

# Executive Summary for the Public (English Version)

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## Paper Mill Plant Expansion Project

Barangay Gugo, Samal, Bataan

**Submitted to:**



**Environmental Management Bureau  
Department of Environment and Natural Resources  
Central Office**

Visayas Avenue, Diliman, Quezon City,  
Metro Manila, Philippines

**Submitted by:**



**Bataan 2020, Inc.**  
Barangay Gugo, Samal,  
Bataan, Philippines

## A. PROJECT DESCRIPTION

Project Name	<b>Paper Mill Plant Expansion Project</b>
Project Location	Barangay Gugo, Samal, Bataan
Project Type	Category A-2 for Pulp and Paper Industries with annual production rate of $\geq$ 50,000 MT (Group 1.7.7 of Annex A – Project Thresholds for Coverage Screening Categorization)
Project Components	Please see <b>Table ES-1</b> for the components of the existing pulp and paper mill plant with components of the Expansion Project and the combined features
Project Area	Existing: 268,677 sq. m. Expansion: 85,050 sq. m. Total: 353,727 sq. m.
Project Capacity	Existing: 50,652 MT/year Expansion: 140,000 MT/year Total: 190,652 MT/year
Process/ Technology	<p>The Expansion Project will employ similar manufacturing process technology as the existing pulp and paper mill plant, as presented below:</p> <ol style="list-style-type: none"> <li>1. Receiving, Handling and Storage of Raw Materials</li> <li>2. Paper Stock Preparation <ul style="list-style-type: none"> <li>o Pulping of waste paper</li> <li>o Cleaning and Screening</li> <li>o Thickening</li> <li>o Storage Tank</li> <li>o Refining</li> </ul> </li> <li>3. Paper Machine</li> <li>4. Rewinding</li> <li>5. Handling, Storage and Transport of Finished Goods</li> </ol> <p>The major substances stored, used and handled at the existing pulp and paper mill plant of Bataan 2020, Inc. are Sodium Hydroxide, Trisodium Phosphate and Diesel Oil. Trisodium Phosphate and Diesel Oil will also be stored, used and handled at the Expansion Project.</p>
Resource Utilization	<p><b>Water Supply.</b> Water supply for the daily operation of the Expansion Project will be sourced from four (4) existing deepwells of Bataan 2020, Inc. located within the Bataan 2020, Inc. Plant Compound. These deepwells were drilled to a depth of 200m so as not to extract water from the shallow aquifer that are utilized by the nearby community.</p> <p>In addition, Bataan 2020, Inc. shall implement Water Conservation Measures such as recycling of treated wastewater from the existing pulp and paper mill plant to be used by the Expansion Project, and employ rainwater harvesting system to be used by the paper mill plant.</p> <p><b>Power Supply.</b> Power supply will be sourced from the existing Waste-to-Energy Power Plant of Bataan 2020, Inc. located within the plant compound.</p> <p><b>Raw Materials.</b> Old corrugated cardboards to be used as raw material in manufacturing brown-grade packaging papers will be sourced locally to support local businesses and suppliers.</p>
Project/ Investment Cost	Existing: PhP1,200,000,000.00 Expansion: PhP800,000,000.00 Total: PhP2,000,000,000.00
ECC Status	<p>The existing pulp and paper mill plant was issued an ECC with Ref. Code No. R03-0910-0115 by the EMB-Region III on October 16, 2009.</p> <p>Request for ECC amendment for the Expansion Project is currently being processed at EMB-Central Office.</p>

Table ES-1. Comparative Matrix of the Components of the Existing Pulp and Paper Mill Plant with Components of the Expansion Project and the Combined Features

Process/Stage	Project Components		
	Existing Pulp and Paper Mill Plant	Paper Mill Plant Expansion Project	Combined Features
Delivery of Materials	<u>Mode of Delivery</u> by Trucks	Same as the existing	Same as the existing
Storage of Raw Materials	<u>Raw Material Yard</u> Area: 56,000 sq. m.	<u>Raw Material Yard</u> Share with existing plant  <u>Raw Materials Staging Area (Additional):</u> Area: 18,000 sq. m.	<u>Raw Material Yard:</u> 56,000 sq. m.  <u>Raw Materials Staging Area (additional):</u> 18,000 sq. m.
Paper Stock Preparation	<ul style="list-style-type: none"> <li>• <u>Pulping of waste paper</u> Capacity: 144 MT/day</li> <li>• <u>Cleaning and Screening</u> Capacity: 144 MT/day</li> <li>• <u>Thickening</u> Capacity: 144 MT/day</li> <li>• <u>Storage Tank</u> Capacity: 144 MT/day</li> <li>• <u>Refining</u> Capacity: 144 MT/day</li> </ul>	<ul style="list-style-type: none"> <li>• <u>Pulping of waste paper</u> Capacity: 500 MT/day</li> <li>• <u>Cleaning and Screening</u> Capacity: 500 MT/day</li> <li>• <u>Thickening</u> Capacity: 450 MT/day</li> <li>• <u>Storage Tank</u> Capacity: 500 MT/day</li> <li>• <u>Refining</u> Capacity: 450 MT/day</li> </ul>	<ul style="list-style-type: none"> <li>• <u>Pulping of waste paper</u> <ul style="list-style-type: none"> <li>○ Capacity: 144 MT/day</li> <li>○ Capacity: 500 MT/day</li> </ul> </li> <li>• <u>Cleaning and Screening</u> <ul style="list-style-type: none"> <li>○ Capacity: 144 MT/day</li> <li>○ Capacity: 500 MT/day</li> </ul> </li> <li>• <u>Thickening</u> <ul style="list-style-type: none"> <li>○ Capacity: 144 MT/day</li> <li>○ Capacity: 450 MT/day</li> </ul> </li> <li>• <u>Storage Tank</u> <ul style="list-style-type: none"> <li>○ Capacity: 144 MT/day</li> <li>○ Capacity: 500 MT/day</li> </ul> </li> <li>• <u>Refining</u> <ul style="list-style-type: none"> <li>○ Capacity: 144 MT/day</li> <li>○ Capacity: 450 MT/day</li> </ul> </li> </ul>
Paper Machines	No. of units: 2 units	No. of units: 1 unit	No. of units: 3 units
Rewinding	No. of units: 7 units	No. of units: 1 unit	No. of Units: 8 units
Storage for Finished Goods	<u>Warehouse</u> Area: 11,689 sq. m.	<u>Warehouse</u> Area: 7,233 sq. m.	<u>Warehouse:</u> Area 1: 11,689 sq. m. Area 2: 7,233 sq. m.
<b>Support Facilities</b>			
Power Supply System	Waste-to-Energy Power Plant of BPVI (288,000 kWh/day)	Waste-to-Energy Power Plant of Bataan 2020, Inc. (240,000 kWh/day)	<ul style="list-style-type: none"> <li>• Waste-to-Energy Power Plant of BPVI (288,000 kWh/day)</li> <li>• Waste-to-Energy Power Plant of Bataan 2020, Inc. (240,000 kWh/day)</li> </ul>

Water Supply System	Source: 4 deepwells <u>Water Supply Reservoir</u> Area: 9,730 sq. m.  Operational Water Requirement: 6,000 m <sup>3</sup> /day	Share with deepwells of existing plant  Operational Water Requirement: 4,000 m <sup>3</sup> /day (2,000 m <sup>3</sup> /day groundwater and 2,000 m <sup>3</sup> /day recycled wastewater from the WWTS)	Source: 4 deepwells <u>Water Supply Reservoir</u> : 9,730 sq. m.  Operational Water Requirement: <ul style="list-style-type: none"> <li>• 8,000 m<sup>3</sup>/day</li> <li>• 2,000 m<sup>3</sup>/day recycled wastewater from the WWTS</li> </ul>
Drainage Systems	<u>Storm Water Drainage System</u> Concrete discharge canal est. 120m long to Samal River	<u>Storm Water Drainage System</u> Concrete discharge canal est. 100m long to Samal River	<u>Storm Water Drainage System</u> <ul style="list-style-type: none"> <li>• Concrete discharge canal est. 120m long to Samal River</li> <li>• Concrete discharge canal est. 100m long to Samal River</li> </ul>
Sewerage System	<u>Sanitary System</u> 20m PVC pipe to 10 two-chamber septic tanks  Hauling, treatment and disposal by the Soliman E.C.	<u>Sanitary System</u> 5m PVC pipe to 4 three-chamber septic tanks  Hauling, treatment and disposal by the Soliman E.C.	<ul style="list-style-type: none"> <li>• <u>20m PVC to 10 two-chamber septic tanks</u></li> <li>• <u>5m to 4 three-chamber septic tanks</u></li> </ul> <p>Hauling, treatment and disposal by the Soliman E.C.</p>
Emergency Systems	<u>Eye Wash Stations</u> : 4 stations <u>Fire Protection System</u> : Sprinkler system, indoor and outdoor fire hydrants and hose boxes, portable and mobile extinguishers, fire detection and alarm system	<u>Eye Wash Stations</u> : 4 stations <u>Fire Protection System</u> : Sprinkler system, indoor and outdoor fire hydrants and hose boxes, portable and mobile extinguishers, fire detection and alarm system	<u>Eye Wash Stations</u> : 8 stations <u>Fire Protection System</u> : Sprinkler system, indoor and outdoor fire hydrants and hose boxes, portable and mobile extinguishers, fire detection and alarm system
General Infrastructures	Maintenance Building: 1,610 sq. m.	Share with existing plant	Maintenance Building: 1,610 sq.m.
	Motor Pool Building: 400 sq. m.	Share with existing plant	Motor Pool Building: 400 sq. m.
	Administration Building: 1,100 sq.m.	Share with existing plant	Administration Building: 1,100 sq.m.
	Employee Accommodation: 1,184 sq.m.	Share with existing plant	Employee Accommodation: 1,184 sq.m.
	Parking Area: 4,300 sq. m.	Parking Area: 300 sq. m.	Parking Area: 4,600 sq. m.
	Guard House: 140 sq. m.	Share with existing plant	Guard House: 140 sq. m.
	Alleys and Pathways: 600 sq. m.	Alleys and Pathways: 600sq. m.	Alleys and Pathways: 1,200 sq. m.
Major & Minor Roads: 9,970 sq. m.	Major & Minor Roads: 8,914 sq. m.	Major & Minor Roads: 18,884 sq. m.	
<b>Pollution Control Devices and Waste Management System</b>			
Solid Waste Management System	<u>Sludge Waste Disposal System</u> Dry Sludge: 30 MT/day used as fuel for the Waste-to-Energy Power Plant of BPVI	<u>Sludge Waste Disposal System</u> Dry Sludge: 43 MT/day will be used as fuel for the Waste-to-Energy Power Plant of BPVI	<u>Sludge Waste Disposal System</u> Dry Sludge: 73 MT/day used as fuel for the Waste-to-Energy Power Plant of BPVI

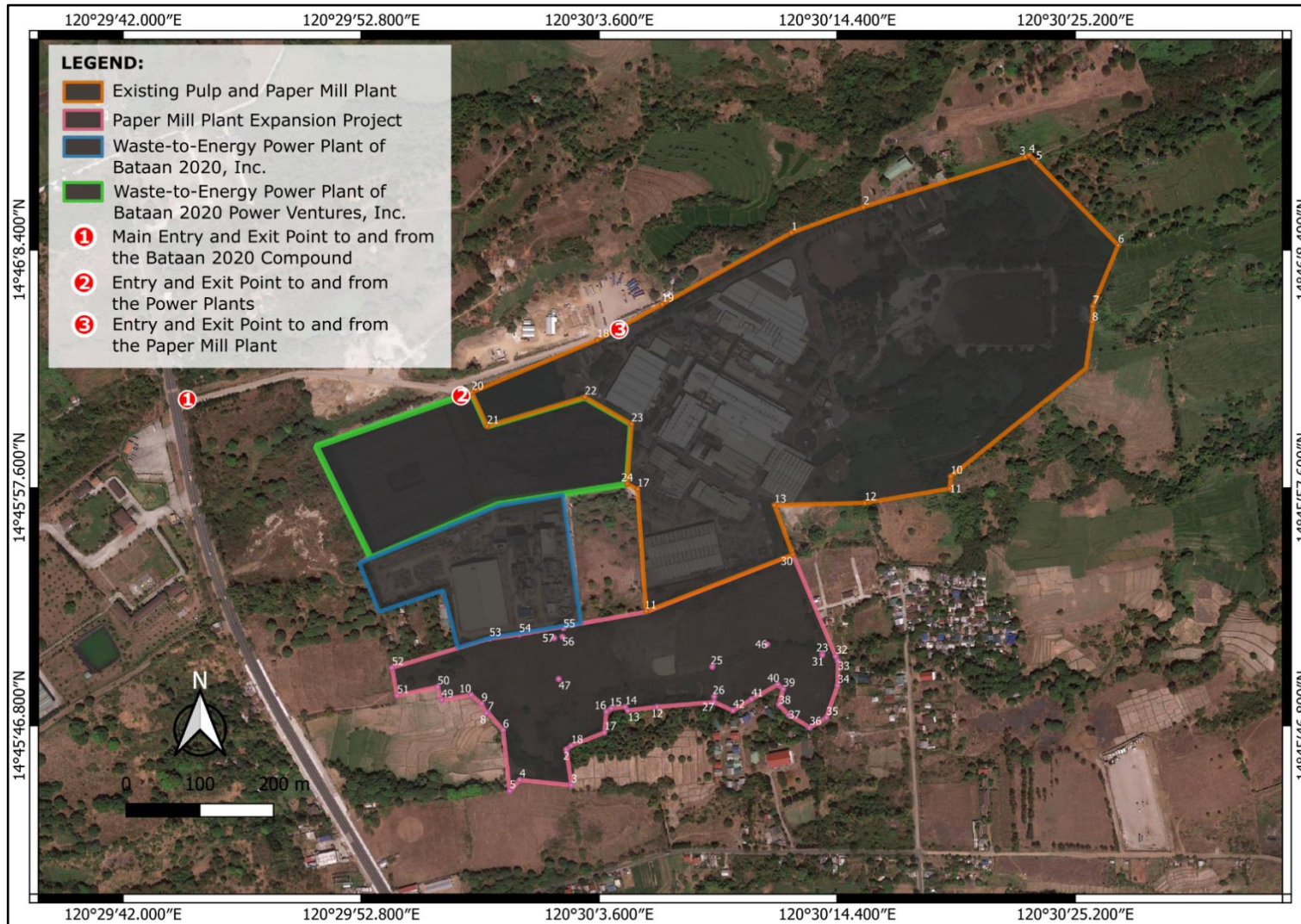
	<p><u>Domestic Solid Waste Management</u>                  Domestic solid waste: 156.5 kg/day                  Garbage bins: 8</p> <p>Domestic Solid Waste Temporary Storage Area:                  Coordinates: 14.767049, 120.503875</p> <p>Collection and disposal by the Municipal solid waste collection service, every Thursday of each week.</p>	<p><u>Domestic Solid Waste Management</u>                  Domestic solid waste: 31 kg/day                  Garbage bins: 8</p> <p>Temporary Storage: Share with existing plant</p> <p>Collection and disposal by the Municipal solid waste collection service, every Thursday of each week.</p>	<p><u>Domestic Solid Waste Management</u>                  Domestic solid waste: 187.5 kg/day                  Garbage bins: 16</p> <p>Domestic Solid Waste Temporary Storage Area:                  Coordinates: 14.767049, 120.503875</p> <p>Collection and disposal by the Municipal solid waste collection service, every Thursday of each week.</p>																								
Hazardous Waste Management System	<p><u>Temporary Hazardous Waste Storage Facility</u>                  Coordinates: 14.766448, 120.503448</p> <p>Hazardous wastes:</p> <table border="1"> <thead> <tr> <th>Hazardous Waste</th> <th>Quantity Generated per Quarter</th> </tr> </thead> <tbody> <tr> <td>Waste oil (I101)</td> <td>4,500 L</td> </tr> <tr> <td>Busted Fluorescent Lamp (D407)</td> <td>7.5 kg</td> </tr> <tr> <td>Used Batteries (D499)</td> <td>87.5 kg</td> </tr> </tbody> </table> <p>Hazardous Waste Temporary Storage Area:                  Capacity: 30,000 liters (150 drums with 200 liters capacity each)</p>	Hazardous Waste	Quantity Generated per Quarter	Waste oil (I101)	4,500 L	Busted Fluorescent Lamp (D407)	7.5 kg	Used Batteries (D499)	87.5 kg	<p><u>Temporary Hazardous Waste Storage Facility</u>                  Share with existing plant</p> <p>Hazardous wastes:</p> <table border="1"> <thead> <tr> <th>Hazardous Waste</th> <th>Quantity Generated per Quarter</th> </tr> </thead> <tbody> <tr> <td>Waste oil (I101)</td> <td>2,000 L</td> </tr> <tr> <td>Busted Fluorescent Lamp (D407)</td> <td>5 kg</td> </tr> <tr> <td>Used Batteries (D499)</td> <td>30 kg</td> </tr> </tbody> </table> <p>Hazardous Waste Temporary Storage Area:                  Share with existing plant</p>	Hazardous Waste	Quantity Generated per Quarter	Waste oil (I101)	2,000 L	Busted Fluorescent Lamp (D407)	5 kg	Used Batteries (D499)	30 kg	<p><u>Temporary Hazardous Waste Storage Facility</u>                  Coordinates: 14.766448, 120.503448</p> <p>Hazardous wastes:</p> <table border="1"> <thead> <tr> <th>Hazardous Waste</th> <th>Quantity Generated per Quarter</th> </tr> </thead> <tbody> <tr> <td>Waste oil (I101)</td> <td>6,500 L</td> </tr> <tr> <td>Busted Fluorescent Lamp (D407)</td> <td>12.5 kg</td> </tr> <tr> <td>Used Batteries (D499)</td> <td>117.5 kg</td> </tr> </tbody> </table> <p>Hazardous Waste Temporary Storage Area:                  Capacity: 30,000 liters (150 drums with 200 liters capacity each)</p>	Hazardous Waste	Quantity Generated per Quarter	Waste oil (I101)	6,500 L	Busted Fluorescent Lamp (D407)	12.5 kg	Used Batteries (D499)	117.5 kg
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Wastewater Treatment System	<p><u>Wastewater Treatment Plant</u>                  Capacity: 8,400 m<sup>3</sup>/day                  Area: 10,750 sq. m.                  Coordinates: 14.766582, 120.503596</p> <p>Operational Wastewater:                  4,800 m<sup>3</sup>/day</p> <p>Domestic Wastewater: 20 m<sup>3</sup>/day</p>	<p><u>Wastewater Treatment Plant</u>                  Share with existing plant</p> <p>Operational Wastewater:                  3,200 m<sup>3</sup>/day</p> <p>Domestic Wastewater: 4 m<sup>3</sup>/day</p>	<p><u>Wastewater Treatment Plant</u>                  Capacity: 8,400 m<sup>3</sup>/day                  Area: 10,750 sq. m.                  Coordinates: 14.766582, 120.503596</p> <p>Operational Wastewater:                  8,000 m<sup>3</sup>/day</p> <p>Domestic Wastewater: 24 m<sup>3</sup>/day</p>																								

## B. PROJECT LOCATION AND AREA

The Expansion Project is to be located in an 85,050 sq. m. lot adjacent to the existing pulp and paper mill plant in Barangay Gugo, Samal, Bataan. The Project site is bounded on the north by the Municipality of Orani, on the south by the Municipality of Abucay, on the west by Mount Natib and on the east by Manila Bay. It is approximately 114 kilometers away from Manila.

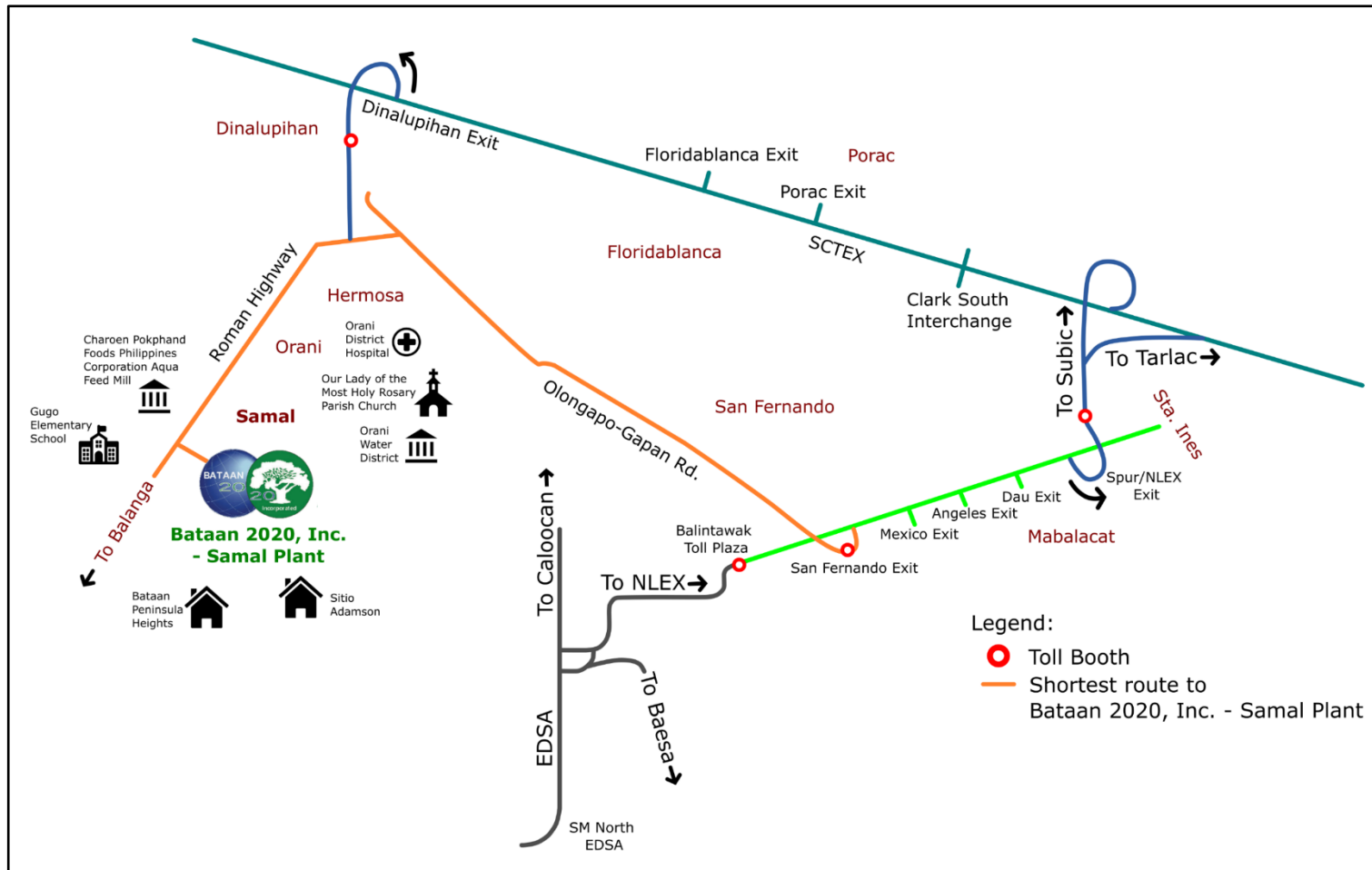
It is accessible from Manila by land using the North Luzon Expressway (**NLEx**) via Pampanga - Bataan route or through Subic-Clark-Tarlac Expressway (**SCTEx**) then along Roman Superhighway. It is about eight (8) kilometers from the Samal Municipal Hall.

The location of the existing pulp and paper mill plant and the Expansion Project is presented in **Figure 1**. The different road systems and routes to the Project site are shown in **Figure 2**.



Source: Google Earth; Modified by GEOSPHERE 2021

Figure 1. Location of the Existing Pulp and Paper Mill Plant and the Paper Mill Plant Expansion Project



Source: Bataan 2020, Inc.; Modified by GEOSPHERE 2021

Figure 2. Different Road Systems and Routes to the Project Site



The primary considerations in the selection of the site for the construction of the Expansion Project are the following:

1. Availability of power and water supply in close proximity
2. Presence of existing facilities such as wastewater treatment plant, drainage system, sewerage system and others that can be expanded to cater for the requirement of the Expansion Project
3. Compatibility of land with the existing land use of Samal, Bataan
4. Accessibility by road
5. Has no Indigenous People residing within or in the surrounding areas to eliminate the ancestral domain issues
6. Has low risk to geophysical disasters

Bataan 2020, Inc. has sought to identify alternative sites for the Expansion Project which aligned with its primary considerations, but was unable to identify another site with sufficient land available that meets the requirements of the Expansion Project. The selected site has a number of distinct advantages over alternative sites, as follows:

1. The land parcels composed of the Project site are owned by Bataan 2020, Inc.;
2. The Project site is adjacent to the Waste-to-Energy Power Plant which will supply the power requirement of the Expansion Project;
3. The Project site is within the Bataan 2020, Inc. Plant Compound where the existing four (4) deepwells of Bataan 2020, Inc. are located;
4. The Project site is adjacent to the existing pulp and paper mill plant where most facilities will be shared with the Expansion Project;
5. The Project site is already developed and is classified as an Industrial Zone based on the existing land use map of Samal, Bataan;
6. The Project site is easily accessible via Roman Superhighway, the main road/ highway in Bataan;
7. There are no Indigenous People residing within or in the surrounding areas, thus, eliminating the ancestral domain issues; and
8. The area has low risk to geophysical disasters, not susceptible to ground rupture from faults and not susceptible to lava flows.

### C. PROJECT PROPONENT

Name of Proponent : Bataan 2020, Inc.  
Proponent's Address : Barangay Gugo, Samal, Bataan  
Authorized Representative : Mr. Ismael D. Tolentino, Management Committee Member  
Contact Details : Mobile No.: 0917 736 6296; Fax No.: 0998 964 3813 local 204  
Email Address: mel.tolentino@bataan2020.net

### D. TIMEFRAME OF THE PROJECT IMPLEMENTATION

The construction phase of the Expansion Project is expected to be completed in February 2022 while the target commercial operation is on the March 2022.

### E. SUMMARY OF THE MAJOR IMPACTS AND RESIDUAL EFFECTS AFTER MITIGATION

**Table 2** presents the summary of the major environmental impacts caused by the project and residual impacts after mitigation.

**Table 2. Summary of the Environmental Impacts, Mitigating and Enhancement Measures, and Residual Impacts**

Project Phase/ Environmental Aspect	Potential Impact	Options for Prevention/Mitigation/Enhancement Measures	Target Efficiency
<b>I. PRE-CONSTRUCTION PHASE</b>			
Pre-construction Phase covers activities like planning, feasibility study, preparation drawing of plans and permit procurement.			
<b>II. CONSTRUCTION PHASE</b>			
Hiring of construction workers	Increase of income for the local residents	<ul style="list-style-type: none"> <li>Priority employment for qualified local residents without discrimination to gender and age.</li> <li>Provision of skills/vocational training program to interested local residents to be qualified for local hiring.</li> <li>Some residents may continue with small businesses such as food &amp; lodging services.</li> </ul>	100% efficient implementation of the proposed mitigation measures.
	Spread of communicable diseases from migrant workers	<ul style="list-style-type: none"> <li>Conduct of pre-employment medical examination, free of charge, for the proper selection and placement of workers in accordance with Rule 1967.01 of Occupational Safety and Health Standards (OSHS) of the Department of Labor and Employment (DOLE).</li> <li>Compliance with the Occupational Safety and Health Protocols of Bataan 2020, Inc., all its contractors and subcontractors pursuant to the Occupational Safety and Health Guidelines of DOLE, Republic Act (RA) No. 11469 also known as the "Bayanihan to Heal as One Act", the Minimum Health Standards of Department of Health (DOH) on COVID-19 and related Ordinances of the LGUs.</li> <li>Provision of sanitation kit (alcohol, germicidal soap, face masks, face shields) for workers.</li> <li>Provision of temporary housing for non-resident workers.</li> <li>Conduct of Environmental Health and Safety Briefing to workers and communities prior to construction.</li> <li>Conduct free of charge annual physical examination of the workers.</li> </ul>	100% compliance with the COVID-19-related policies and guidelines of the DOH.
	Construction-related hazards	<ul style="list-style-type: none"> <li>Conduct of Environmental Health and Safety Training prior to construction.</li> <li>Contractors will prepare and implement Construction Safety and Health Programs (CSHP) in accordance to the DOLE OSHS 1998 – Department Order No. 13 Guidelines.</li> <li>Assign Safety Personnel at each construction site to ensure CSHPs are duly followed and enforced.</li> <li>Provision of personal protective equipment (PPE).</li> <li>Provision of competent emergency health personnel within the worksite duly complemented by adequate medical supplies, equipment and facilities.</li> <li>Provision of safety signages and warning signs.</li> <li>Keep construction site tidy.</li> <li>Report equipment defects and near misses.</li> <li>Timely submission of construction safety and health report to the Bureau of Working Conditions (BWC) or to the DOLE Regional Office concerned.</li> </ul>	100% efficient implementation of the proposed mitigations and zero accident at the construction site.
Land preparation and site clearing;	Inducement of subsidence, Liquefaction, mud/debris flow, etc.	<ul style="list-style-type: none"> <li>The geotechnical study recommended the following measures:</li> </ul>	100% efficient implementation of the proposed mitigation measures.

Project Phase/ Environmental Aspect	Potential Impact	Options for Prevention/Mitigation/Enhancement Measures	Target Efficiency
Earthmoving (Excavation)		<ul style="list-style-type: none"> <li>Use of shallow foundation along the site area. The foundation level may depend on the required loading condition.</li> <li>In lieu of using piles or deep foundation system, higher loading requirements may require ground improvement, possibly of cement injection or grouting technique that can be applied marginally along foundation areas prior to construction of structures. Ground improvement may extend to 8m depth to at least 12m depth encompassing some intermittent weaker sandy soils.</li> <li>Practical observations of the subsoil shall be made during construction of every structure in the Project site.</li> </ul>	
	Change in sub-surface underground geomorphology	<ul style="list-style-type: none"> <li>There will be no significant disturbance of the subsurface/ underground geomorphology of the Project site. Although excavations shall cause permanent impact, the level of disturbance is considered to be low.</li> <li>The Project area does not entail the extraction and removal of substantial quantity of rock formation.</li> <li>The volume of spoils to be generated is approximately 6,100 m<sup>3</sup> which will be used as backfill materials for the low-lying area (lot 1880) at the Expansion Project site.</li> </ul>	100% efficient implementation of the proposed mitigation measures.
	Generation of spoils; Soil erosion	<ul style="list-style-type: none"> <li>Minimize alteration of topography and removal of vegetation.</li> <li>Control vehicle movement by maintaining the speed limit within the construction site to &lt;10kph.</li> <li>Conduct regular cleaning and clearing of construction access /sites and the surfaces of spoils and debris from construction equipment and vehicles and wetting (3x/day specially on dry season) of ground soil in the construction site.</li> <li>Store excavated materials outside road reserve and far from drainage ways. It shall be covered with plastic sheets/ geotextile.</li> <li>The volume of spoils to be generated is approximately 6,100 m<sup>3</sup> which will be used as backfill materials for the low-lying area (lot 1880) at the Expansion Project site.</li> </ul>	100% efficient implementation of the proposed mitigations.
	Sedimentation of nearby water body	<ul style="list-style-type: none"> <li>Bataan 2020, Inc. has sedimentation pond to address the possible issue on sedimentation in the area.</li> <li>Conduct regular maintenance of the sedimentation pond</li> <li>No soil stockpiling along drainage ways.</li> </ul>	
	Depletion of water resources/ competition in water use	<ul style="list-style-type: none"> <li>During construction, the Expansion Project will utilize water from the existing deepwells of Bataan 2020, Inc., which were drilled to a depth of 200m, so as not to extract water from the shallow aquifer that are utilized by the nearby community.</li> <li>Implementation of Water Conservation Measures.</li> <li>Employment of rainwater harvesting system.</li> <li>Compliance with the NWRB permit terms and conditions.</li> </ul>	100% compliance with the permitted extraction rate of NWRB, and implementation of the proposed mitigation measures.
Ingress and egress of workers	Degradation of air quality due to dust generation/ increase of suspended particles due to operation of	<ul style="list-style-type: none"> <li>Pave the road with concrete, bituminous materials, hardcore materials or metal plates; keep the road clear of dusty materials; spray the road with water or a dust suppression chemical so as to maintain the entire road surface wet; and immediately before leaving a</li> </ul>	100% compliance with RA 8749, DAO 2000-81, and implementation of the proposed mitigation measures.

Project Phase/ Environmental Aspect	Potential Impact	Options for Prevention/Mitigation/Enhancement Measures	Target Efficiency
Delivery of construction materials and mobilization of vehicles and heavy equipment	heavy equipment and transport vehicles	<ul style="list-style-type: none"> <li>construction site, every vehicle should be washed to remove any dusty materials from its body and wheels;</li> <li>Truck load of dusty materials shall be covered by clean impervious sheeting to ensure that the dusty materials do not leak out;</li> <li>Control vehicle movement by maintaining the speed limit within the construction site to &lt;10kph;</li> <li>Any stockpile of dusty material should be either covered entirely by impervious sheeting; placed in a sheltered on the top and sides; or sprayed with water or a dust suppression chemical to maintain the entire surface wet;</li> <li>Exposed earth shall be compacted, vegetation planting or sealing with suitable surface stabilizer within six (6) months after the last construction activity.</li> </ul>	
	Increase in ambient noise level	<ul style="list-style-type: none"> <li>Schedule high noise emitting works and equipment/ machines during daytime, and minimize works and use of equipment during nighttime.</li> <li>Use of the most environmentally acceptable equipment such as electrically powered equipment. If mechanical powered equipment will be used, it should be fitted with suitable silencers and mufflers.</li> <li>Use of least intrusive method of work.</li> <li>Defective equipment/ parts with abnormal noise and/or vibration will be either repaired or replaced.</li> </ul>	100% compliance with NPCC's Noise Level Standards and implementation of the proposed mitigation measures.
	Traffic congestion during peak hours  Road damage and premature deterioration of pavements	<ul style="list-style-type: none"> <li>Scheduling delivery of construction materials during off-peak hours.</li> <li>Provision of adequate parking areas for vehicles and delivery trucks.</li> <li>Compliance with the load restrictions, height and width clearances as imposed by Department of Public Works and Highways (DPWH) for all roads and bridges to be utilized during transport of construction materials and heavy equipment.</li> </ul>	100% compliance with the DPWH policies and implementation of the proposed mitigation measures.
Materials handling and waste management	Devaluation of land  Generation of construction debris and other solid wastes	<ul style="list-style-type: none"> <li>Proper waste segregation and good housekeeping.</li> <li>Provision of garbage bins and domestic solid waste temporary storage area onsite for segregation into biodegradable and non-biodegradable then sorted out into recyclables and non-recyclables before collection and disposal to the MRF of Samal LGU.</li> <li>Implementation of plastic ban in the company canteen.</li> </ul>	100% implementation of the proposed mitigation measures.
	Change in Drainage Morphology	<ul style="list-style-type: none"> <li>Strictly impose the policy of no disposal of debris into nearby water body.</li> </ul>	100% compliance with the prevention measure.
	Degradation of surface water and groundwater quality due to possible accidental spillage of fuel/oil, chemicals and contaminants; and improper sanitation from workers  Generation of hazardous wastes and domestic wastes	<ul style="list-style-type: none"> <li>Provision of hazardous waste temporary storage area onsite which is capable to store 150 drums with 200 liters capacity each.</li> <li>Return of contaminated cans/ containers of hazardous materials such as paints, thinners, wood preservatives and others to the supplier for treatment and safe disposal.</li> <li>Proper handling of fuels and chemicals during construction.</li> <li>Regular maintenance of equipment to avoid fuel/oil leaks.</li> <li>Regular inspection for leaks/spills in the hazardous waste temporary storage area.</li> </ul>	100% compliance with RA 9275, DAO 2016-08, DAO 2013-22, RA 9003 and efficient implementation of the proposed mitigation measures.

**EXECUTIVE SUMMARY FOR THE PUBLIC**

**Paper Mill Plant Expansion Project**

Roman Superhighway, Barangay Gugo, Samal, Bataan

**Bataan 2020, Inc.**

Project Phase/ Environmental Aspect	Potential Impact	Options for Prevention/Mitigation/Enhancement Measures	Target Efficiency
		<ul style="list-style-type: none"> <li>Provision of portalets (1 portalet: 20 workers) to be hauled by a DENR-registered domestic waste hauler/treater.</li> </ul>	
Payment of taxes/revenues to the local government units	Improvement of infrastructure and social services	<ul style="list-style-type: none"> <li>Diligent payment of taxes/revenues by Bataan 2020, Inc.</li> </ul>	100% diligent payment of taxes/ revenues to host LGUs.
<b>III. OPERATION PHASE</b>			
Hiring of workers for the Operation Phase	Change in population (size, distribution); In-migration; Social conflict	<ul style="list-style-type: none"> <li>Priority hiring of qualified local residents in coordination with the Samal Municipal Government and Barangay Gugo.</li> <li>Provision of training program, and skill transfer to local residents.</li> </ul>	100% priority hiring of qualified local residents in coordination with the host LGUs.
	Overburdening of public social services	<ul style="list-style-type: none"> <li>Priority hiring of qualified local residents in coordination with the Samal Municipal Government and Barangay Gugo.</li> <li>Provision of onsite medical clinic staffed by at least a doctor and a nurse.</li> </ul>	100% efficient implementation of the proposed mitigation measures.
	Introduction of disease between migrant workers and local workers	<ul style="list-style-type: none"> <li>Better workplace condition.</li> <li>Conduct of regular medical monitoring of workers.</li> <li>Provision of potable water, sanitary facilities and garbage bins for workers.</li> <li>Close coordination with the Barangay Health Unit.</li> <li>Compliance to the Occupational Safety and Health Protocols of Bataan 2020, Inc., all its contractors and subcontractors pursuant to the Occupational Safety and Health Guidelines of DOLE, R.A. 11469 also known as the "Bayanihan to Heal as One Act", Minimum Health Standards of DOH on COVID-19 and related Ordinances of the LGUs.</li> </ul>	100% compliance with the COVID-19-related policies and guidelines of the DOH, and efficient implementation of the proposed mitigation measures.
Delivery of raw materials to the Project site, and hauling of wastes from the Project site	Traffic Congestion during peak hours  Road damage and premature deterioration of pavement road.	<ul style="list-style-type: none"> <li>Proper scheduling of deliveries/hauling</li> <li>No parking of delivery/hauling trucks outside the plant compound</li> </ul>	100% efficient implementation of the proposed mitigation measures.
Operation of the Existing Pulp and Paper Mill Plant and the Expansion Project: - Paper stock preparation area, paper machine and rewinder area - Support facilities - Pollution control devices/sytems	Subsidence and Liquefaction	<ul style="list-style-type: none"> <li>Structural monitoring of buildings/ facilities especially after each earthquake.</li> <li>Implementation of the Emergency Preparedness and Response Plan of Bataan 2020, Inc.</li> </ul>	100% compliant with the National Building Code of the Philippines.  No incidence of subsidence and liquefaction.
	Soil erosion due to repeated passing-by of vehicles and workers	<ul style="list-style-type: none"> <li>Planting of trees within the vicinity of the Project site to serve as buffer for soil erosion. At present, the buffer zone of the existing pulp and paper mill plant of Bataan 2020, Inc. has 1,167 trees. Trees will also be planted for the buffer zone of the Expansion Project.</li> </ul>	100% efficient implementation of the proposed mitigation.
	Depletion of Water Resources/ Competition in Water use	<ul style="list-style-type: none"> <li>Water requirements for domestic use and plant operation activities will be sourced from the existing deepwells of Bataan 2020, Inc.</li> <li>Implementation of Water Conservation Measures such as recycling of 2,000 m<sup>3</sup> of treated wastewater per day from the wastewater volume to be utilized in the Expansion Project.</li> </ul>	100% compliance with the permitted extraction rate of NWRB, and efficient implementation of the proposed mitigation measures.

Project Phase/ Environmental Aspect	Potential Impact	Options for Prevention/Mitigation/Enhancement Measures	Target Efficiency
		<ul style="list-style-type: none"> <li>• Employment of rainwater harvesting system.</li> <li>• Compliance with the NWRB permit terms and conditions.</li> <li>• Monitoring of water extraction or water use</li> </ul>	
Materials handling and waste management	Soil contamination due to possible accidental spillage of fuel oil and chemicals	<ul style="list-style-type: none"> <li>• The diesel oil storage tank and chemical storage area of the existing pulp and paper mill plant which will be shared with the expansion project, has secondary containment in the form of bund containment walls. The bund wall of the chemical storage area has sufficient capacity to contain 110% of the volume of the largest tank plus 10% of the aggregate capacity of all other tanks within the area.</li> <li>• Immediately collect and contain spilled fuel and chemicals.</li> <li>• All hazardous wastes will be transported and disposed through a DENR-registered hazardous waste hauler/ treater.</li> </ul>	100% efficient implementation of the proposed mitigation measures.
	Degradation of surface water and groundwater quality due to discharge of untreated effluent and possible accidental spillage of chemicals.	<ul style="list-style-type: none"> <li>• Ensure effluent quality does not exceed the DENR General Effluent Standards for Class C water prior to discharge to Samal River</li> <li>• Compliance with the conditions in the Discharge Permit to be issued by the EMB-DENR.</li> <li>• Proper maintenance and operation of the wastewater treatment facility with capacity of 8,400m<sup>3</sup>/day and domestic waste collection system.</li> </ul>	100% compliance with RA 9275, DAO 2016-08, and DAO 2013-22, IRR of RA 6969, RA 9003 and efficient implementation of the proposed mitigation measures.
	Generation of domestic and hazardous wastes	<ul style="list-style-type: none"> <li>• Conduct daily inspection for possible leaks or spillages in the chemical storage area, hazardous waste and domestic solid waste storage areas.</li> <li>• Conduct regular maintenance of equipment and pipes to avoid possible leaks.</li> <li>• Provision of hazardous waste temporary storage area onsite which can fit 150 drums of 200 liters capacity each.</li> <li>• Proper sorting of domestic wastes into biodegradable and non-biodegradable for collection and disposal to the MRF of Samal LGU.</li> <li>• Return of contaminated containers of hazardous substances such as paints, thinners and others to the supplier for treatment and safe disposal.</li> </ul>	
	Nuisance odor due to generation of paper sludge	<ul style="list-style-type: none"> <li>• Paper mill sludge generated from the existing pulp and paper mill plant and to be generated from the Expansion Project will be hauled by Bataan 2020 Power Ventures, Inc. (BPVI) to be used as fuel for its Waste-to-Energy Power Plant.</li> <li>• In the event that a portion of the paper sludge hauled by BPVI will not be utilized, BPVI shall coordinate with Bataan 2020, Inc. for its proper disposal through its Solid Waste Management System.</li> </ul>	100% efficient implementation of the proposed mitigation measures.
Increase of greenhouse gases emissions	<ul style="list-style-type: none"> <li>• Planting of vegetation to open areas at the plant site and in the buffer zones. At present, the buffer zone of the existing pulp and paper mill plant of Bataan 2020, Inc. has been planted with 1,167 trees. Trees will also be planted for the buffer zone of the Expansion Project.</li> <li>• Carry out energy/water conservation programs such as use of energy efficient products (i.e., LED lights); and</li> <li>• Conduct regular inspection and proper maintenance of structural facilities, equipment, and machinery of both</li> </ul>	100% efficient implementation of the proposed mitigation measures.	

Project Phase/ Environmental Aspect	Potential Impact	Options for Prevention/Mitigation/Enhancement Measures	Target Efficiency
		the existing pulp and paper mill plant and the Expansion Project.	
	Increase in ambient noise level	<ul style="list-style-type: none"> <li>• Enclose high noise generating equipment, and implement regular and proper maintenance of machines/ equipment in accordance with the manufacturers' recommendations.</li> <li>• Provision of personal protective equipment to machine operators.</li> <li>• Establishment of a buffer zone around the Project site especially in the vicinity of an area with the highest noise level recorded.</li> <li>• Repair and replace defective equipment/parts with abnormal noise and/or vibration.</li> </ul>	100% compliance with the Noise Standards in general areas of NPCC, and efficient implementation of the proposed mitigation measures.
	<p>Generation of domestic sewage and solid wastes.</p> <p>Health problems to workers and nearby community resulting from improper waste management</p>	<ul style="list-style-type: none"> <li>• Domestic sewage generated from the existing pulp and paper mill plant goes to the sewerage system which consists of 10 two-chamber septic tanks. Domestic sewage in each septic tank is hauled annually by a DENR-registered domestic sewage hauler and treater. Similar to the existing pulp and paper mill plant, hauling of domestic sewage from the Expansion Project will be scheduled on an annual basis.</li> <li>• Regular collection of domestic solid wastes for disposal to the MRF of Samal LGU.</li> <li>• Provision of no litter signs at strategic locations in Bataan 2020, Inc. Plant Compound.</li> <li>• Provision of garbage bins, and domestic solid waste temporary storage area onsite with capacity of 70 MT for proper sorting into biodegradable and non-biodegradable domestic solid wastes then sorted out into recyclable and non-recyclable prior to collection and disposal to the Samal MRF.</li> <li>• Innovate products such as trash cans out of scrap metal tanks for donation to Barangay LGU and/or sold to interested buyers</li> <li>• Recycle treated wastewater from the existing pulp and paper mill plant to be used by the Expansion Project.</li> <li>• Use of paper sludge for fuel of the Waste-to-Energy Power Plant of BPVI.</li> </ul>	100% compliance with RA 9003, and efficient implementation of the proposed mitigations.
<b>IV. ABANDONMENT PHASE</b>			
Decommissioning	<ul style="list-style-type: none"> <li>• Reduction in employment opportunities to include the staff of local contractors with long-standing service contracts with the plant, for example, maintenance services, site transport services and franchised catering companies.</li> <li>• Out migration of affected project</li> </ul>	<ul style="list-style-type: none"> <li>• Provision of six-month notice prior to termination of contract to give ample time to look for next employment.</li> <li>• Effective management via consultation, planning and communications with affected workers.</li> <li>• Financial support within a human resources plan.</li> </ul>	100% efficient implementation of the proposed mitigation measures.

Project Phase/ Environmental Aspect	Potential Impact	Options for Prevention/Mitigation/Enhancement Measures	Target Efficiency
	personnel to seek work elsewhere.		
Hiring of workers for the decommissioning activities	<ul style="list-style-type: none"> <li>Increase in local employment during abandonment.</li> <li>New skills developed for decommissioning may be marketable elsewhere.</li> </ul>	<ul style="list-style-type: none"> <li>Prioritize hiring of qualified local residents.</li> </ul>	100% efficient implementation of the proposed mitigation measure.
Dismantling/De molition of facilities/structures; Waste management	<ul style="list-style-type: none"> <li>Soil contamination due to possible accidental spillage of fuel and chemicals during dismantling of equipment/ machines</li> </ul>	<ul style="list-style-type: none"> <li>The Abandonment/Decommissioning/Rehabilitation Plan will be strictly implemented with emphasis on the strategy of sustaining erosion/ sedimentation control within and at the adjacent vicinity of the paper mill plant and rendering the Project area free of soil contamination.</li> <li>The detailed Abandonment/Rehabilitation Plan shall be submitted to the DENR-EMB at least one year prior to project abandonment in compliance with DAO 2003-30.</li> </ul>	100% efficient implementation of the proposed mitigation measures.
	<ul style="list-style-type: none"> <li>Degradation of water quality due to accidental spills and discharges of contaminants.</li> </ul>	<ul style="list-style-type: none"> <li>Collection and removal of spills, if any.</li> <li>Removal and/or neutralization of spilled and expired chemicals.</li> <li>All hazardous wastes collected will be transported and disposed through a DENR-registered hauler/treater.</li> </ul>	100% compliance to RA 9275, DAO 2016-08, and efficient implementation of the proposed mitigation measures.
	<ul style="list-style-type: none"> <li>Air quality degradation due to generation of dusts and exhaust emissions from heavy equipment.</li> <li>Increase in ambient noise level</li> </ul>	<ul style="list-style-type: none"> <li>Control vehicle movement maintaining the speed limit within the plant site to &lt;10kph.</li> <li>Conduct regular cleaning and clearing of decommissioning sites and the surfaces of debris from equipment and vehicles and wetting (3x/day specially on dry season) of ground soil in the site.</li> <li>Proper maintenance of vehicles.</li> <li>Use of noise suppressors/mufflers.</li> <li>Limiting noisy activities during daytime.</li> </ul>	100% compliance with RA 8749, DAO 2000-81 and efficient implementation of the proposed mitigation measures.
	<ul style="list-style-type: none"> <li>Nuisance and local disturbance or damage as a result of increased road traffic, noise, etc.</li> </ul>	<ul style="list-style-type: none"> <li>Implementation of decommissioning impact management plan.</li> <li>Proper scheduling of dismantling activities.</li> <li>No parking of trucks outside the plant compound.</li> </ul>	100% efficient implementation of the proposed mitigation measures.

## F. IDENTIFIED STAKEHOLDERS

The following are the identified stakeholders of the Expansion Project:

- LGU of the host municipality: Samal Municipality
- LGU of the host barangay: Barangay Gugo
- Sectoral Representatives (Education, Health, Livelihood, Religious, Business, Senior Citizens, Women) at the host LGUs
- Non-Government Organizations at the host LGUs



## G. STATEMENT OF COMMITMENT AND CAPABILITY TO IMPLEMENT NECESSARY MEASURES TO PREVENT NEGATIVE IMPACTS

The Bataan 2020, Inc. as the Proponent commits to provide overall policy and guidance with regards to the implementation of the Expansion Project. Bataan 2020, Inc. shall ensure that all necessary mitigating measures including budgets and agreements with concerned national and local government agencies are included in all contracts to prevent and/or minimize the negative impacts of the project and enhance the positive impacts.

## H. INFORMATION ON WHERE TO GET COPY OF THE EPRMP

The draft Environmental Performance Report and Management Plan (**EPRMP**) and this ESP will be posted in the EMB website (<https://emb.gov.ph/>) at least 20 days before the public hearing. After the review process, the final EPRMP of the Paper Mill Plant Expansion Project will be available at the following:

1. **EMB - Region III**  
Diosdado Macapagal Government Center, Brgy. Maimpis, San Fernando City, Pampanga
2. **MPDO – Samal Municipality**  
Samal, Bataan

For more information about the Expansion Project, the following people may be contacted:

Proponent:	Preparer:
<b>Mr. Ismael D. Tolentino</b> Management Committee Member Bataan 2020, Inc. Brgy. Gugo, Samal, Bataan Mobile No.: 0917 736 6296 Fax No.: 0998 964 3813 local 204 Email Address: mel.tolentino@bataan2020.net	<b>Engr. Leticia T. dela Cruz</b> Managing Director GEOSPHERE Technologies, Inc. 19D Eisenhower Tower, Eisenhower St., Greenhills, San Juan City, Metro Manila Tel: (02) 8724-5665/67 E-mail: gti0722@geospheretechnology.com