of the contractors to the work sites up to the completion of the works and demobilization of staff.

### **4.3 Resource Efficiency and Pollution Prevention**

#### 4.3.a Greenhouse Gases

The construction of the pulp mill will account for 215,000 tCO<sub>2</sub>eq of greenhouse gases (GHGs) emissions a year. This amount will be gradually reduced as the forestry component advances thanks to the capture of CO<sub>2</sub> in the new eucalyptus plantations. In this sense, net removals (i.e., a carbon sink) during the first six years of growth of the new plantation are expected to reach about 56.58 million tCO<sub>2</sub>eq.

However, Paracel will: i) report annually on its GHG emissions (scopes 1 and 2) for the year ending; ii) estimate the GHG emissions for the new year; and iii) devise an efficiency plan to include measures that help mitigate GHG emissions from fossil fuel.

#### 4.3.b Pollution Prevention

Paracel has been constantly monitoring the quality of surface water and groundwater in the mill site and at the plantations during the rainy and dry seasons. In this sense, it has gathered quantitative data about the quality of the water of the Paraguay River, both upstream and downstream the mill site, for a total of 59 parameters (5 in situ, 22 physicochemical, 1 bacteriological, 16 metals and 15 pesticides, including glyphosate). Likewise, for the forestry component, it has been collecting quantitative data about the quality of surface water and groundwater in the departments of Concepción and Amambay for 26 physicochemical, bacteriological, metals and pesticides parameters in streams, rivers and wells located in the area of influence of the plantations.



Paracel has carried out effluent dispersion and self-purification studies using the CORMIX<sup>25</sup> and WASP<sup>26</sup> models, respectively, to analyze the impact of the industrial treated effluents on the Paraguay River. The CORMIX model, which analyzed the variation in the concentration of several water parameters<sup>27</sup> considering ten discharge scenarios for different river flow rates, showed that the discharged effluents would be fully dispersed less than 50 m away from the discharge point. The WASP model, used to assess the impact<sup>28</sup> of discharging pollutants (treated effluents) from the pulp mill on the Paraguay River self-purification capacity, revealed insignificant impacts across all water quality parameters analyzed, mainly because the high flow rates of the Paraguay River (even at its historical minimum) guarantee a satisfactory pollutant dilution capacity.

Nonetheless, Paracel: i) will continue controlling the groundwater level at the monitoring stations intended for the forestry component to (a) detect the effects the eucalyptus plantations may have on water, (b) address all impacts identified in the surrounding native vegetation, including the wetland, and (c) estimate the availability of surface water; ii) will continue sharing the results of the monitoring activities with the multi-stakeholder roundtable and communicating the management measures triggered in case of inadequate concentrations; and iii) has updated the water quality monitoring program to include an analysis of phosphates (apart from the total phosphorus), chlorophyll  $\alpha$  (as an indicator of phytoplankton density), zooplankton, and benthic invertebrates.

Paracel has developed two air quality sampling campaigns to set a baseline with, among others, the following parameters: total suspended particles (TSPs), particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>), nitrogen dioxide (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), ozone (O<sub>3</sub>), hydrogen sulfide (H<sub>2</sub>S), carbon monoxide (CO) and volatile organic compounds (VOCs)<sup>29</sup>.

Additionally, as part of the environmental licensing process, Paracel used the AERMOD<sup>30</sup> modeling system to determine the air conditions at 15 key points of the Pulp Project, which include sparsely populated rural settlements, critical receptors (as schools in Piquete Cue, Callejón San Ramón and Laguna Plato), and the cities of Loreto and Concepción. The results indicate an insignificant impact on the air quality at the sensitive receptors.

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<sup>25</sup> The Cornell Mixing Zone Expert System (CORMIX) is a mixing zone modeling and decision-support software system backed by the United States Environmental Protection Agency (EPA) for assessing the environmental impact of regulated mixing zones resulting from continuous point-source discharges.

<sup>26</sup> The Water Quality Analysis Simulation Program (WASP), developed by the US EPA, is one of the water quality models most widely used across the world because it can integrate several types of pollutants, for a variety of water quality parameters in 1, 2 and 3 dimensions for lentic and lotic environments.

<sup>27</sup> The parameters include: i) biochemical oxygen demand (BOD); ii) color, iii) flow, iv) total nitrogen; v) total phosphorus; vi) adsorbable organic halides (chlorine, bromine and iodine); and (vii) temperature.

<sup>28</sup> The analyzed variables included: i) flow (historical maximum, minimum and critical levels); ii) consumption demand; iii) water quality; iv) climate (air temperature, evaporation, relative humidity and solar radiation); v) hydraulic parameters; vi) effluent biochemical parameters (flow rate, pH, temperature, BOD, chemical oxygen demand [COD], suspended solids, color, total phosphorus, total nitrogen, ammonia and adsorbable organic halides); and vii) river morphology.

<sup>29</sup> A campaign was carried out during the dry season (September-October) and another one, during the rainy season (February-March). The three sampling points were: i) the city of Concepción (SENACSA / Departmental Committee of Animal Health); ii) the center of the city of Loreto; and iii) National Police Station No. 18, Colonia Roberto L. Petit. These points are relatively far (i.e., between 15 km and 20 km) away from the mill site, have specific local conditions and, therefore, cannot be fully representative of the air quality in the future mill site.

<sup>30</sup> AERMOD is an atmospheric dispersion modeling system developed by AERMIC, the American Meteorological Society (AMS) and the United States Environmental Protection Agency (EPA).

Notwithstanding the above, Paracel will: i) update the atmospheric dispersion model, considering the emissions suggested by the manufacturers of the biomass boilers, recovery boilers and lime kilns at the pulp mill for the key atmospheric parameters; and ii) review the estimated emissions of SO<sub>2</sub> and other pollutants based on the final fuel selection for the lime kilns (for example, regasification).

The initial study of the acoustic baseline around the pulp mill shows predominantly low noise levels both during the daytime (30-50 dBA) and at night time (35-50 dBA). However, Paracel: i) has updated this baseline and included six sampling points altogether, near the sawmill, close to the sensitive receptors (for example, households in Pyrendá during the construction and in Piquete Cue during the operations) and in households near the main forest access roads; ii) will review the noise propagation model using the new baseline; and iii) will suggest noise mitigation measures, if necessary.

In order to control the impact of leaf-cutting ants (*Atta spp.* and *Acromyrmex spp.*) on the eucalyptus plantations, Paracel uses sulfluramid-based granular baits<sup>31</sup> or insecticides based on fipronil<sup>32</sup>, both classified as moderately hazardous (class II) substances by the World Health Organization (WHO)<sup>33</sup>. To make sure these products are applied following international best practices and to reduce their impact on the environment, the Company assesses their E&S risks before they are used.

Given that these compounds are applied locally, and a 100 m buffer zone is kept from all human settlements and water courses, its use does not generate significant risks on bees or other beneficial insects. Nevertheless, Paracel: i) has in place an integrated pest management plan for the forestry component, which seeks to reduce the impact of pests in a sustainable manner; ii) constantly updates their forest management procedures to make sure no agrochemicals prohibited by the WHO, the Forest Stewardship Council (FSC)<sup>34</sup> and the National Plant and Seed Quality and Health Service (SENAVE)<sup>35</sup> are used; iii) reports periodically on the chemicals used in the forestry component (fipronil, sulfluramid, isoxaflutole<sup>36</sup>, glyphosate<sup>37</sup>, among others); and iv) continuously supervises these pesticides are only used when essential and are applied following the best international practices.

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<sup>31</sup> Sulfluramid is manufactured with a perfluorooctyl fluoride (PFOS) derivative, a persistent organic pollutant listed under Annex B (i.e., on the restricted-use list) of the Stockholm Convention. Under the Stockholm Convention on Persistent Organic Pollutants, the limited information provided about the workers exposure to PFOS when manufacturing sulfluramid-based baits indicates low-risk exposure for the workers' health.

<sup>32</sup> Fipronil (traded as Formirex®, containing 0.01% of the compound) is an active neonicotinoid pesticide banned by the European Union for use on herbaceous crops that attract bees, as it is potentially lethal to them.

<sup>33</sup> <https://iris.who.int/server/api/core/bitstreams/36c193cd-2362-46d1-be00-fef570d80037/content>

<sup>34</sup> [https://fsc.org/sites/default/files/2019-07/FSC-POL-30-001a%20V3-0%20ES%20Listas%20FSC%20de%20Pesticidas%20Altamente%20Peligrosos\\_1.pdf](https://fsc.org/sites/default/files/2019-07/FSC-POL-30-001a%20V3-0%20ES%20Listas%20FSC%20de%20Pesticidas%20Altamente%20Peligrosos_1.pdf)

<sup>35</sup> SENAVE. Approved chemicals ([https://secure.senave.gov.py/registros/servlet/com.consultaregistros2.prod\\_agro2](https://secure.senave.gov.py/registros/servlet/com.consultaregistros2.prod_agro2))

<sup>36</sup> Isoxaflutole is a systemic pre-emergence herbicide that is used to control a wide range of broadleaf and grass weed, and that primarily acts through uptake by roots or shoots.

<sup>37</sup> Glyphosate (the active ingredient in Roundup®) is the most widely used broad-spectrum herbicide in the world to eliminate weeds and plants by blocking an enzyme that is essential for plant growth.

## 4.4 Community Health, Safety and Security

### 4.4.a Community Health, Safety and Security

A major risk for the local communities (Concepción and its surroundings) is the possible impact generated by the inflow of workers during the Project construction and operation in terms of cultural behavior (for migrant workers) and gender-based violence (due to the large number of male workers to be hired).

To mitigate these possible impacts, Paracel has adopted a migrant workers inflow management plan based on the results of the potential impact assessment of the workers' accommodation in the local communities (in other words, a workers' accommodation impact matrix) and has updated its code of conduct to: i) clearly establish zero tolerance for gender-based violence; ii) define the expected behavior on the works and the Project area of influence; iii) prohibit (a) sexual harassment at the workplace, and (b) all forms of sexual exploitation or abuse in local communities; iv) set the rules of engagement with the local communities; and v) require campaigns to communicate these possible risks at the workplace and in the affected communities. In this sense, Paracel has adopted certain management programs to avoid these impacts: i) community health and safety; ii) road safety; iii) hazardous materials management; and iv) migrant workers inflow management.

Paracel has also contacted the United Nations Children's Fund (UNICEF) and the United Nations Population Fund (UNFPA) to generate synergies that enable the deployment of components aimed at children and women in locations near the Project area of influence. They are currently reviewing technical and financial proposals.

Since 2024, Paracel has also been working on joint actions with the Ministry of Childhood and Adolescence to prevent violence among children and adolescents in the departments of Concepción and Amambay. Likewise, as part of its community health and safety program, together with the Ministry of Public Health and Social Welfare, and the Paraguayan Red Cross, it has supported government initiatives like the National HIV/AIDS<sup>38</sup> and STDs<sup>39</sup> Control Program (PRONASIDA, in Spanish), the Expanded Program on Immunization (PAI, in Spanish), and the Comprehensive Food and Nutrition Program (PANI, in Spanish). In this regard, the protocol Support Pathway for Cases of Violence against Women (*Ruta de Auxilio para Casos de Violencia contra la Mujer*) has been launched this year; it was developed by a group of women from the department of Concepción, mainly the municipalities of Concepción, Paso Barreto, Sargento José Félix López and Paso Horqueta.

However, Paracel will continue implementing and will develop: i) a community health and safety program (Concepción and surroundings); and ii) a safe transportation management plan, which will include (a) a river transportation management program that will consider the intergovernmental agreements currently in effect (for example, the Intergovernmental Committee of the Paraguay-Paraná Waterway), (b) other considerations for road traffic, and (c) additional contingency road safety measures.

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<sup>38</sup> The Human Immunodeficiency Virus (HIV) is a virus attacking the immune system, specifically the cells helping to fight off infections. The Acquired Immunodeficiency Syndrome (AIDS) is the most advanced stage of the HIV infection.

<sup>39</sup> Sexually transmitted diseases.

#### 4.4.b Ecosystem Services

The most important ecosystem services for the communities in the Project area of influence are surface water<sup>40</sup>, used for non-industrial purposes (toilets, beach), fishing (sale and own consumption) and navigation; and to a lesser extent, the provision of fibers, especially of caranday palm (*Copernicia alba*) for artisanal weaving, and of wood, fruit, honey and herbs used for food, medicine, construction and, in some cases, fuel. Therefore, using internationally accepted methodologies, Paracel will improve the characterization of those ecosystem services to include: i) the possible impacts that the construction and operation of the port will have on the aquatic services (recreation, fishing and navigation); and ii) measures to handle the identified impacts.

#### 4.4.c Security Personnel

Access to the Project site (the industrial platform, camps and river port site) is and will continue under the control of unarmed guards. Even though Paracel has a corporate security manual<sup>41</sup>, as well as rules of engagement with the community and procedures to investigate the security personnel for human rights abuses committed in the past and records of inappropriate use of force, the Company will partner with a specialized institution for GbV and sexual violence prevention and awareness-raising through internal and external training programs, based on (a) a diagnostic assessment completed in consultation with the communities near the transportation routes (including children, young women and sexual workers) and areas with high concentration of female workers, and (b) a map of the available social and health services.

### 4.5 Land Acquisition and Involuntary Resettlement

All the areas required for the Project have been acquired or released (easements for the TLs) through market transactions that have not involved physical or economic displacement.

Likewise, the 25 properties used for forestry development and the Zapatero Cué farm where the mill will be located, have been acquired (24 of them) or leased (the remaining 1) through market transactions that have not involved physical displacement. Nonetheless, in compliance with the provisions in the guidelines for managing worker displacement, Paracel will carry out an analysis to determine whether the change in ownership has caused any economic displacement among the former workers in those properties.

Should Paracel identify any form of economic displacement or should it decide to increase the Pulp Project forest footprint, or build new access roads or TLs in the future, it shall: i) prepare an easement and land acquisition report which includes the properties, easements and other associated facilities, and which, among other things, identifies any form of physical or economic displacement; and ii) prepare a livelihood restoration plan if physical or economic displacement is identified.

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<sup>40</sup> Most drinking water systems are sourced with groundwater. Most of the communities that still have no access to drinking water systems are supplied from deep wells, springs, groundwater and streams.

<sup>41</sup> With topics related to: i) private security; ii) video surveillance systems; iii) perimeter security; iv) intruder detection systems; v) access control security; vi) security lighting; vii) aerial surveillance systems; viii) road safety; and ix) security system audits.

#### 4.6 Biodiversity Conservation and Natural Habitats

In order to preserve or restore the biological corridors, and preserve environmental or ecological sensitivity areas, Paracel is applying a micro-planning process on the plantation areas, using a tool called Environmental, Technical, Economic and Social Micro-planning (MATES, in Spanish).

The MATES methodology considers: i) an initial geospatial analysis, which provides a preliminary map with clearly distinguished areas to be used for forestry production and those that will be used for conservation purposes (map MATES V00); ii) the identification of the information points requiring field validation<sup>42</sup>; iii) a field visit to validate map MATES V00; iv) a team meeting to decide on the necessary changes; v) the preparation of the corrected map (MATES V01), with the information gathered during the visits and with drones (for the places that are physically impossible or very difficult to reach on foot); vi) the validation and approval of map MATES V01; viii) the preparation of map MATES V02; and ix) the validation and approval of map MATES V02.

Once the conservation areas are identified, Paracel manages them with a strategic plan, which is based on six thematic pillars: i) sustainable production, which seeks to ease the pressure on the conservation areas; ii) research and monitoring; iii) education and training (with firefighters, health and safety staff, tourist guides, beekeepers, etc.); iv) ecotourism, trekking, hospitality; v) conservation area management (ecosystem restoration and rehabilitation); and vi) interinstitutional relations, including strategic alliances.

Paracel has contacted the World Wildlife Fund for Conservation (WWF) to generate synergies for sustainably managing the almost 88,000 hectares the Project aims for conservation.

It is also worth highlighting that, in line with the requirements in the ESAP for the Pulp Project, Paracel has completed to the satisfaction of IDB Invest: i) a critical habitat analysis focused on the reference species identified as potentially leading to this kind of sensitive area; and ii) the inclusion of all locations identified as critical habitats in the areas to be used for conservation. Also, once the MATES process is completed in all properties designated for forestry production, the Company will: i) correct its biodiversity action plan (BAP) and update it periodically; ii) prepare a biodiversity monitoring and evaluation plan and update it every time the BAP is updated; and iii) prepare an invasive alien species management plan.

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<sup>42</sup> Especially flooded savannas (wetland) and floodable savannas (normally associated with floodplains or low lands) that cannot be easily delineated with satellite images and that are identified through visual indicators (vegetation and soil), supported by the knowledge from local residents.

#### 4.7 Indigenous Peoples

The indigenous community settled in Redención is only one within the area of influence of the works planned for the Project, about 13 km from the mill site and with 105 families from different origins (mainly Maskoy and Paĩ Tavyterã). The other nine indigenous communities<sup>43</sup> are further away, within the direct area of influence of the forestry component of the Pulp Project.

Paracel has engaged in a consultation and free, prior and informed consent process with these 10 communities, based on a social baseline study and an assessment of the negative impacts the Pulp Project may cause, and has obtained the consent from all of them. Moreover, it has taken measures to mitigate the negative impacts and to enhance the positive impacts with an indigenous people plan.

#### 4.8 Cultural Heritage

In general terms, the Project is not expected to cause any impact on the cultural heritage. Nonetheless, Paracel has adopted a cultural heritage management program that includes chance finds guidelines to be triggered should the cultural heritage be affected.

### 5. Local Access of Project Documentation

The ESIA is locally available at Paracel's offices in Asunción, on the company's website ([www.paracel.com.py](http://www.paracel.com.py)), and the licensing agency (MADES) website (<http://www.mades.gov.py/expediente/fabrica-de-celulosa-y-puerto/>).

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<sup>43</sup> These communities are: i) Takuarita, located 1 km from farm Hermosa, with 42 Mbya Guaraní families; ii) Vy'a Renda, located almost 5 km from farm Mandiyú, with 43 Mbya Guaraní families; iii) Takuarendyju, located 5 km from farm Mandiyú, with 7 Paĩ Tavyterã families; iv) Jeguahaty, located 14 km from farm La Blanca, with 43 Paĩ Tavyterã families; v) Sati - Chiru Poty, located 10 km from farm Trementina, with 35 Paĩ Tavyterã families; vi) Guyra Ñe'engatu Amba, located 13 km from farm Santa Teresa, with 24 Paĩ Tavyterã families; vii) Mberyvo Jaguarmi, located 13 km from farm Santa Teresa, with 17 Paĩ Tavyterã families; viii) Yvyty Rovi Cerro Po'I, located 7 km from farm Santa Teresa, with 15 Paĩ Tavyterã families; and ix) Apyka Jegua, located 17 km from farm Zapallo, with 18 Paĩ Tavyterã families.