

## Environmental and Social Review Summary (ESRS) Amadeus Dissolving Wood Pulp Project – Brazil

Original language of the document: English

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

LD Celulose SA ("LDC", or "the Client") is a joint venture company composed by Lenzing (Austria) and Duratex (Brazil). LDC will build and operate a total chlorine free ("TCF") dissolving wood pulp ("DWP") mill (the "Project", or the "Amadeus Project") with a capacity of 500,000 tons per annum (TPA).

The DWP mill will be located in the municipality of Indianópolis, state of Minas Gerais, Brazil. The Project components include: i) pulp production (wood preparation, fiber processing, drying and baling; ii) chemical recovery (evaporation, recovery boiler, causticizing, lime kiln); iii) utilities (biomass boiler, water treatment plant, boiler feed water treatment plant and effluent treatment plant); iv) cogeneration unit with a nominal capacity of 144 MW; v) area for unloading, handling and storage of sodium hydroxide, hydrogen peroxide, sulfuric acid and magnesium sulphate; vi) dedicated plants for the production of oxygen and ozone; vii) natural gas storage tanks; viii) fuel oil storage tanks for boilers start-up; ix) area for waste treatment; x) spur for connecting to the existing rail line crossing inside the Nova Monte Carmelo ("NMC") Forest Unit; xi) administrative areas (first aid post, laboratory, and restaurant); xii) 5-km access road from state highway LMG-748 to the mill site; xiii) 23-km effluent emissary and water intake from the Araguari river; xiv) 22-km 138kV transmission line connecting LDC's cogeneration unit to substation; and xv) two substations, one located close to the water intake site and another at the plant site. The Project will also include the following associated facilities: i) a 4.2-km transmission line and substation to connect LDC's transmission line to the transmission line of the electric power distribution company (*Companhia Energética de Minas Gerais S.A – "CEMIG"*), located on the opposite bank of the Araguari river; and ii) workers' accommodation camps with capacity for up to 600 workers, close to Araguari.

Amadeus will require 2.9 million cubic meters of wood per year to produce some 500,000 tons of DWP, sourced from 44,000 ha of existing eucalyptus plantations from Duratex's NMC Forest Unit comprised of Fazendas NMC, Furnas and Brejão; and 26,000 ha of additional eucalyptus plantations in leased lands. The site is expected to be released for construction on June 2020 and the DWP mill is expected to start operating in March 2022.

The production of the dissolving pulp will be carried out through the kraft process, similar to the papermaking obtained from processing the common pulp. However, the DWP process requires a higher content of cellulose in its composition (>92%) and this means a longer cooking process with an associated lower yield when compared to that of the common pulp. Because it is a high-purity pulp and has lower level of contaminants, it is used for four major product groups: viscose (cut rayon, industrial and textile filaments, cellophanes, etc.), acetates (cigarettes filter, acetate filaments and films), ethers (binders, detergents, glues, foods, pharmaceuticals) and nitrates (explosives, varnishes and celluloid). The DWP pulp has this name because it is dissolved in a caustic solution to form the viscose and then extruded into a baffle to form rayon filaments.

The Environmental and Social Due Diligence (“ESDD”), performed by IDB Invest with the help of the Independent Environmental and Social (“E&S”) consultant firm Arcadis (“IESC”), included a visit<sup>1</sup> to Duratex NMC Forest Unit, Amadeus Project site, water intake and discharge point in the Araguari river, and municipalities in the Project’s area of influence. The visit also included presentations by and interviews with Duratex and LDC operational, environmental, health and safety (EHS), forestry, logistics, social and human resources personnel, neighbors adjacent to forest plantations, river users, mayors of the municipalities of Araguari, Indianopolis and Estrela do Sul, environmental authorities in Uberlandia (SUPRAM, IGAM<sup>2</sup>) and Belo Horizonte (SUPPRI<sup>2</sup>), and the watershed committee (*Comite de Bacia Hidrografica*-CBH) of the Araguari river. The appraisal also comprised the review of: i) the Environmental and Social Impact Assessment (“ESIA”) and E&S Management Programs and Management Plans (“ESMP”, *Programas Básicos Ambientais* or “PBA”, and *Plano de Controle Ambiental* or “PCA”) approved as part of the permitting process; ii) other environmental and social management and monitoring programs approved by the state of Minas Gerais environmental authorities; iii) the ESDD report by the IESC; and iv) the equipment delivery specifications and contracts with suppliers. As part of the appraisal, the IESC also included a site visit to Lenzing’s sulphite DWP and viscose production plant in Austria and sulphite DWP production plant in the Czech Republic, respectively, to assess the company’s management systems with regards to operations and maintenance, EHS and continuous improvement.

## 2. Environmental and Social Categorization and Rationale

The Project has been classified as a Category A Project, pursuant to the IDB Invest Environmental and Social Sustainability Policy, because it may cause significant adverse E&S impacts that may be diverse and irreversible<sup>3</sup>. During its peak construction period, the Project will directly employ nearly 8,000 workers with resulting impacts on public services, security of nearby municipalities, and the increase of occupational health and safety risks. During operations, the mill will require large quantities of inputs (i.e. wood, chemicals) with the associated risks of vehicular accidents from log hauling and hazardous materials transportation. Wood will be secured from 44,000 ha of existing plantations but the Project will require the acquisition (through lease) of additional 26,000 ha. The mill will also generate large amount of air and effluent emissions, with the potential to impact the air and water quality in the Project’s area of influence.

The Project has triggered the following Performance Standards (“PS”): i) PS-1: Assessment and Management of Environmental and Social Risks and Impacts; ii) PS-2: Labor and Working Conditions; iii) PS-3: Resource Efficiency and Pollution Prevention; iv) PS-4: Community Health, Safety and Security; v) PS-5 Land Acquisition and Involuntary Resettlement; and vi) PS-6: Biodiversity Conservation and Sustainable Management of Living Natural Resources.

## 3. Environmental and Social Context

The Municipalities in the Amadeus Project’s area of influence: Indianopolis, Estrela do Sul, Araguari and Uberlandia. The mill site will be located in Indianópolis, and the water intake and treated effluent disposal pipelines will be located in Araguari, near the federal BR-365 highway and about 35 km from the city of

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<sup>1</sup> From October 07 to 11, 2019. A second site visit was conducted by the IFC from February 18 to 19, 2020, with IDB Invest participating remotely, which included meetings with the *Consorcio Capim Branco Energia* (CCBE – operators of the hydroelectric power plant located downstream from LDC effluent/water intake), *Instituto Estadual de Florestas* (IEF), and follow-up meetings with the CBH Araguari, IGAM and SUPPRI.

<sup>2</sup> SUPRAM is the Regional Environmental Superintendency, SUPPRI is the Superintendency for Priority Projects; both are divisions of the State Secretariat for Environment and Sustainable Development (SEMAD). IGAM is the State Institute for Water Management, an executive agency linked to the SEMAD.

<sup>3</sup> The key construction and operation risks are identified in section 4.1.c.i of this document.

Uberlândia. The mill (industrial plant) will be built within Duratex's Nova Monte Carmelo Forest Unit, in a selected 150-ha site currently occupied predominantly by large fields of eucalyptus plantations for commercial purposes, and from which approximately 72 ha will be occupied by industrial installations. The mill site is crossed by the Ferrovia Centro-Atlântica ("FCA") railway that connects to the Araguari Terminal, one of the largest cargo trans-shipment terminals of Latin America, currently being used to transport grains and fertilizers. The alignment of the Project's transmission line and water intake and effluent pipelines traverse a mosaic of mixed crop and cattle farming landscapes.

Whereas Uberlândia is the second most populous city in Minas Gerais (approximately 700,000 inhabitants), Araguari is a mid-sized city (approximately 120,000 inhabitants) and Indianópolis is a small rural town (approximately 7,000 inhabitants). A significant proportion (>40%) of the gross domestic product (GDP) of the municipalities in the Project's area of influence (Araguari, Indianópolis, Estrela do Sul) comes from the agribusiness sector in terms of eucalyptus forest plantations and cash crops (coffee, soybeans, and maize).

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

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

###### **4.1.a E&S Assessment and Management System**

The Project had its preliminary environmental license issued by SUPPRI on June 25, 2019 (LP nr. 007/2019). On September 24, 2019 the state environmental authority (State Environmental Council – "COPAM") issued the installation environmental license ("LI"), releasing the site for construction of the DWP mill (LI nr. 0016/2019). The ESMP for construction ("PCA") was approved as part of the permitting process, which includes other environmental and social management and monitoring programs ("PBA") for construction and operation. As the PBA and PCA are not operational documents, LDC will design and adopt an E&S Management System for construction and operations based on the PCA and additional mitigation measures identified by the addendum to the ESIA.

Once operating, the DWP mill will have modern computerized systems for process control and maintenance practices used to ensure process safety and minimize discharges and losses. In addition, air emissions and effluents will be monitored continuously -and monitoring data made available online to the regulator- to promptly address any exceedances. Lenzing has also been working in the harmonization of process safety and management of chemicals procedures across their facilities worldwide, through their corporate EHS management system, which will incorporate also the Amadeus project. The NMC Forest Unit will continue to be management under the existing procedures, which are compliant with the requirements of the PS1<sup>4</sup>.

###### **4.1.b Policy**

All Lenzing and Duratex operations are ISO 14001 and OHSAS 18001 certified and LDC will also seek EHS management system certification for the Amadeus project. Both Duratex<sup>5</sup> and Lenzing<sup>6</sup> have corporate code of conducts in line with the objectives of IFC Performance Standards. LDC will adopt Lenzing's Global Code of Conduct to be adapted to its operations.

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<sup>4</sup> Duratex (LDC's) forests are environmentally permitted, and certified under Forest Stewardship Council (FSC) ([www.fsc.org](http://www.fsc.org))

<sup>5</sup> <https://www.duratex.com.br/ir/corporate-governance/regulations-and-policies>

<sup>6</sup> <https://www.lenzing.com/lenzing-group/compliance/>

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

##### 4.1.c.1 Direct and indirect impacts and risks

Both Lenzing and Duratex have mapped the hazards and developed risk registers for all their existing operations as part of their EHS management systems. A similar system will be implemented by LDC in the Amadeus project.

The ESIA prepared by LDC aimed at complying with Brazilian environmental regulatory requirements for the construction and operation of the DWP mill and the water intake and effluent system but did not include all the project components such as the 22-km 138-kV transmission and the improvement of the access road.

LDC's 22-km 138-kV transmission line was not included in the ESIA because, according to the Brazilian legislation, transmission lines under 230-kV only require a vegetation suppression permit. Moreover, the transmission line will traverse an agricultural landscape and its trajectory has been designed to avoid the clearance of native vegetation, tree crops, and dwellings.

The 5-km access road from state highway LMG-748 to DWP mill site is an existing internal road across four agricultural farms that will be widened and paved. Despite the latter, LDC will prepare an addendum to address some deficiencies in the assessment of risks related to noise during construction and operations, including: i) updated noise baseline in line with good international industry practice (GIIP); ii) revised noise propagation model including fixed and mobile sources (i.e. truck traffic along the access road) at project fence and at sensitive receptors - both at Fazenda Quilombo (water intake/substation) and Fazenda Nova Monte Carmelo (pulp mill); and iii) mitigation measures if required. The noise baseline will include: i) the characterization of background noise levels at potential sensitive receptors; ii) statistically significant measurement times; and iii) measurements at sufficient distance from reflective surfaces.

As part of the licensing process, LDC has commissioned a cultural and archeological heritage assessment and management plan. The report –currently based on secondary data– includes the methodology for conducting field research on archeological remains in the project area of influence and has been presented to the Brazilian National Historic and Artistic Heritage Institute (“IPHAN”) for its consideration. As the report does not include procedures in the event of discoveries made during the construction process of the mill and ancillary facilities, LDC will develop a Chance Find Procedure for civil works and will communicate the plan to contractors.

Within the NMC Forest Unit supplying the proposed mill, Fazenda NMC is currently undergoing renewal of its environmental license -for which Duratex has submitted an updated ESIA- and a reporting of its environmental compliance to the environmental authority (SUPRAM). Fazenda Brejão has already obtained its license and Fazenda Furnas is currently applying for a new license. LDC will obtain the environmental licenses required for additional plantations.

##### 4.1.c.2 Cumulative impact analysis

A cumulative impact assessment (“CIA”) report for the Araguari river was conducted in 2020 at the request of IDB Invest and the IFC, as “water quality” had been already identified by LDC as a key valued ecosystem component (VEC) through a participatory diagnostic process. According to the CIA, the Araguari river meets the applicable national surface water quality standard (CONAMA 357/2005 Class 2 river) in the study area,

except for phosphorous - whose concentration at times surpasses the applicable standard during the rainy period.

The CIA concludes that the main contributors of nutrients in the study area currently are agricultural runoff and effluents discharge from a beverage bottling company (0.1 m<sup>3</sup>/s) located 10 km upstream LDC's planned effluent discharge point. As per the CIA, once operating, LDC will be largest source of effluents (0.6 m<sup>3</sup>/s) in the study area. The CIA recommends a series of actions to mitigate cumulative impacts on water quality that will be presented by LDC to the members of the CBH committee, a multi-stakeholder entity whose mission is to promote the participatory management of the water resources of the Araguari basin.

#### 4.1.c.3 Climate and weather induced risks

The CIA study included an analysis of the key climate and weather risks to the Project, focusing on the assessment of: i) change in rainfall patterns; ii) soil/relief susceptibility to increased erosion events; and iii) climatic patterns (e.g. change in temperature amplitude and seasonal averages). The CIA has drawn from various official data sources, especially an evaluation of potential impacts from global climate change on the Minas Gerais economy projected for a 2080 scenario, elaborated by the State Environmental Foundation ("FEAM")<sup>7</sup>, and consistent with the assessment guidelines of the IPCC (International Panel on Climate Change).

The CIA report concluded that, for the VEC "water", the following situations will likely occur: i) increase in total amount of yearly rainfall for the Araguari watershed, coupled with an increase in average temperatures and associated potential for evapotranspiration; and ii) an increase in occurrence of extreme events (e.g. droughts and floods). However, considering the uncertainties associated with the climate models and lack of availability of adequate hydrological data, the study concludes that for the next 20-30 years timespan the potential climate change induced effects to the watershed will not be significant.

#### 4.1.c.4 Analysis of alternatives

The Project's ESIA included an analysis of alternatives to take advantage of existing infrastructure and avoid impacts on sensitive biological or cultural areas. The alignment of the 22Km, 138Kv transmission line and its associated 23m wide easement corridor have maximized presence of open areas or agricultural landscapes (pastures and cropland), minimizing interference with areas of permanent protection. Accessibility, logistics, distance from critical receptors, soil drainage, topography, wind direction and atmospheric dispersion, availability of manpower, supply of process water, as well as proximity to a forest supply base were all taken into account in mill site selection, from a total of 14 possible options.

The project's water intake/effluent pipelines will take advantage of the right-of-way of existing roads. The analysis of alternatives for siting of the effluent discharge pipeline considered a detailed evaluation of five alternatives (three of which involving subaquatic pipeline and diffusers). Based on the effluent dispersion and depuration studies contained in the ESIA, the preferred option was siting the effluent discharge point at 16 Km upstream from Uberlandia's Department of Water and Sanitation ("DMAE") utility water intake at the Capim Branco hydropower dam. This alternative is included in the project's environmental installation license. Enhanced dispersion and depuration studies using preliminary manufacturer guarantee

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<sup>7</sup> "Avaliação de Impactos de Mudanças Climáticas sobre a Economia Mineira", Fundação Estadual do Meio Ambiente de Minas Gerais (2011).

data for the effluent treatment plant do not show potential impact on water quality of this stretch of the Araguari river.

All of LDC's DWP production will be transported by existing railway connections to major ports of *Porto do Espirito Santo* or *Porto de Santos*.

#### 4.1.d Management Programs

The Project will adopt Best Available Technologies ("BAT") and Best Environmental Management Practices ("BPEM"), aiming at reducing air emissions, liquid effluents, noise and solid waste generated by the industrial processes. The new plant will be equipped with the latest generation of equipment to be highly efficient. The ESIA sets forth the required framework of environmental management plans ("PBA") for construction of the Project. These include the following programs: i) Environmental Construction ("PCA"); ii) Solid Waste Management ("PGRS"); iii) Industrial Liquid Effluent Monitoring; iv) Surface Water Quality Monitoring; v) Groundwater Quality Monitoring; vi) Atmospheric Emission Monitoring; vii) Air Quality Monitoring; viii) Noise Monitoring; ix) Flora Monitoring; x) Fauna Monitoring; xi) Aquatic Fauna Monitoring; xii) Social Communication ("PCS"); xiii) Environmental Education ("PEA"); xiv) Environmental Compensation; and (xv) Operation Environmental Management System.

#### 4.1.e Organizational Capacity and Competency

LDC has selected six first-class manufacturers for the supply of the equipment (woodyard, cooking, bleaching/evaporation/pulp drying/white liquor, boilers, water/wastewater, power). Equipment suppliers are responsible for the detailed design, procurement of materials and construction under Engineering, Procurement and Construction ("EPC") contracts. Construction of linear infrastructure will be executed by several contractors under Engineering, Procurement, Construction and Management (EPCM) contracts. Lenzing and Duratex will act as Owner's Engineer and Management and will be responsible to supervise the construction and the Balance of Plant ("BOP") with the support of an engineering company.

LDC will establish an adequate E&S team to implement all the E&S processes required during construction and operation (i.e. environmental and social programs, plans and procedures). As the EHS team still needs to be fully assembled, LDC will present an organizational structure that defines roles, responsibilities and authority to implement the ESMS.

LDC has appointed an Environmental Coordinator who has been responsible for the licensing process, and an Occupational Health & Safety ("OHS") Coordinator who is currently responsible to coordinate and supervise a small number of contractors present on site for earthworks.

During construction, LDC will also retain the services of an Environmental and Health & Safety ("EHS") Management Company to supervise the contractors' performance inside and outside (i.e. water pipeline, transmission line, road access, railway spur/patio) the mill fence. As part of the EHS team LDC will also appoint a Social Senior Expert in accordance to the requirements of the position to lead a team and coordinate overall social affairs and plans related to all project components during construction and operations (e.g. socio-economic baseline, stakeholder engagement plan, grievance mechanism, land acquisition procedure, influx management, local hiring strategy) to cover the mill and the plantations.

#### 4.1.f Emergency Preparedness and Response

Lenzing's engineering team has conducted a hazard and operability study ("HAZOP") for the DWP mill based on the project's basic engineering and communicated equipment specifications to suppliers. The HAZOP study will be updated once the detailed engineering studies are available and the company will implement the recommendations. In addition, the PCA includes a preliminary hazard analysis ("PHA") to identify the potential hazardous events that may lead to an accident. No catastrophic or critical hazards were identified. Scenarios simulated for four hazards involving explosions showed that the radius of the vulnerable areas are all within the boundary of the industrial plant. Once the detailed engineering has been completed, LDC will repeat the HAZOP study and conduct a Quantitative Risk Assessment (QRA) to confirm no negative impact to people or the environment will take place under worst case scenarios. LDC will submit these studies to the IESC for review as part of their scope of work.

LDC has drafted an emergency plan that identifies the most significant emergency scenarios (e.g. explosion and leakages in the recovery boiler, leakages in the ozone plant) and response procedures. LDC will finalize the plan before start-up and will regularly update it. The IESC will review the emergency response plan during project supervision as part of its scope of work. According to the plan, the OHS Coordinator will be responsible of the emergency plan and emergency brigades will receive 8-hour refresher training twice per year. LDC will adopt Lenzing's policy of having at least ten trained first responders per 100 employees.

Fires are the most common emergency in eucalyptus plantations. The NMC Forest Unit has developed a fire prevention and suppression plan (detailed further on in this document).

#### **4.1.g Monitoring and Review**

Lenzing has implemented a corporate management system that includes the reporting and documentation of all relevant environmental and safety events (accidents, near-accidents, observations) from all facilities into an on-line shared platform ("SHEARS"). Facilities are regularly audited by Lenzing's internal audit team and by external auditors, and a management review is held once a year by top management. Lenzing will incorporate the Amadeus project into its auditing and management review program.

The PCA describes the environmental monitoring programs required as part of the permitting process. LDC will compile these programs into an Environmental Monitoring Plan, covering all project components and summarizing: i) parameters to be monitored; ii) monitoring methodology; iii) location and frequency of monitoring; iv) applicable references (i.e. Brazilian Regulation, WBG EHS Guidelines, GIIP Guidelines (World Health Organization-WHO, European Union Best Available Technology-BAT, etc.); and v) numerical standards adopted by the project.

IDB Invest and associated lenders will monitor the Project with the support of an independent E&S consultant (IESC), for the life of the loan. IDB Invest will also conduct regular supervision visits to the Project its during construction and operation. The IESC reports will be submitted to lenders for review.

#### **4.1.h Stakeholder Engagement**

The project's area of influence includes medium-sized municipalities with metropolitan dynamics such as Uberlândia and Araguari, and small municipalities with no capacity to absorb and manage additional pressure on social and physical infrastructure such as Indianopolis, Estrela do Sul and Nova Ponte. LDC

maintains a positive and constructive dialogue with the current mayors of these municipalities and with project neighbors.

Ongoing stakeholder engagement has identified and channeled local community expectations in terms of LDC contributions to improvements of local rural roads, donations of materials for social projects, and accessibility by neighbors to forestry plantations for local travel. However, despite this engagement LDC will require an adequate socio-economic baseline and robust Stakeholder Engagement Plan (SEP) to support the mitigation of complex social impacts derived from the project such as: i) induced in-migration; ii) local employment expectations; iii) housing and transportation of workers; iv) increase in traffic; v) increase in forest management areas; and vi) water extraction and effluent discharge.

LDC will prepare a socio-economic baseline for the project's area of influence according to the level of impact and focused on the identification of vulnerable groups. The baseline will include: i) primary data points or census for people affected by land acquisition and for neighbors adjacent to the project's components (i.e. forest plantations, DWP mill, transmission line, water system, main transportation routes); and ii) secondary data points or macro-data for the municipalities of Indianopolis, Estrela do Sul, Nova Ponte, Araguari and Uberlandia.

Based on the socio-economic baseline, LDC will update its SEP for all project components. The SEP will include: i) identification and prioritization of key stakeholders; ii) stakeholder mapping and categorization; iii) criteria for identification of vulnerable groups, IP, and traditional communities (i.e. Quilombolas); iv) information to be disclosed to each stakeholder group; v) strategy for information disclosure, consultation, and collection/analysis of feedback; vi) grievance mechanism for complaints presented directly or through interaction with contractors; vii) key performance indicators (e.g. grievances received vs solved, meetings executed vs planned, etc.); and viii) socio-economic monitoring.

Local stakeholders value water quality as one of the most important ecosystem services (VEC). The area close to LDC's planned effluent release point is increasingly being used for recreation and for tilapia farming in floating cages. Also, there is a planned potable water intake point by DMAE downstream of LDC's effluent discharge point. Therefore, as a mechanism to build trust with water users downstream of LDC's effluent discharge point, LDC will use commercially reasonable efforts to develop a participatory water quality monitoring program involving downstream users, as described in the Stakeholder Engagement Plan (SEE).

#### 4.1.h.1 Disclosure of Information and informed consultation

The Project's ESIA summary (EIA/RIMA) was presented in February 2019 at a public meeting held in Indianópolis and called for by LDC, given that the state environmental regulator (SUPPRI) had exempted the Project from having a formal public hearing led by the regulator. The participatory socioenvironmental diagnostic conducted as part of the ESIA process also included targeted Project information sharing and disclosure workshops with community leaders, local civil associations and municipal governments of Indianópolis and Araguari. The key issues identified during these informed consultation events focused on impacts to water and air quality, as well as potential interference with local tourism. The main expectation from local stakeholders from the Project is related to employment generation and potential LDC investment in social projects.

Uberlandia's DMAE water utility has raised concerns relating to the Project's potential impacts to water quality (e.g. risk of eutrophication) of the Araguari river section between LDC plant's effluent discharge point and DMAE's water intake facility (near the Capim Branco hydropower dam, some 16Km downstream). The municipality is finalizing the construction of a water treatment plant with an initial

planned capacity of 2 m<sup>3</sup>/s to provide potable water to the city of Uberlandia. Those concerns were addressed to Uberlandia's municipal public prosecutor and to its state counterpart (Minas Gerais state prosecutor, or "MP") in April and May 2019, respectively. As a result of those exchanges, LDC provided a detailed document response to MP's list of questions and the MP mandated the CBH committee to conduct a study of the carrying capacity of the Capim Branco reservoir, with an expected completion within one year.

#### **4.1.i External Communication and Grievance Mechanisms**

Currently the Project does not have an external communication and a grievance mechanism. Therefore, and as a part of the Stakeholder Engagement Plan (SEP) LDC will prepare a grievance mechanism for complaints presented directly or through interaction with contractors that contains key performance indicators (e.g. grievances received vs solved, meetings executed vs planned, etc.).

#### **4.1.j Ongoing Reporting to Affected Communities**

As a mechanism to build trust with water users downstream of LDC's effluent discharge point, LDC will use commercially reasonable efforts to develop a joint water quality monitoring program, as described in the SEP.

### **4.2 Labor and Working Conditions**

#### **4.2.a Working Conditions and Management of Worker Relationships**

The project will directly employ 1,000 people during operations (450 people at the mill and 550 in forestry operations) and maintain an average of 5,000 contracted workers during the 24-month long construction period, with a peak at about 8,000 workers.

##### **4.2.a.1 Human Resources Policies and Procedures**

LDC will adopt Lenzing's corporate policy on Human Rights and Labor Standards, which is in line with Performance Standard 2<sup>8</sup>. Duratex has a Human Resources ("HR") department in NMC Forest Unit has been transferred to LDC. LDC's HR department is in the process of developing the company's HR policies and procedures for the project construction and operations.

##### **4.2.a.2 Working Conditions and Terms of Employment**

Working conditions in Duratex's NMC Forestry Unit comply with Performance Standard 2. NMC Forestry Unit employees have been transferred LDC and have been extended similar working conditions. As previously done in Duratex, all employees will hold indefinite contracts and will receive an induction training that includes the company's code of conduct, health and safety rules, benefits, deductions, time recording, wage and overtime pay. Pay slips clearly identify worked hours and overtime compensation.

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<sup>8</sup> <https://www.lenzing.com/lenzing-group/compliance>

#### 4.2.a.3 Workers' Organizations

Both Lenzing and Duratex have corporate policies respecting the right for collective bargaining and freedom of association in accordance with Performance Standard 2. Conditions of employment for NMC forestry operators are defined under the collective agreement with the local union for rural workers, and for mill operators will be defined under a collective agreement with the local union for pulp and paper workers. For the project construction, LDC is negotiating collective agreements with the main unions involved.

#### 4.2.a.4 Non-discrimination and Equal Opportunity

Duratex and Lenzing have policies on non-discrimination and equal opportunities. However, the representation of women in both companies is below 15% and currently the Amadeus Project does not have a strategy to increase the recruitment of women. LDC will thus explore options to promote the recruitment and promotion of women during operations both at the mill and forest plantations. The strategy will also identify and address safety risks to women in the worksite (e.g. transportation, work in isolated places, adequate Personal Protective Equipment-PPE) to ensure safety does not present a barrier to employment opportunities for women in non-traditional roles.

As part of the Project, LDC will develop and implement policies and procedures addressing sexual harassment ("SH") in the workplace. LDC will also ensure that its employee grievance mechanism is adapted to accept and address issues around SH in the workplace, including a mechanism that ensures confidentiality for employees who report SH (survivors and witnesses), involvement of the survivor in decision-making about responses, and consequences for perpetrators of SH in the workplace. LDC will communicate this policy internally and to contractors and suppliers.

#### 4.2.a.5 Retrenchment

Current employees (220) from NMC Forest Unit have been transferred to LDC and no retrenchment was necessary as part of the Project. On the contrary, the number of employees in forestry operations will increase to 550 once the DWP mill begin operating. Furthermore, retrenchment will not take place in Duratex existing processing plants as the NMC Forest Unit currently supplies wood to third parties as well. Third parties have been notified that they will need to find new suppliers by 2022.

#### 4.2.a.6 Grievance Mechanism

Duratex has a corporate confidential channel to report grievances related to breaches to its code of conduct<sup>9</sup>, which includes breaches to the company's HR policies. The mechanism is accessible to current and former employees, contractors and suppliers. In addition, the HR department from the NMC Forest Unit regularly conducts site visits (HR Floresta) to proactively address workers' concerns. Similar systems will be implemented by LDC including a call free number, email and direct access to social assistants.

During the Project construction, the grievance mechanism for contractors will be centralized by a third-party ("Central Services") in charge of workforce management. Contract workers will also be able to present complaints through the elected representatives of their unions, which will also be recorded by the

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<sup>9</sup> [https://canalconfidencial.com.br/duratex\\_portal/](https://canalconfidencial.com.br/duratex_portal/)

central services. LDC will regularly audit the central services' grievance mechanism to ensure the process is understood by workers, the mechanism allows for anonymous complaints to be raised and addressed, and complaints from contracted workers are adequately registered, analyzed and resolved.

#### 4.2.b Protecting the Workforce

Wood planting and harvesting operations in Brazil are sometimes performed by contractors. Violations of worker rights regulations in this industry segment have been previously recorded in Brazil due to the living conditions of sub-contracted workers. To mitigate this risk, LDC will not rely on third-party contractors for core forestry operations.

##### 4.2.b.1 Child & Forced Labor

Both Duratex and Lenzing have corporate policies against the use of child and forced labor, which will be adopted by LDC. The appraisal visit did not detect any instances of potential child or forced labor.

#### 4.2.c Occupational Health and Safety

Duratex and Lenzing have established Occupational Health and Safety (OHS) management systems across all its operations. OHS systems include identification, prevention and management of OHS risks. Controls include engineering controls, reinforcement of good safety behavior, training, harmonization of procedures and proper reporting. Injury rates are below industry benchmarks for forestry and mill operations (i.e. US Department of Labor, 2013). Similar systems are expected to be implemented once the mill and plantations are in operations.

LDC's Occupational Health and Safety (OHS) Coordinator for the Amadeus Project has been in place since August 2019, before start of earthworks in the DWP mill site. The OHS Coordinator has prepared an EHS Contract Amendment establishing contractor's responsibilities related to health, safety and the environment. A contractor who is not complying with the guidelines or action plans to correct non-compliances, can be subject to contractual sanctions. As part of the requirements, contractors are required to present an EHS plan and CV of the EHS Manager for review and approval by LDC. As common in other wood pulp greenfield projects in Brazil, LDC will retain an EHS Management Company to provide support in supervision and reporting of contractors' EHS performance. Once operational, the DWP mill will adopt the best practices from Lenzing's and Duratex's respective EHS management systems.

For the operational phase the mill will have a modern computerized maintenance planning system for predictive and corrective maintenance, and several maintenance operational staff, in line with good international industry practice (GIIP).

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

The Project expects to maintain about 5,000 contracted workers averaging 24 months of site construction (excluding preparation and commissioning phases), with a mid-2021 estimated peak of 8,000 mobilized workers. LDC will rely on the services on a specialized company to standardize the management of workers. The Central Services management support function will review worker's documentation (e.g. contract, affiliation to social security, professional affiliations, tests), deliver the induction training before the worker is released a badge for accessing the project site, and verify the correct time recording and payment of

wages and benefits by contractors. The central services will also be responsible for the inspection of basic services such as catering, accommodation, waste collection, transportation and medical services. The responsibilities of the Central Services and contractors are defined in a document called “Central Services Scope”, which is also attached to the contractors’ contract and is part of the requirements. LDC does not allow labor outsourcing and subcontracting the entirety of Contractor’s Work. Outsourcing an activity that is the core business of the contractor is under most EPC contracts practically not possible. All subcontracting was either pre-approved by LDC in the scope of work or, if proposed at a later stage, will have to be approved or can be rejected by LDC beforehand.

To ensure that workforce management during construction complies with all the requirements of the Performance Standards, LDC will prepare a Workforce Management Plan for construction, including: i) local recruitment strategy and procedure to limit project-induced in-migration; ii) workers’ accommodation plan in line Brazil’s Ministry of Labor’s NR-18 Regulatory Standard on Working Conditions and the Environment in the Construction Industry and IFC Guidance Note on Workers’ Accommodation; and iii) demobilization plan to mitigate negative impacts on workers and receiving communities (e.g. notice period, mechanism to ensure payment of severance package, proactive programs to ensure re-entry of non-local workers, mitigation of workers’ liabilities in hosting communities such as unpaid bills and damage compensation, etc.). LDC has prepared a request for proposal (RfP) for the provision of workers’ accommodation services, which already includes the requirements under the Brazilian Ministry of Labor NR-18 Regulatory Standard on Working Conditions and the Environment in the Construction Industry and IFC’s Guidance Note on Workers’ Accommodation.

As the influx of a large male-dominated workforce and increase in truck traffic is likely to increase the risks of gender-based violence (GBV) in the Project’s area of influence, LDC will prepare a code of conduct for managers and workers engaged in construction which adherence will be mandatory. The code of conduct will clearly state zero tolerance for GBV and define the expected behavior in the construction site and project area of influence – including sexual harassment in the workplace, sexual exploitation and abuse in local communities, and rules for interactions with local communities – and will be integrated in the induction training and in communication campaigns inside the workplace and within communities at risk.

#### **4.2.e Supply Chain**

LDC is not planning to develop third-party suppliers or purchase wood from the open market. All the wood required for the DWP mill will be sourced from LDC’s plantations (owned or leased). Should LDC require wood from third parties, the Company will define a mechanism compliant with the supply chain requirements of the Forest Stewardship Council (FSC) criteria for controlled wood, which are consistent with the Performance Standards requirements for supply chain.

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

#### **4.3.a Resource Efficiency**

The design of the mill complies with the BAT and techniques identified in WBG EHS Guidelines for Pulp and Paper.

New DWP fiberlines are similar to paper grade fiberlines (use of kraft process) but require more extensive cooking and washing to remove all lignins and hemi-cellulose. Dissolving pulp has typically a yield of about 35-38% (on wood) while the yield for paper grade pulp is in the 50-55% range. As the pulp yield for DWP

mills is lower (35-38% versus 50-55%), the recovery boiler is larger, allowing for a higher production of electricity available for sale thus higher air emissions per ton of product.

The DWP mill will require 64 MW of power, corresponding to 1100 kWh/ADt (air dried tons) of DWP, which is in line with WBG EHS Guidelines for kraft bleached pulp. All the electricity and steam required will be generated on site from the biomass and recovery boilers. The excess generated electricity (by the 80MW extra installed capacity) will be available for export. The lime kiln will consume about 100,000 Nm<sup>3</sup>/day of natural gas that will be trucked to the site with high-pressure cylinders.

#### 4.3.a.1 Greenhouse Gases

The main source of GHG emissions from the DWP production process is the consumption of natural gas in the lime kiln (about 90,000 tons of CO<sub>2</sub> per year), as all the electricity required will be generated on site from wood waste in the recovery and biomass boilers. The client forest management and harvesting operations as well as log transportation to pulp plant are expected to emit 28,000 tons of CO<sub>2</sub> equivalent per year.

About 2.3 million tons of CO<sub>2</sub> will be sequestered annually by the 70,000 ha of eucalyptus plantations. Most of this carbon will be transformed into fiber pulp and emitted in the process of producing renewable energy. Nevertheless, a portion of it will be permanently sequestered as soil carbon (at least ~ 0.1 million tons CO<sub>2</sub>/year). The excess electricity generated from wood waste in the recovery and biomass boilers – about 675,000 MWh per year – will be sold into the Brazilian grid. Considering the Brazilian grid emissions factor (0.2 kg CO<sub>2</sub>/kWh), this represents 136,000 tons of CO<sub>2</sub> avoided emissions per annum.

LDC will measure and report annually GHG emissions annually as part of the Environmental and Social Compliance Report (ESCR).

#### 4.3.a.2 Water Consumption

The expected water demand from the DWP mill, including water used for cleaning and process restart, is estimated at 1,900 m<sup>3</sup>/h (0.61 m<sup>3</sup>/s), which is less than two percent of the low flow (40 m<sup>3</sup>/s) and less than 0.2 percent of the medium flow (430 m<sup>3</sup>/s) of the Araguari river at the intake point. Water consumption per unit of production (32 m<sup>3</sup>/ADt) will also comply with WBG EHS Guidelines for kraft bleached pulp (Table 1a for Kraft Bleached Pulp). About 80% of the water intake will return to the Araguari river as treated effluent. Eucalyptus plantations are not irrigated.

#### 4.3.b Pollution Prevention

To determine potential impacts to surface runoff from silvicultural activities, Duratex monitors surface water quality in one micro-basin (*Bacia Hidrográfica Córrego Piçarrão*) inside Fazenda NMC. Turbidity, total phosphorus, ammonia, potassium, BOD and dissolved oxygen are measured monthly. In the last decade, minor exceedances have been monitored for these parameters in a limited number of cases (less than 5%). In 2019, water quality analyses were done for 86 parameters including metals and glyphosate. All results were below detection and/or below relevant Brazilian standards.

#### 4.3.b.1 Wastes

The DWP production will generate about 170,000 tons of non-hazardous wastes per annum. All wastes will be composted and reutilized as soil amendments or compost. However, the ESIA also indicates that some of these wastes may go to an industrial landfill as an alternate destination. Currently, the waste management plan is included in the PCA. However, the document is neither comprehensive nor practical for implementation in a construction site. There is also no evidence to indicate that a database to register the waste or a full custody chain (in the form of a manifest) exists for the whole project. LDC will therefore prepare a Waste Management Plan and Database in line with requirements of Performance Standard 3 to ensure that waste is treated and disposed in an environmentally safe manner and to guarantee its traceability.

#### 4.3.b.2 Hazardous Materials Management

LDC will consume about 37,000 tons/year of caustic soda (sodium hydroxide), sodium sulfate, sulfuric acid, hydrogen peroxide, magnesium sulfate, and aluminum sulfate to produce up to 500,000 tons/year of TCF DWP. Oxygen and ozone will be produced on site. Liquid chemical transportation will be carried out in bulk through tank trucks.

As mentioned before in this document, Lenzing has been working in the harmonization of management of chemicals procedures, and these will be adopted by the Amadeus project. To prevent and adequately respond to emergencies associated with the transportation of hazardous materials, LDC will prepare a Transportation Safety Plan described further on this document.

Storage of hazardous materials (agrochemicals) in Fazenda NMC is in line with Good International Industry Practice (GIIP). The storage facility is fully fenced and locked with access by a supervisor who must accompany staff into the facility. The interior of the facility is clean, well-organized, well signed and ventilated. Protective clothing, material safety data sheets (MSDS) and emergency kits are available on site. The floor of the storage rooms drains towards a canal that drains into an external spill collection container. Empty agrochemical containers are triple-rinsed and the rinse water is reused for new applications. Empty containers are also lock up in the storage facility and disposed by an authorized company. The other main sources of hazardous waste are used oils and oil-contaminated wastes from equipment maintenance. These are temporarily stored in adequate areas with secondary containment and disposed by authorized companies.

#### 4.3.b.ii.a Pesticides

None of the pesticide active ingredients reported in Duratex's FSC public summary report (License: SCS-FM/COC-00029P) is included in the WHO's (World Health Organization) Class 1a or 1b lists of Extremely or Highly Hazardous substances. Glyphosate-based products along with Sulfentrazone-based and Flumioxazin-based herbicides are used for weeding control. Detailed technical instructions for the use and application of these materials, including health considerations, are documented in procedures. Sulfluramid-based products are employed to control leaf-cutter ants. Sulfluramid is an organic persistent pollutant included in the Stockholm Convention; Brazil holds an exception under Annex B of the Convention for its use as ant bait. Duratex applies Sulfluramid about 3-months prior to planting and in case of ant infestations. In 2018, an average of 4.35 kg/ha of Sulfluramid-based products were applied in the Fazenda NMC. IDB Invest will require LDC to report the use of Sulfluramid as part of its annual environmental and social compliance monitoring report (ESCR) and will monitor trends in the use of this pesticide by the

company. Other pests attacking eucalyptus plantations are the gall wasp (*Leptocybe invasa*), *Gonipterus* weevils, and *Cylindrocladium* fungal diseases in nurseries. Pesticides are not applied systematically but only in case of infestations. Biological control (*Beauveria bassiana*) is used for the control of *Gonipterus*. Duratex is a member of the Brazilian Forestry Science and Research Institute (IPEF) and participates in the Cooperative Program in Forest Protection (PROTEF) to promote integrated management of forest pests and diseases and find alternatives to products listed as dangerous by FSC.

#### 4.3.b.3 Effluents - Wastewater and Water Quality

Process effluents will be treated in a wastewater treatment plant with an installed hydraulic capacity of 2,700 m<sup>3</sup>/h. The performance guaranteed values for the wastewater treatment plant are designed to comply with WBG EHS Guidelines for Pulp and Paper (Table 1a. Kraft bleached pulp). The mill will use total chlorine-free (TCF) bleaching avoiding the formation of Adsorbable Organic Halides (AOX) such as dioxins. In addition, the mill will not use metal chelating agents (i.e. EDTA) in the bleaching process as EDTA has been found to increase the availability of metals and the risk of eutrophication of water bodies receiving the effluents of pulp mills.

Effluents will be released into the Araguari river, two kilometers upstream from Amadeus' water intake point, between two man-made reservoirs (Miranda and Capim Branco) at an estimated rate of 1,900 m<sup>3</sup>/h. The Araguari river presents good water quality in the project's area of influence, with the exception of phosphorous which concentration intermittently surpasses the applicable national standard (CONAMA 357/2005 Class 2) during the rainy period.

LDC has conducted effluent dispersion modelling (using CORMIX<sup>10</sup>) and depuration (AQUATOOL<sup>11</sup>) studies to assess the impact of the effluents on the Araguari river. These models were also revised after publication of the ESIA considering updated effluent emission levels, which are lower and closer to the performance guaranteed values of the equipment supplier for the wastewater primary and secondary treatment plant. This revised CORMIX and AQUATOOL models were submitted to the environmental authorities and are included in the environmental license.

CORMIX modeled the mixing zone of biological oxygen demand (BOD), color and total phosphorus with low ( $Q_{7,10} = 40 \text{ m}^3/\text{s}$ ) and medium ( $Q_m = 430 \text{ m}^3/\text{s}$ ) flow. The only aspect of concern is the concentration of total phosphorus during low flow, as it will need about 313m from the release point to achieve a concentration of 0.03 mg/l, which is the applicable national standard for surface water quality of class 2 rivers for lentic environments (CONAMA 357/2005). The model, however, did not include the baseline concentration of total phosphorous in the river, which during the rainy periods tends to be at or above applicable water quality standards (mean  $0.03 \pm 0.05 \text{ mg/l}$ ).

AQUATOOL simulated scenarios for dissolved oxygen (DO), BOD, organic nitrogen (NO), ammonia (NH<sub>3</sub>), nitrate (NO<sub>3</sub><sup>-</sup>) and total phosphorus. The model assessed the impact of effluents on the Araguari river along a 46-km stretch, starting from a national water quality monitoring station (ANA ID. 60356000) located 27 km upstream of LDC's planned effluent release point and ending past the Capim Branco reservoir, distant 20 Km downstream from the Project's effluent release point. The model includes water quality baseline data from the ANA monitoring station and effluent discharges from point and non-point sources along the

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<sup>10</sup> Cornell Mixing Zone Expert System, is a US Environmental Protection Agency supported mixing zone software model and decision support system for environmental impact assessment of regulatory mixing zones resulting from continuous point source discharges

<sup>11</sup> AQUATOOL is a computational tool developed by the Institute of Water Engineering and Environment of the Valencia Polytechnic University to simulate water quality in rivers and reservoirs.

46-km stretch. Similar to CORMIX, the only parameter of concern is total phosphorus as the river requires 7 km from LDC's effluent release point to return to its baseline conditions.

The design of LDC's wastewater treatment plant approved in the environmental license includes primary treatment with mechanical screens and a clarifier and secondary biological treatment using activated sludge. The design also includes emergency and stormwater basins to redirect effluents into the treatment plant if needed. While the plant is already designed to comply with national effluent standards (CONAMA 430/2011 and COPAM 01/2008) and WBG EHS Guidelines for Pulp and Paper (Table 1a for Kraft Bleached Pulp), as a precautionary measure, LDC will install and operate a wastewater tertiary treatment plant to further reduce the concentration of nutrients and COD in its effluents as necessary.

In addition, LDC will grant DMAE access in real time to its online continuous monitoring data allowing them to verify the performance of LDC's wastewater treatment plant. LDC will as well present the results of its water quality and effluent monitoring program in open meetings to the members of the CBH-Araguari committee regularly to the extent that the CBH agrees to promote such meetings and receive LDC results.

#### 4.3.b.4 Air Quality and Atmospheric Emissions

The main sources of air emissions are the recovery boiler, the biomass boiler and the lime kiln for the reprocessing of calcium carbonate into calcium oxide. Equipment performance guarantees provided by manufacturers comply with WBG EHS Guidelines for Thermal Power Plants (Table 6c. Boilers) and for Cement and Lime Manufacturing (Table 2. Lime Manufacturing). Predicted performance levels for air emissions are expected to comply with WBG EHS guideline values for kraft pulp, taking into consideration the bigger size of the DWP recovery boiler compared to paper pulp. Both diluted non-condensable gases ("DNCG") and concentrated non-condensable gases ("CNCG") will be burnt in the recovery boiler for control of malodorous gases.

Ambient air quality was monitored for two seven-consecutive-days campaigns at the end and beginning of the rainy season. Levels of NO<sub>2</sub>, CO, ERT and H<sub>2</sub>S were below detection limits, and levels of SO<sub>2</sub> and PM<sub>10</sub> were below the current applicable intermediary ambient air quality guideline values (padrão intermediário 2 in CONAMA 491/2018). LDC will continue to monitor ambient air quality and report results to IDB Invest as part of the annual EHS compliance report (ESCR).

As part of the environmental licensing process, LDC also prepared an air dispersion model with AERMOD.<sup>12</sup> The study models concentration of pollutants at 12 sensitive receptors including the municipalities surrounding the project and the closest school, located 6 km away from the mill. The model includes air emissions from the lime kiln, recovery boiler and biomass boiler. No other large emitters are present in the area. While the model did not include ambient air quality baseline data, the airshed is non-degraded and modeled concentration of pollutants at sensitive receptors contributes less than 25% of the applicable ambient air quality standard as required by WBG EHS General Guidelines for non-degraded airsheds. More precisely, emissions of PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>2</sub> contribute less than 2%, 3%, 8% and 15% respectively, of the most stringent guideline values (*padrão final*) of the national air quality standards (CONAMA 491/2018) at sensitive receptors. Furthermore, the emission rates used in the air dispersion model are the ones

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<sup>12</sup> AERMOD is an atmospheric dispersion modeling system developed by the AERMIC (American Meteorological Society (AMS) and the US Environmental Protection Agency (EPA).

published in the ESIA, which are multiple times higher than the predicted guarantee performance values. Hence, the project is not expected to significantly impact ambient air quality at sensitive receptors.

Air emissions during construction are typically dust generated from earth moving activities and fumes from heavy equipment. Management of these conditions are contemplated in the ESIA and management plans are defined in the PCA. Road dust in the construction site is currently controlled through water tanks and roads will be paved before releasing the site to contractors for equipment installation. Condition of equipment (including emission of fumes) is verified by LDC before is released to be used in the construction site.

#### 4.3.b.5 Noise

As part of the EIA addendum, LDC will also address deficiencies in the assessment of risks related to noise during construction and operations through a: (i) updated noise baseline in line with good international industry practice (GIIP); (ii) a revised noise propagation model including stationary and mobile sources (i.e. truck traffic) at the Project fence and at sensitive receptors; and (iii) mitigation measures if required. The noise baseline will include (i) the characterization of background noise levels at potential sensitive receptors; (ii) statistically significant measurement times; (iii) and measurements at sufficient distance from reflective surfaces.

### **4.4 Community Health, Safety and Security**

#### **4.4.a Community Health and Safety**

##### 4.4.a.1 Transportation and handling of hazardous materials and wood logs

DWP production will require the transportation of large quantities of hazardous materials (sodium hydroxide, sodium sulfate, sulfuric acid, hydrogen peroxide, magnesium sulfate), natural gas in high pressure cylinders, wood and finished product (fiber pulp). About 100 truck trips per day will be necessary to supply materials to the DWP mill and 80 internal trips to transport finished product. During operations, most log hauling will take place inside the NMC Forest Unit and finished product is likely to be transported by train, reducing road traffic and the risk of vehicular accidents involving the public. LDC commissioned a traffic study using the methodology mandated by the Brazilian National Department of Transport Infrastructure (DNIT). The traffic study determined that the project will not adversely impact traffic flow on public roads providing access to the site (BR-365/MG and LMG-748) and identified necessary road improvements along LMG-748 (i.e. roundabouts, hard shoulders) which have been financed by LDC.

In addition to the existing mitigants, LDC will prepare a Transportation Safety Plan to mitigate risks to the environment and communities exposed to increased traffic as a result of project's activities (e.g. transportation of equipment, hazardous materials, wood, finished products, etc.). The plan will include the identification of vulnerable locations and procedures for emergency response, and it will be developed in consultation with appropriate groups and organizations. The plan will include the identification of vulnerable locations and procedures for emergency response, and it will be developed in consultation with appropriate groups and organizations. The plan will include a damage compensation procedure linked to LDC's external grievance mechanism. Simple brochures on what to do in case of an emergency will be distributed among the population at risk.

#### 4.4.a.2 Emergency Preparedness and Response - Forest Fires

Fire prevention, detection and response capabilities and procedures are described in Duratex's document "*Plano de Monitoramento e Combate a Incêndios Florestais*". In NMC Forest Unit, prevention is undertaken through public education on preventing and reporting fires including contacting communities and neighbors at the beginning of each dry season. There is a railway line that crosses through the farm and fuel build-up is monitored and cleaned (as required) along either side of the line as well as the public roads. Duratex has a monitoring center for early fire detection within the Fazenda NMC. The center includes 24-hr (dry season) and 16-hr (wet season) live monitoring of the entire farm (including Furnas and Brejão) and the immediately adjacent area. The system involves the uses of three tall monitoring towers (60 to 70 m) with rotating digital cameras. The three- tower system allows for triangulation of any point which provides very accurate positioning and mapping.

Fire detection is also provided through staff with motorcycles and cars. When a fire is detected, the monitoring center identifies whether the fire is located on company property and responds accordingly. Fire response capability in the NMC Forestry Unit includes over 50 water access points, six water trucks, four pick-up trucks with rapid response equipment (shovels, damping mats, axes, hoes, and scythes), and a water forwarder vehicle for access within forest blocks. All vehicles have 24-hr radio communication equipment to maintain contact with the main gate. Although Duratex does not maintain permanent fire brigades in this forestry unit, staff are trained in fire response actions with a core response team of over 40 individuals. The incidence and area of burned forest has been very low generally affecting less than 1% of the forest base through 2018. However, 2019 showed an increase in area burned with 1,465 ha which corresponds to 3.3% of the planted area. The root-cause analysis determined that the fire was started by an illegal electricity connection by a neighbor; the company has reinforced its communication with neighbors to prevent a reoccurrence.

#### 4.4.a.3 Ecosystem Services

There are no communities the Project's area of influence that depend on Duratex' ecosystem services from its forest plantations. However, as analyzed in the Cumulative Impact Assessment study (CIA), the area close to LDC's planned effluent release point is used for a number of recreation activities and for tilapia commercial farming in floating cages, and as such local stakeholders value water quality as one the most important valued ecosystem components (VEC). Water in the discharge area has very low color and turbidity, increasing people's perception of good water quality. The CIA study offers several recommendations for LDC to develop and include as part of its SEP plan.

#### 4.4.a.4 Community Exposure to Disease and Other Risks

Community risk to disease exposure is considered moderate to low, given that workers from outside the Project's area will be lodged at fully equipped and furnished workers' camps with capacity to accommodate 600 workers each, as well as in additional accommodations (in hotels and rented houses) in the urban centers of Araguari, Uberlandia and Indianópolis. To reduce Project-induced in-migration, contractors will be encouraged to recruit workers through public employment agencies in the Project's area of influence. LDC will also prepare a demobilization plan to mitigate negative impacts on workers and receiving communities. In addition, employers will be required to provide the necessary resources to allow for the regular re-entry of workers to their place of origin and will be responsible to demobilize workers at the end of their contract.

#### 4.4.a.5 Project-induced In-migration

The Amadeus project expects to maintain an average of 5,000 contracted workers during 24 months of site construction with a mid-2021 estimated peak of 8,000 mobilized workers. It is estimated that about half of these workers will not be local. The project-induced in-migration due to job expectations and formal and informal business opportunities is likely to be much larger. The municipalities likely to receive project-induced immigration are Indianopolis, Araguari and Uberlandia.

LDC has developed positive relationships with municipal authorities, but the company has not yet prepared an influx management plan. Therefore, LDC will prepare an Influx Management Plan to assess, mitigate and monitor impacts from project-induced in-migration on: i) public services (i.e. medical, schools, water and sanitation); ii) public security; and iii) gender-based violence (GBV). The plan will focus on vulnerable groups and small municipalities with low capacity to manage impacts. The plan will identify the socioeconomic indicators to be monitored; examples of indicators that could be monitored are inflationary trends, security incidents (assaults, drugs and alcohol abuse), GBV incidents, early-pregnancies, school dropouts, prevalence of communicable diseases, etc. As part of the Influx Management Plan, the client will implement a participatory monitoring committee – aimed at small municipalities – to monitor impacts and implement mitigation measures as needed

The influx of a large male-dominated workforce and increase in truck traffic is likely to increase the risks of gender-based violence (GBV) in the project's area of influence. LDC has signed a service contract with World Childhood Foundation<sup>13</sup> to provide GBV prevention and awareness raising. The contract includes: i) a first phase of diagnosis, consultation with target populations: children, young women, sex-workers (close to transportation routes and areas where workers are concentrated) and a mapping of health services; and ii) a second phase for implementation of internal and external training programs and the definition of social indicators.

#### 4.4.b Security Personnel

LDC's forestry assets are safeguarded by a team of unarmed mobile patrols. Access to LDC's industrial site will be controlled at checkpoints by unarmed security officers. All employees, visitors, and contracted workers entering the site will carry an identifying badge issued by the company. No armed custody will be used for the transportation of materials and finished products. LDC does not plan to change these security arrangements and if needed an assessment in accordance to PS4 will be required.

### 4.5 Land Acquisition and Involuntary Resettlement

LDC requires to implement processes of land acquisition and leasing for the expansion of forestry plantations and project's linear infrastructure. LDC's current land-access management tools consider technical, environmental and legal factors but do not meet all the requirements of PS 5. Therefore, LDC has prepared a Land Acquisition Framework that will serve as a guide for all land-access management tools described below and to identify and bridge any gaps for lands that have been already acquired.

#### 4.5.a Land Acquisition for Expansion of Forestry Plantations

LDC's forestry plan considers the acquisition of 26,000 ha to meet the needs of the DWP mill. The company is currently acquiring lands through the identification of existing eucalyptus plantations or pasture lands to

be leased for at least 15 years but preferably 30 years. Lease contracts have an option for the company to opt-out should other lands be available (e.g., closer to the mill). Most of the land parcels are between 100-300 ha. The company has already contacted owners of 13,000 ha and 4,900 ha are under discussion for leasing. The current Investment Control and Land Acquisition Negotiation procedure considers technical, environmental, and legal factors. In this case, land acquisition will be conducted by willing-buyer willing-seller and there is no right of expropriation granted by the government. This is the context of large-scale agriculture where land markets or other opportunities for the productive investment of the sales income exist, the transaction will take place with the seller's informed agreement; and the seller will be provided with fair compensation based on prevailing market values. For the reasons mentioned above, Performance Standard 5 does not apply to these land transactions. For other users that maybe occupying the land, the client will address potential impacts through the Land Acquisition/Leasing Procedure described below.

Based on the Land Acquisition Framework, LDC will prepare a Land Acquisition/Leasing Procedure for forestry plantations expansion focused on managing impacts if there is displacement of tenants or sharecroppers without legal rights to the land. In that case, affected people will be surveyed in socioeconomic aspects with the purpose to identify and mitigate impacts and compensation, resettlement and livelihood restoration will be implemented if needed. All affected people will be included within the Stakeholder Engagement Plan (SEP) and will have access to the Grievance Mechanism.

#### 4.5.b Land acquisition for other project components

LDC also requires land for the following project components: i) a 22-km long right-of-way (ROW) for the transmission line (of 23m easement width); ii) a 23-km long water system (pipeline and intake/discharge points, with 12m easement width); and iii) a 5-km access road. The design of linear infrastructure considered the minimization of impacts: the trajectory of the transmission line avoids the clearance of tree crops and the presence of houses; the water pipeline will run along state and municipal roads to take advantage of the right-of-way existing infrastructure; and the access road is an existing internal farm road.

While the pipeline is built, the municipal road will be blocked, and since the Project will need a 10-m wide corridor to allow the transit of vehicles during the 18-month construction period, a side road was selected instead, aiming at avoiding native trees, tree crops and houses.

At the time of the ESDD, LDC had completed the permanent and temporary land acquisition for the transmission line, the water system and the access road. An initial assessment of the land acquisition process (as per LDC land acquisition files) indicates that this process; i) impacted directly less than 50 landowners (28 along the transmission line, 12 along the water system, and 4 along the access road); ii) there is no physical displacement, nor permanent or significant impact on livelihoods; and iii) the percentage of land affectation is less than 10% of each property. Since the land acquisition process did not consider groups which are different from landowners (e.g. sharecroppers, informal land users, tenants, land custodians), LDC will prepare a Land Acquisition Report describing the process performed with supportive documentation, identifying the gaps vis-a-vis the Land Acquisition Framework, and documenting an action plan to close the gaps consistent with PS 5.

## 4.6 Biodiversity Conservation and Natural Habitats

### 4.6.a Protection and Conservation of Biodiversity

The project's terrestrial area of influence is classified as modified habitat. Patches of natural habitat, generally located closer to the river Araguari, are small and highly fragmented and have limited potential to sustain natural communities over the long term. None of this area is therefore designated as critical habitat as it is highly unlikely that there are critical habitat qualifying species occurring with adequate concentrations to justify that designation.

Removal of native vegetation is limited to 1,200 trees for the construction of project infrastructure (i.e. pipelines). Compensation – through regeneration of 30 ha of native vegetation – will occur in an area to be conserved for the long term (i.e. Area de Proteção Ambiental) within the company's landholding. The ESIA also includes measures to educate company drivers to minimize wildlife mortality on roadways although the cumulative effects of public highway use will likely result in animal mortality in any case.

The project's aquatic area of influence, located between two hydropower dams, is considered modified habitat. Although the river retains a representative portion of its native communities, the diversity of fish species in particular is much lower (21%) than that reported for the entire basin. This low diversity can be explained by the uniformity of the sampled environments, which show important signs of modification in terms of the effect of the river already being impounded and the introduction of non-native species, which are now abundant (e.g., potentially invasive African tilapia: *Oreochromis niloticus*; 'tucunaré': *Cichla kelberi*; and 'cascudo': *Pterygoplichthys ambrosettii*). No threatened aquatic fauna species listed in national or international red lists<sup>14</sup> were detected. The project's mitigation plan includes a commitment to monitor water quality and aquatic fauna during the dry and wet seasons.

### 4.6.b Sustainable Management of Living Natural Resources

The project will require 2.9 million cubic meters of wood per annum mostly to be sourced from 44,000 ha of existing eucalyptus plantations (NMC Forest Unit). The three farms comprising the NMC Forest Unit – Nova Monte Carmelo, Furnas and Brejão – are registered in the Environmental Rural Cadaster (CAR) and are Forest Stewardship Council ("FSC") certified. Duratex has a track record of managing the plantations in a sustainable manner, through the application of forestry good management practices as confirmed by FSC. FSC audits are conducted annually and no major non-compliance has been identified in the last three years. Any additional area leased for the expansion of forest plantations will be FSC certified and the company will not use areas deforested after 1994.

The plantations supporting the proposed mill maintain wetlands and Cerrado native vegetation in conservation lands (about 20% as mandated by the Brazilian Forestry Code for the Cerrado and Mata Atlantica biomes). Duratex has a long history of biodiversity research and monitoring across its forest areas in close cooperation with universities. Research and active management have included species inventory and investigations of honeybee species, development of ecological corridors, control of exotic species in conservation areas, characterization of native vegetation, and native species planting in forest fragments and degraded areas.

Appropriate measures are being undertaken by Duratex in the plantations to minimize soil compaction (i.e. maintenance of slash, efficient forest road layout) and soil erosion, in line with WBG EHS Guidelines for

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<sup>14</sup> <https://www.iucnredlist.org/>

Forestry Harvesting Operations. Soil erosion control includes the use of riparian buffers, controlled access at water-taking locations, use of drainage canals or reservoirs along road edges, minimization of stream crossings and good bridge maintenance. Also, the topography in this area is flat to gently rolling limiting uncontrolled runoff and permitting standard harvesting techniques. Nutrient management is supported through detailed soil mapping and soil analysis (pre-plant and post-planting).

#### **4.6.c Invasive Alien Species**

Within the NMC forestry unit, pine (*Pinus sp.*) is considered potentially invasive and is formally controlled as per the existing requirements of the FSC certification process.

#### **4.7 Indigenous Peoples**

There are no indigenous peoples (“IP”) within the area of influence of the Project. Therefore, this Performance Standard has not been triggered. Nevertheless, the Client will include criteria for identification and mitigation of impacts on IP and traditional communities (e.g. *Quilombolas*) as part of its land acquisition framework and stakeholder engagement plan.

#### **4.8 Cultural Heritage**

This Performance Standard is not considered applicable because the initial assessment has not identified cultural heritage impacts, and potential issues that might emerge will be addressed under PS1.

#### **5. Local Access to Project Documentation**

The ESIA is available locally at LDC offices both in Sao Paulo and in Indianópolis (at Duratex’s NMC Forest Unit), as well as through the state of Minas Gerais environmental permitting system portal: <http://www.siam.mg.gov.br/siam/lc/2018/1849220180012018/7263892018.pdf>.