

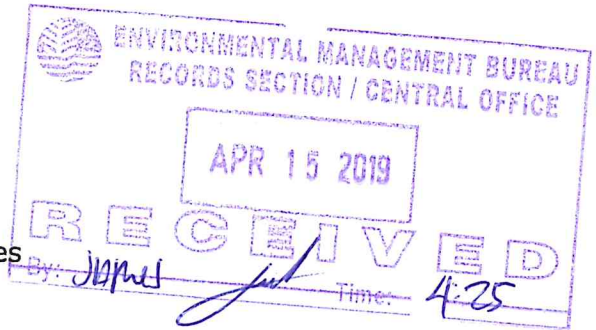


Holcim Philippines, Inc.  
7th Floor , Venice Corporate  
Center, 8 Turin Street  
McKinley Town Center,  
Fort Bonifacio, Taguig 634  
Philippines

Phone +63 2 459 3333  
Fax +63 2 459 4444  
www.holcim.ph

**15 April 2019**

**ENVIRONMENTAL MANAGEMENT BUREAU**  
Department of Environment and Natural Resources  
DENR Compound, Visayas Avenue  
Diliman, Quezon City 1116



Attention: **Engr. Esperanza A. Sajul**  
*Chief, EIA and Management Division*

Re: Project Description for the Proposed Lugait Plant Expansion Project

Dear Engr. Sajul:


We respectfully submit one (1) copy of the Project Description for the proposed Lugait Plant Expansion Project.

The project proposes to reactivate the currently mothballed Line 1 thru equipment upgrade to increase the production capacity from 871,200 MT/y to 1,060,000 MT/year of cement. Also, the ECC amendment will cover the process finetuning of Line 2 to support the increase of cement production capacity from 1,700,000 MT/y to 2,400,000 MT/year. The project is located in Barangay Poblacion, Lugait, Misamis Oriental and Sitio Mapalad, Dalipuga, Iligan City, Lanao Del Norte.

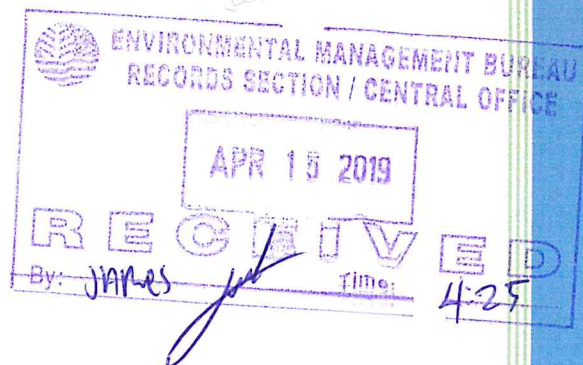
As part of the EIA process stipulated in the Revised Procedural Manual for D.A.O 03-30, we would like to request for a Public Scoping for the above-cited project.

We hope you find the document in order.

Sincerely yours,

  
**Orville B. Sacayle**  
Project Manager





# PROJECT DESCRIPTION FOR SCOPING



## Proposed Holcim Lugait Plant Expansion Project

**Holcim Philippines, Inc.**



## TABLE OF CONTENTS

<b>1</b>	<b>PROJECT DESCRIPTION.....</b>	<b>5</b>
1.1	Project History .....	5
1.2	Project Location .....	6
1.2.1	Impact Area .....	11
1.3	Project Rationale.....	13
1.4	Project Alternative .....	14
1.5	Project Components .....	14
1.5.1	Port Operation.....	14
1.5.2	Non-Production Facilities .....	14
1.5.3	Technical Description of Proposed Equipment Installation .....	14
1.5.4	Pollution Control Devices .....	22
1.5.5	Utilities.....	29
1.6	Process Technology Options.....	30
1.6.1	Line 1 Existing and Proposed Operation .....	30
1.6.2	Line 2 Existing and Proposed Operation .....	35
1.7	Development Plan, Description of Project Phases, and Corresponding Timeframes.....	46
1.7.1	Pre-Construction Phase .....	46
1.7.2	Construction Phase .....	46
1.7.3	Operation Phase .....	46
1.7.4	Abandonment/Decommissioning Phase .....	46
1.8	Project Size .....	47
1.8.1	Production Capacity .....	47
1.8.2	Size.....	48
1.9	Project Cost.....	48

## LIST OF FIGURES

Figure 1 - Project Location Map .....	9
Figure 2 - Google Earth view of the Project .....	10
Figure 4 – Project Drone Shot .....	12
Figure 4 - Line 1 Process Flow Diagram .....	43
Figure 5 - Line 2 Process Flow Diagram .....	44



**LIST OF TABLES**

<i>Table 1 - Geographic Coordinates of the Plant Area .....</i>	<i>6</i>
<i>Table 2 - Geographic Coordinates of the Port Area .....</i>	<i>7</i>
<i>Table 5 - Existing Pollution Control Devices .....</i>	<i>22</i>
<i>Table 6 - Proposed Pollution Control Devices .....</i>	<i>24</i>
<i>Table 7 - Fuel Characteristic .....</i>	<i>30</i>
<i>Table 6 - Initial Impact Management Plan .....</i>	<i>49</i>

**LIST OF ANNEXES**

Annex A – Issued Environmental Compliance Certificate
Annex B – Lease Agreement Between HPHI and HMDC
Annex C – Information, Education and Communication (IEC) and Perception Survey Documentations



**A. PROJECT FACT SHEET**
**I. Project Information**

<b>Name of Project</b>	<b>Proposed Lugait Plant Expansion Project</b>
<b>Location</b>	Barangay Poblacion, Municipality of Lugait, Misamis Oriental and Sitio Mapalad, Barangay Dalipuga, Municipality of Iligan City, Lanao Del Norte
<b>Nature of the Project</b>	Modification of Cement Processing Plant
<b>Issued ECC</b>	ECC Ref. No. 9607-001-104C ECC Ref. No. 95-ECC-REC-1043-843
<b>Area Covered</b>	Cement Plant – 71.6 hectares Pier – 8.1282 hectares <b>Total Project Area: 79.7282 hectares</b>
<b>Proposed Project Expansion</b>	
<b>Production Capacity</b>	<p><b>Existing</b></p> <p>Line 1 Cement: 871,200 MT/year Clinker: 693,500 MT/year</p> <p>Line 2 Cement: 1,700,000 MT/year Clinker: 1,300,000 MT/year</p> <p><b>Proposed</b></p> <p>Line 1: Cement: 1,060,000 MT/year Clinker: 1,100,000 MT/year</p> <p>Line 2: Cement: 2,400,000 MT/year Clinker: 1,600,000 MT/year</p>
<b>Upgrading/Installation of Equipment</b>	<p>► <b>Re-activation of existing pyro-processing sections of Line 1 covering the following components/activity:</b></p> <ul style="list-style-type: none"> <li>❖ New raw material feed system which ties into the existing Line 2 raw materials system.</li> <li>❖ New Vertical Roller Mill (VRM) for raw meal production with associated fabric filter type baghouse, ID fans, gas ducts, stack and associated equipment.</li> </ul>



	<ul style="list-style-type: none"> <li>❖ New raw meal silo with bucket elevators to feed the raw meal silo.</li> <li>❖ New kiln baghouse with ID fan and stack</li> <li>❖ New 4-stage pre-calciner/pre-heater with new tower and kiln feed system</li> <li>❖ New rotary kiln with new kiln hood, burners, tertiary air duct and other associated equipment New cooler and electrostatic precipitator (ESP)</li> <li>❖ New coal mill system with a VRM and pulverized firing system to the kiln and pre-calciner</li> <li>❖ Fully enclosed storage hall for clinker with additional cladding and de-dusting system</li> <li>❖ Electrical modernization and new plant control system for central control room operations including Finish Mill 1</li> </ul> <p>► <b>Process finetuning of Line 2 to support the increase of cement production capacity.</b></p>
--	---

## II. Proponent Profile

<b>Proponent Name</b>	<b>Holcim Philippines, Inc.</b>
<b>Address</b>	Head Office 7th Floor, Venice Corporate Center No. 8 Turin Street McKinley Hill Town Center Fort Bonifacio, 1634 Taguig City, Philippines
<b>Contact Person</b>	Engr. Bobby Garza Plant Manager
<b>Contact Number</b>	Head Office: (+632) 459-3333

Holcim Philippines Inc. (HPHI) is a member of the LafargeHolcim Group, the leading building solutions provider in the world. . LafargeHolcim is a team of more than 80,000 employees and operates in 80 countries around the globe. It operates four businesses segments: Cement, Aggregates and Ready-Mix Concrete as well as Solutions & Products, which includes precast concrete, asphalt, mortar and building solutions.

Holcim established its presence in the Philippine cement industry in 1974. Holcim Philippines takes pride in being the leading cement company in the country. It operates four state-of-the-art cement manufacturing facilities in key areas nationwide located in La Union, Bulacan, Lugait and Davao. All plants are certified to internationally recognized management system standards, namely: ISO 9001 - Quality Management System, ISO 14001 - Environmental Management System and OHSAS 18001 - Occupational Health and Safety Management System.

HPHI has a total annual cement capacity of 10 million tons and a skilled workforce of over 1,100 employees. Its corporate headquarters is located in 7th Floor, Venice Corporate Center, No. 8 Turin Street, McKinley Hill Town Center, Fort Bonifacio, 1634 Taguig City.

By giving back to society, Holcim Philippines contributes to a growing economy and builds stronger and more prosperous communities, making a difference in people's lives. With market-oriented structures, new and stronger product offerings, technically skilled employees, and efficient environmental impact management systems, Holcim lights the way to an even stronger future.

## **1 PROJECT DESCRIPTION**

### ***1.1 Project History***

Holderbank Financiere Glaris, the old name of Holcim started its presence in the Philippines as early as 1970's in partnership with Iligan Cement owned by Alcantara Group and another cement plant in Surigao City, PACEMCO. But eventually opt to sell its stake in those 2 plants and concentrated in Union and Alsons in the late 90's. Holcim Lugait Plant was originally built as Floro Cement Corporation and started commercial operations in 1972 with a brief closure in 1985 and re-opened in 1988.

Acquired by the Alcantara Group of Companies in 1991 and was renamed Alsons Cement Corporation.

Alsons Merged with Phinma Group of Companies in 2003 under the company name Union Cement Corporation.

In 2005, Union Cement Corporation becomes what is now Holcim Philippines Inc. with 4 plants operating at Full Capacity (La Union, Bulacan, Lugait and Davao Plants with Cement Terminal in Batangas and Grinding Plant in Mabini Batangas.)



In 2015, Holcim Philippines Inc. became a member of the LafargeHolcim Group which was formed by the merger of cement companies Lafarge and Holcim.

## 1.2 Project Location

The proposed expansion project is located in Barangay Poblacion, Municipality of Lugait, Misamis Oriental and Sitio Mapalad, Barangay Dalipuga, Municipality of Iligan City, Lanao Del Norte covered by the following geographical coordinates:

**Table 1 - Geographic Coordinates of the Plant Area**

Point	Latitude	Longitude
1	8° 20' 6.8022"	124° 15' 14.5326"
2	8° 20' 6.8022"	124° 15' 15.2136"
3	8° 20' 5.334"	124° 15' 17.6106"
4	8° 20' 6.522"	124° 15' 17.4738"
5	8° 20' 6.522"	124° 15' 17.4738"
6	8° 20' 6.522"	124° 15' 17.4738"
7	8° 20' 6.864"	124° 15' 27.6156"
8	8° 20' 6.1656"	124° 15' 28.1262"
9	8° 20' 3.8904"	124° 15' 29.088"
10	8° 20' 1.8522"	124° 15' 30.7182"
11	8° 20' 1.2336"	124° 15' 30.834"
12	8° 20' 0.9306"	124° 15' 31.7406"
13	8° 19' 59.3646"	124° 15' 32.1912"
14	8° 19' 58.7958"	124° 15' 33.4656"
15	8° 19' 59.1774"	124° 15' 34.3254"
16	8° 20' 0.3474"	124° 15' 35.0496"
17	8° 19' 58.4904"	124° 15' 39.2538"
18	8° 19' 57.9642"	124° 15' 42.9258"
19	8° 19' 54.066"	124° 15' 44.7516"
20	8° 19' 51.6498"	124° 15' 45.81"
21	8° 19' 47.5566"	124° 15' 46.6416"
22	8° 19' 46.416"	124° 15' 45.0612"
23	8° 19' 50.0412"	124° 15' 41.5188"
24	8° 19' 42.6354"	124° 15' 38.9082"
25	8° 19' 45.3786"	124° 15' 28.2306"

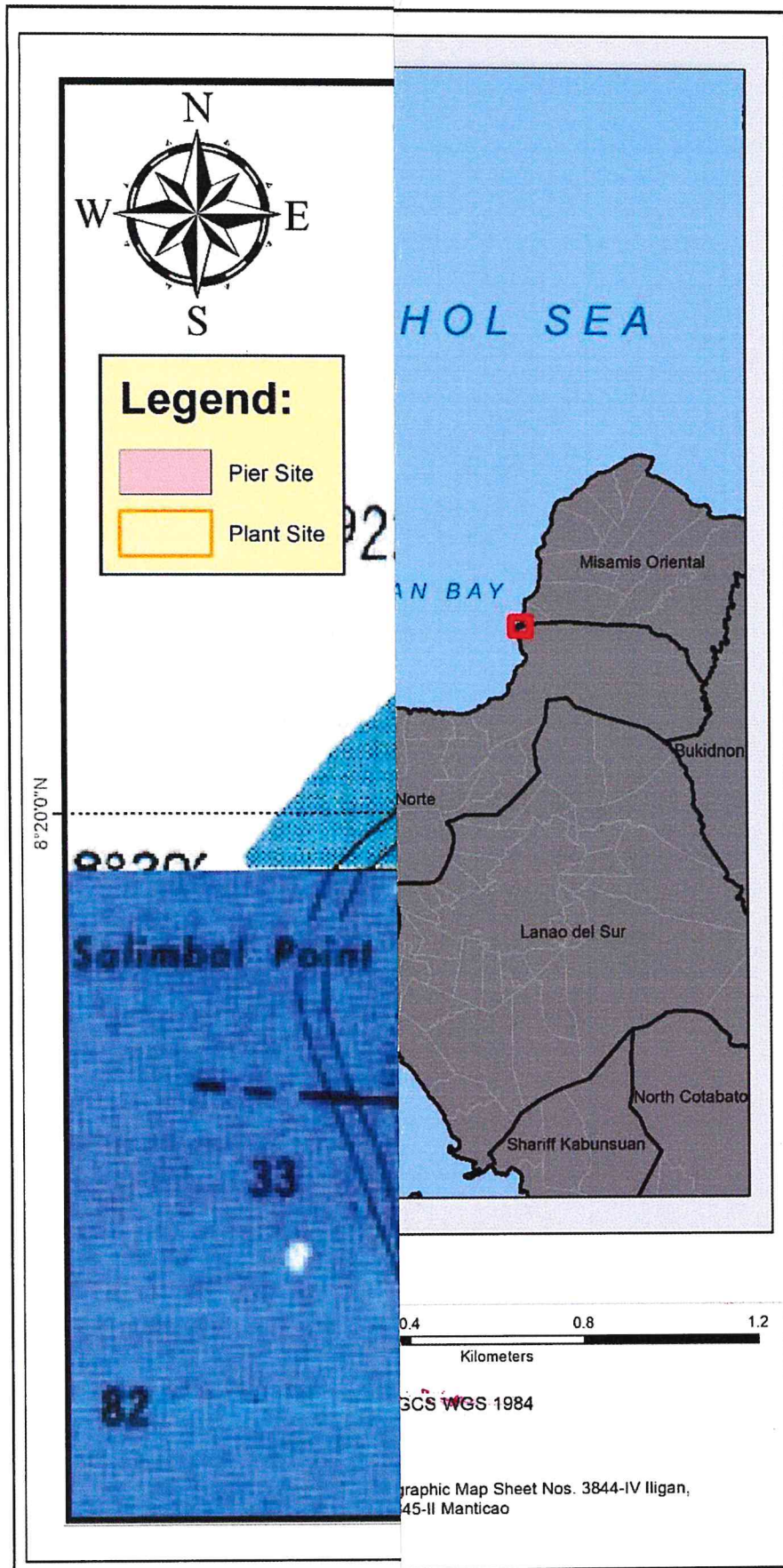
Point	Latitude	Longitude
26	8° 19' 45.5226"	124° 15' 26.625"
27	8° 19' 46.6392"	124° 15' 22.4856"
28	8° 19' 47.5356"	124° 15' 18.885"
29	8° 19' 47.8344"	124° 15' 17.6934"
30	8° 19' 48.813"	124° 15' 13.5936"
31	8° 19' 48.0576"	124° 15' 13.7988"
32	8° 19' 47.2476"	124° 15' 12.9024"
33	8° 19' 45.4764"	124° 15' 9.1074"
34	8° 19' 49.4004"	124° 15' 4.4928"
35	8° 19' 52.3236"	124° 14' 56.4684"
36	8° 19' 53.6988"	124° 14' 54.3942"
37	8° 19' 54.408"	124° 14' 54.0234"

**Table 2 - Geographic Coordinates of the Port Area**

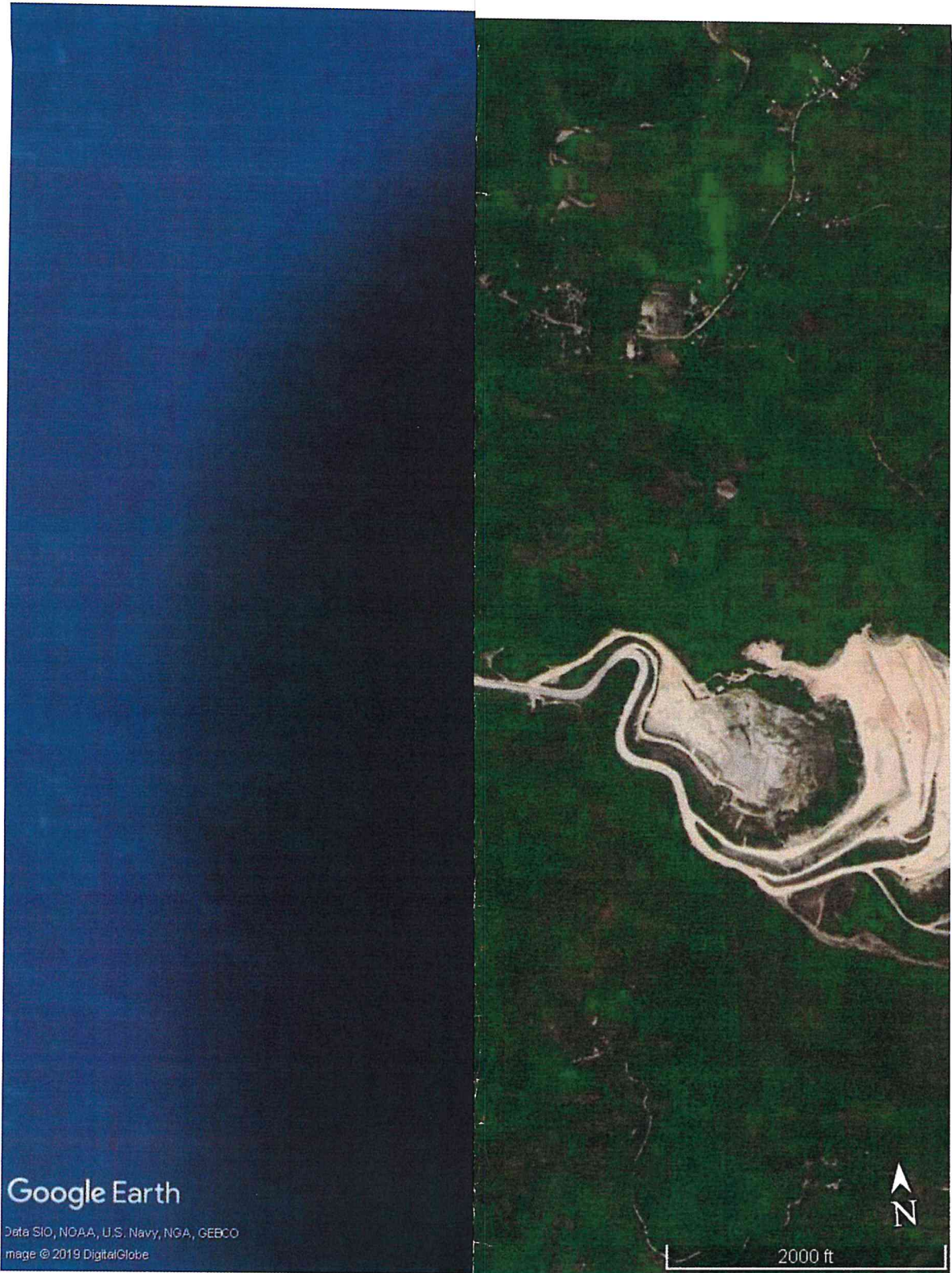
Point	Latitude	Longitude
1	8° 20' 8.7288"	124° 15' 1.5264"
2	8° 20' 5.6148"	124° 15' 3.816"
3	8° 20' 6.7884"	124° 15' 5.8356"
4	8° 20' 7.5552"	124° 15' 8.8632"
5	8° 20' 8.2968"	124° 15' 10.0188"
6	8° 20' 6.9072"	124° 15' 11.376"
7	8° 20' 1.9644"	124° 15' 3.9708"
8	8° 20' 0.9924"	124° 15' 2.8692"
9	8° 20' 0.1716"	124° 15' 1.4652"
10	8° 19' 58.224"	124° 14' 57.21"
11	8° 19' 57.1224"	124° 14' 54.9456"
12	8° 19' 56.388"	124° 14' 53.9088"
13	8° 19' 55.8084"	124° 14' 53.3688"
14	8° 19' 55.722"	124° 14' 53.6712"
15	8° 19' 54.3216"	124° 14' 52.854"
16	8° 19' 54.426"	124° 14' 51.8568"
17	8° 19' 56.1036"	124° 14' 50.1684"
18	8° 19' 56.6184"	124° 14' 49.6284"



Point	Latitude	Longitude
19	8° 19' 53.8392"	124° 14' 47.8932"
20	8° 19' 55.182"	124° 14' 45.5568"
21	8° 19' 58.2204"	124° 14' 47.4864"
22	8° 20' 0.978"	124° 14' 49.2108"
23	8° 19' 59.5884"	124° 14' 51.3924"
24	8° 19' 59.2248"	124° 14' 51.2124"
25	8° 19' 58.71"	124° 14' 51.5508"
26	8° 20' 5.2692"	124° 15' 3.42"
27	8° 20' 8.4192"	124° 15' 1.3644"
28	8° 20' 7.692"	124° 15' 0.1476"
29	8° 20' 8.0772"	124° 14' 59.91"
30	8° 20' 9.6252"	124° 15' 2.6496"
31	8° 20' 10.0212"	124° 15' 2.4228"







**1.2.1 Impact Area**

The area subjected to the EIA was based on the perceived direct and indirect impact areas of the proposed project. As stipulated in Revised Procedural Manual for DAO No. 2003-30, direct impact areas, in terms of physical environment, are those where all project facilities are to be constructed/situated and the designated project area. The entire area within the Project being applied for amended ECC are all considered direct impact areas. The direct impact barangay are Barangays of Poblacion and Sitio Mapalad, Barangay Dalipuga.

On the other hand, areas not directly subjected to any activities/construction and those outside the project area but are within the jurisdiction of the Municipality of Lugait and Iligan City (e.g. stretch of the river draining the project area, communities along haul roads) are considered as indirect impact areas.



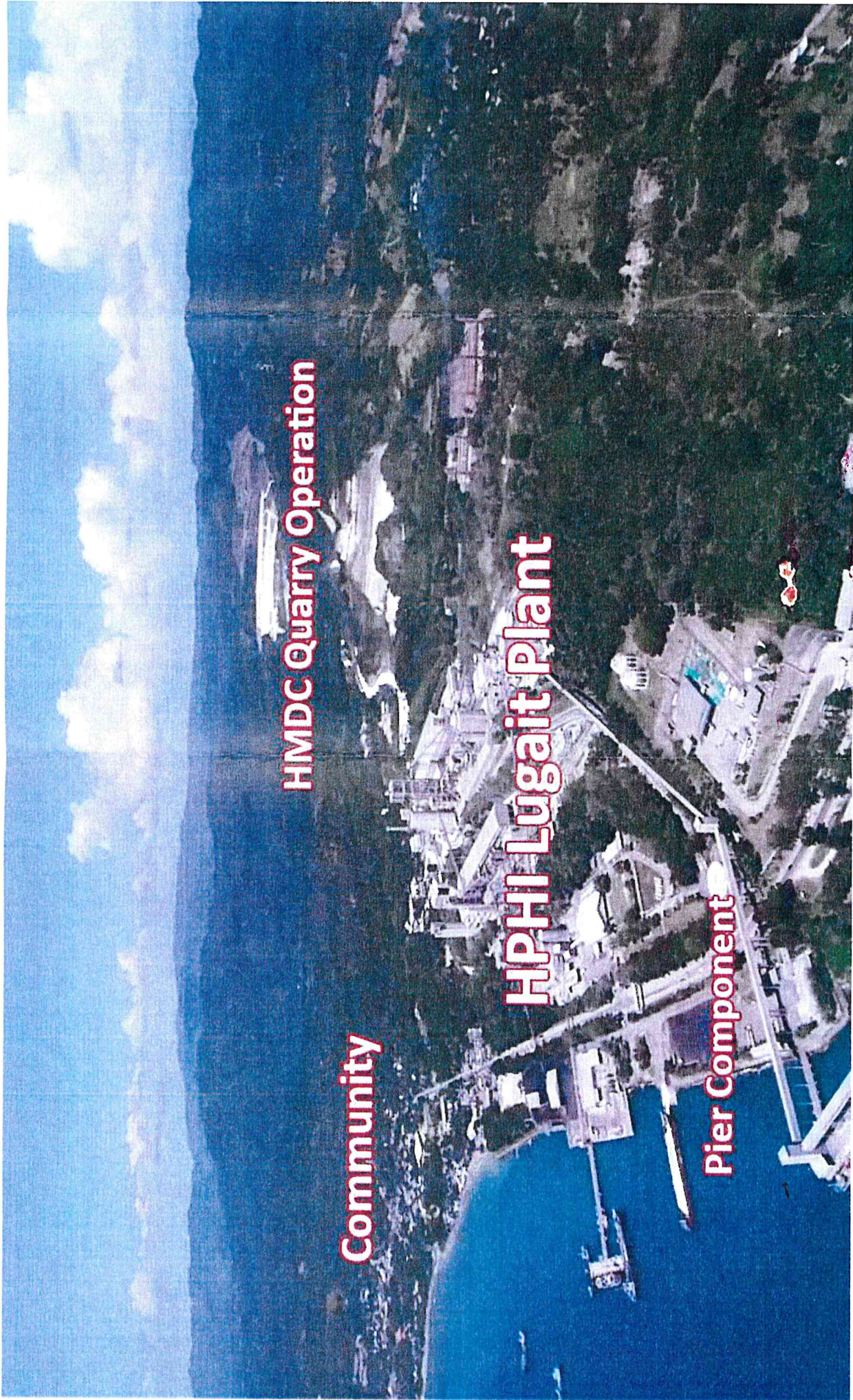


Figure 3 – Project Drone Shot



**1.3 Project Rationale**

President Duterte initiated the “Build, Build, Build” (BBB) Program, which seeks to accelerate infrastructure spending and develop industries that will yield robust growth, create jobs and improve the lives of Filipinos. This initiative gave rise to the construction of various infrastructures such as high-rise buildings, roads, airports and even housing. In the establishment of these concrete structures/products, cement serves as the major ingredient for its creation.

In order to supply quality cement for supporting further rapid development of the country, Holcim Philippines, a member of LafargeHolcim, will execute a series of small and medium size projects to rationalize the plant equipment operation, with focus on equipment upgrading, and optimization.



**1.4 Project Alternative**

Since the project is already operating, selection of new project location and technology will no longer be considered. The expansion project will focus on the re-installation of Line 1 equipment.

**1.5 Project Components****1.5.1 Port Operation**

The project has an existing port facility covering a total area of 8.1282 hectares that caters raw materials in-loading and cement in-loading and out-loading/dispatching.

**1.5.2 Non-Production Facilities**

The existing and proposed non-production facilities to support the project operation are presented below:

Line 2 Existing and Proposed (No Additional Facility)	Proposed (Line 1)
a. Administration Office/Port and Logistics Office	a. Administration Office/Port and Logistics Office
b. Laboratory	b. Laboratory
c. Central Control Room	c. Central Control Room
d. Motor Control Center	d. Motor Control Center
e. Machine Shop	e. Electrical Shop
f. Electrical Shop	f. Warehouse
g. Warehouse	g. Substation
h. Substation	h. Parking
i. Rest and Duty Room	
j. Guardhouse	
k. Canteen	
l. Recreation Area	
m. Parking	

**1.5.3 Technical Description of Proposed Equipment Installation****1.5.3.1 Plant Concept and Selection**

The key performance indicators for the Lugait New Line Project are:

- Kiln BDP of 3,000tpd
- Kiln net OEE of 85%

- Heat consumptions of 3,400MJ/t clinker

The project consists of the following:

- New raw material feed system which ties into the existing Line 2 raw materials system
- New Vertical Roller Mill (VRM) for raw meal production with associated fabric filter type baghouse, ID fans, gas ducts, stack and associated equipment
- New raw meal silo with bucket elevators to feed the raw meal silo
- New kiln baghouse with ID fan and stack
- New 4-stage pre-calciner/pre-heater with new tower and kiln feed system
- New rotary kiln with new kiln hood, burners, tertiary air duct and other associated equipment
- New cooler and electrostatic precipitator (ESP)
- New coal mill system with a VRM and pulverized firing system to the kiln and pre-calciner
- Fully enclosed storage hall for clinker with additional cladding and de-dusting system
- Electrical modernisations and new plant control system for central control room operations including Finish Mill 1

#### ***1.5.3.2 Plant Capacity***

##### **Line 1**

The Line 1 is an old line and the clinker production facilities shall be revived with an increased capacity from 1,900 tpd to 3,000 tpd clinker production. Most of the equipment will be replaced with new and efficient technology. Line 1 cement production facilities are existing and operational.

##### ***1.5.3.2.1 Production Process and Mechanical Equipment***

The production process will be similar to Line 2 after the process upgrades. Since both kilns will have a common raw materials stockpile and coal supply, the process will be similar. The existing Line 2 raw materials reclaim and transport system has sufficient capacity to serve Line 1 in addition to Line 2.



#### *1.5.3.3 Technical Description*

##### *1.5.3.3.1 Raw Material Preparation*

This is the existing Line 2 plant which will feed both Line 2 and Line 1.

##### *1.5.3.3.2 Limestone and Clay Crushing*

This is the existing Line 2 plant. The crusher capacity is 1,400tph which is adequate to sustain both lines with 6 days operation at 2 shifts/day.

##### *1.5.3.3.3 Raw Material Transport*

This is the existing Line 2 plant transport and pre-blend stacking system.

##### *1.5.3.3.4 Raw Meal Preparation*

###### *1.5.3.3.4.1 Raw Material Reclaiming and Transport*

The existing reclaimer shall serve both kiln lines. The reclaimer capacity is adequate to serve both lines. PLC changes are envisaged to minimize the bin change over times in the proportioning building.

###### *1.5.3.3.4.2 Raw mill feed (Group 335)*

The feed for the Line 1 will originate from the Line 2 dosing building located near the Line 2 Raw mill VRM. Two of the existing bins in this building will be used for Line 1 (as installed and current unused) and two new bins located in a new building will provide the remaining dosing bins required for the raw feed.

The limestone/clay mix and the correctives will be transported from their feed bins to the raw grinding system via an extension of the 1 primary crusher belt and a new belt conveyor system to the raw mill.

###### *1.5.3.3.4.3 Raw material grinding*

The raw mill circuit includes all material transports, external recirculation with bucket elevator and two tramp metal removing systems.

A vertical roller mill will be installed in this project. A three-fan system, consisting of raw mill fan, kiln ID fan and filter fan is envisaged for the raw mill system.

Waste gas for drying purposes is taken out from the kiln preheater exhaust (compound operation) and the cooler waste gas. At the mill outlet, the gas carrying the fine and dry particles passes first through a series of cyclones where the major part of the raw meal is separated out. The final dust removal takes place in the kiln filter.

A Hot Gas Generator as auxiliary heat source for the raw material drying is installed.

#### *1.5.3.3.4.4 Raw Meal Transport and Storage*

The raw meal collected in the mill cyclones is transported to a new homogenizing silo by means of new airslide conveyors and bucket elevator.

#### *1.5.3.3.5 Clinker Production*

##### *1.5.3.3.5.1 Raw Meal Transport to Kiln Feed*

Raw meal is transported from the silo by a bucket elevator feeding the preheater tower.

##### *1.5.3.3.5.2 Kiln Dedusting, Kiln Dust Handling*

All new process equipment including a new pulse jet type process filter coupled with a new ID fan and main stack. Kiln dust will return to the raw meal silo via a transport system.

##### *1.5.3.3.5.3 Kiln Feed*

A new contemporary mechanical type kiln feed system.

##### *1.5.3.3.5.4 Preheating*

This group consists of a four-stage cyclone preheater, downcomer duct and kiln fan.

##### *1.5.3.3.5.5 Pre-calcining*

This will be constructed in the preheater tower.



#### ***1.5.3.3.5.6 Kiln***

This group consists of a rotary kiln (3 pier), including all refractory, cooling fans etc. The kiln drive will be upgraded to AC VFD. A new thruster system will be installed and major replacements of the shell, tires, rollers and girth gear drive system will be undertaken. A new firing system, kiln hood, TAD will be installed.

#### ***1.5.3.3.5.7 Clinker Cooler***

Existing CPAG cooler will be replaced with a 4th generation cooler. The cooler will have a hot gas take off to supply the raw mill.

#### ***1.5.3.3.5.8 Kiln Firing***

A new high momentum burner for traditional fuels as main fuel and light fuel oil for start-up will be installed.

#### ***1.5.3.3.5.9 Clinker Transport and Storage***

The clinker is transported to the storage hall via a new transport conveyor. The existing storage hall is currently arranged for both clinker and raw materials. After the re-activation, the hall will cater only for clinker and FM1 additives.

The existing storage hall will be fully enclosed with additional cladding and de-dusting to address any potential fugitive dust issues.

### **Line 2**

The existing Line 2 operations shall utilize the same process and equipment with increase in clinker and cement production capacity. This will be achieved through process optimization. The increase in clinker production will be mainly driven by process optimization of existing kiln cooler to improve efficiency and optimize heat recovery such as direct aeration process, clinker crushing and cooler water spray optimization. On cement production, this will be driven mainly by process will be mainly optimization of existing ventilation fans to increase gas velocity inside the mill and improve feed transport system to increase cement mill production rate.

**Table 3 - Existing and Proposed Line 1 Component**

Plant Process	LINE 1 Existing		LINE 1 Proposed	
	Equipment	Description	Equipment	Description
<b>Raw Material Preparation</b>				
Pre-blended Crushing	Roller Crusher	shared with Line 2	Roller Crusher	shared with Line 2
Additive Premix Crushing/Drying	Impact Crusher/Dryer	250tph	Impact Crusher/Dryer	250 TPH
Pre-blending Storage	Storage Building	shared with Line 2	Storage Building	shared with Line 2
<b>Raw Meal Preparation</b>				
Raw Meal Grinding	Vertical Roller Mill (VRM)	n/a	Vertical Roller Mill (VRM)	240 tph
Homogenization Silo and Storage	Raw Meal Silo	n/a	Raw Meal Silo	5,000 tons
Correctives Storage	Correctives Storage	shared with line 2	Correctives Storage	shared with line 2
<b>Clinker Manufacture</b>				
Pre-heating	Pre-heater tower	n/a	Pre-heater tower	4-stage cyclone system w/ pre-calcliner
Rotary Kiln	Rotary Kiln	n/a (1,900 TPD)	Rotary Kiln	3,000 TPD
Fuel Preparation	Coal Mill (VRM)	n/a	Coal Mill (VRM)	22 tph
Clinker Cooling	Clinker Cooler	n/a	Clinker Cooler	3,000 tpd
Clinker Storage	Clinker Silo		Clinker Silo	
Fuel Storage	Coal, AFR and Oil & Other Fuels Storage Buildings/Yard	shared with Line 2	Coal, AFR and Oil & Other Fuels Storage Buildings/Yard	shared with Line 2
<b>Cement Production</b>				
Cement Grinding (Ball Mills)	Finish Mill 1	110 TPH	Finish Mill 1	120 TPH
Pe-grinding	Pe-grinding		Pe-grinding	
Cement Storage	Cement Storage		Cement Storage	
Additives Storage	Additives Storage		Additives Storage	



Table 4 - Existing and Proposed Line 2 Component

Plant Process	LINE 2 Existing		LINE 2 Proposed
	Equipment	Description	
Raw Material Preparation			
Pre-blended Crushing Additive Premix Crushing/Drying Pre-blending Storage	Roller Crusher Impact Crusher/Dryer Storage Building	1,400 TPH, 100 mm size 350 TPH, 25 mm size 2 x 35,000 metric tons	same
Raw Meal Preparation			
Preblended, Additives and Mill Feed Transport Raw Meal Grinding Homogenization Silo and Storage Correctives Storage	Bedeschi Reclaimer Vertical Roller Mill (VRM) Raw Meal Silo Corrective Storage	630 TPH 330 TPH 10,000 metric tons 1 X 1,100 metric tons (iron slag) 1 X 4,000 metric tons (silica) 1 X 3,400 metric tons (limestone)	same
Clinker Manufacture			
Pre-heating Rotary Kiln Gas Conditioning Fuel Preparation Clinker Cooling	Pre-heater tower Rotary Kiln Gas Conditioning Tower Coal Mill (VRM) Clinker Cooler	Twin String 4-stage cyclone system 3,562 TPD Dual fluid system 25 TPH Static Inlet & Chamber Aeration	same 4,300 TPD same

Plant Process	LINE 2 Existing		LINE 2 Proposed
	Equipment	Description	
Clinker Storage	Clinker Silo	1 x 32,000 metric tons 1 x 1,300 metric tons <i>(for off-spec clinker)</i>	
Fuel Storage	Coal, AFR and Oil & Other Fuels Storage Buildings/Yard	1 X 60,000 metric tons (coal) 1 x 800 metric tons (AFR) 1 x 450,000 liters Tank (Oil)	
<b>Cement Production</b>			
Cement Grinding (Ball Mills)	Finish Mill 2	110 TPH	135 TPH
	Finish Mill 3	110 TPH	135 TPH
Pe-grinding	Pre-Grinder (VRM)	220 TPH	
Cement Storage	Cement Silos	4 x 4,300 metric tons	same
Additives Storage	Additive Bins	3 x 11,500 metric tons 2 x 70 t gypsum, 2 x 90 t additive, 1 X 20 t bin slag/fly ash	
<b>Cement Packing</b>			
Cement Bagging	Rotopackers	3 X 2,200 bags / hour	
Palletizing	Palletizer	1 X 3,200 bags / hour	same
Bulk Truck Loading	Bulk Truck Loading Facility	3,200 bags/hour <i>(at 11,500 MT silo)</i>	
Bulk Ship Loading	Bulk Ship Loading Facility	(1,000 TPH for 20,000 DWT vessel)	



1.5.4 Pollution Control Devices

Table 3 - Existing Pollution Control Devices

Pollution Control Device	Description/Specification
	<b>LINE 1</b>
	<p><b>Bulk Loading Station (Line 1):</b></p> <p>Two (2) units 500 TPH Air Slide Conveyor and One (1) unit 1,000 TPH belt Conveyor served with common <b>66.67 cu.m/min Pulse Jet Type Bag Filter Dust Collector</b>; Four (4) units 500 TPH Air Slide Conveyor served with common <b>66.67 cu.m/min Pulse Jet Type Bag Filter Dust Collector</b>; Three (3) units 1,000 TPH Belt Conveyor serve with <b>93.33 cu.m/min Pulse Jet Type Filter Dust Collector</b>; One (1) unit Ship Loader served with Two (2) units <b>66.67 cu.m/min Pulse Jet Bag Filter Dust Collector</b>.</p>
	<p><b>Crushing and drying Section (Line 1):</b></p> <p>One (1) unit 250 TPH Crusher and Dryer served with a common <b>Electrostatic Precipitator</b>.</p>
	<p><b>Finish Mill and Packhouse Section (Line 1):</b></p> <p>One (1) unit 100 TPH capacity Finish Mill with <b>20 compartments Fabric Dust Collector System</b>; Three (3) units Packing machine individually served with <b>Pulse Jet Type Filter Dust Collector</b>; One (1) unit Tonnering Facility and One (1) unit bulk truck loading facility served with <b>common Pulse Jet Type Filter Dust Collector</b>; One (1) unit Packing Machine with <b>Pulse Filter Single Row Dust Collector with 35,650 cu.m/hr capacity</b>; One (1) unit tonnering facility serve and One (1) unit air slide with 150 TPH capacity served with <b>Pulse Jet Hopper Type Bag Filter Dust Collector with a capacity of 42 cu.m/m</b>.</p>
	<b>LINE 2</b>
	<p><b>Burning and Cooling, and Fuel Preparation Section (Line 2):</b></p> <p>One (1) 4000 TPD Rotary Kiln, One (1) unit 570,000 cu.m Gas Cooling Tower and One (1) unit 305 TPH Vertical Roller Mill served with common <b>13,583.33 cu.m/min Electrostatic Precipitator</b>; One (10 unit 4000 TPD Clinker Cooler served with <b>5,713.33 cu.m/min Electrostatic Precipitator</b>, One (1) 300 TPH Clinker Discharge Belt Conveyor served with <b>60 cu.m/min Pulse Jet Type Bag Filter Dust Collector</b>; One (1) unit 300 TPH Belt Conveyor; One (1) unit 60 TPH Clinker Feeder, Truck Discharge and 1,400 Tons Clinker Silo served with common <b>333.33 cu.m/min Pulse Jet Type Bag filter Dust Collector</b>; One (1) unit 30,000 Tons Clinker Silo served with <b>250 cu.m/min Pulse Jet Type Bag Filter Dust Collector</b>; Two (2) units 250 TPH Belt Conveyor served with <b>41.67 cu.m/min Pulse Jet Type Bag Filter Dust Collector</b>; One (1) unit 25TPH Coal Mill with <b>Pulse Jet Type Bag Filter Dust Collector</b>; One (1) unit 20 Tons Steel Coal Bin served with <b>41.67 cu.m/min Pulse Jet Type Bag Filter Dust Collector</b></p>

Pollution Control Device	Description/Specification
	<p><b>Finish Grinding and Storage Section (Line 2a):</b></p> <p>Two (2) units 110 TPH capacity Finish Mill with Fabric Filter Dust Collector System; One (1) unit 300 TPH Belt Conveyor served with <b>333.33 cu.m/min Pulse Jet Type Bag Filter Dust Collector</b>; Two (2) units 150 TPH Reversible Belt Conveyor and One (1) unit 70 Tons and 90 Tons Steel Additive Bin served <b>333.33 cu.m/min Pulse Jet Type Filter Dust Collector</b>; One (1) unit Vertical Roller Mill 220 TPH capacity served with <b>725 cu.m/min Pulse Jet Type Bag Filter Dust Collector</b>.</p>
	<p><b>Finish grinding and Storage Section (Line 2b):</b></p> <p>One (1) unit 250 TPH Belt Feeder served with <b>60 cu.m/min Pulse Jet Type Bag Filter Dust Collector</b>; One (1) unit 200 Tons Steel Clinker Bin; One (1) unit 385 TPH Chain Bucket Elevator and One (1) common <b>725 cu.m/min Pulse Jet Type Bag Filter Dust Collector</b>.</p>
	<p><b>Material Proportioning, Raw Grinding and Homogenizing Section (Line 2a):</b></p> <p>Three (3) units 660 TPH sealed Reversible Belt Conveyor; One (1) unit 200 Tons cap. Steel Bin and One (1) unit 200 Tons cap. Steel Bin served with common <b>166.67 cu.m/min Pulse Jet Type Filter Dust Collector</b>; Three (3) units 250 TPH Reversible Belt Conveyor and Two (2) units 200 tons Steel Bin served with common <b>166.67 cu.m/min Pulse Jet Type Bag Filter Dust Collector</b>; Two (2) units 180 Tons Steel Bin served with individual <b>10 cu.m/min Pulse Jet Type Bag Filter Dust Collector</b>; Two (2) units 470 TPH Belt Conveyor served with individual <b>105 cu.m/min Pulse Jet Bag Filter Dust Collector</b>. One (1) unit 250 TPH Belt Conveyor from Additive Storage to Proportioning Transfer Points served with <b>60 cu.m/min Pulse Jet type Bag Filter Dust Collector</b>; Two (2) units 660 TPH enclosed Belt Conveyor from Pre-blending to Proportioning Transfer Points served with common <b>41.67 cu.m/min Pulse Jet Bag Filter Dust Collector</b>.</p>
	<p><b>Material Proportioning, Raw Grinding and Homogenizing Section (Line 2b):</b></p> <p>One (1) unit 250 TPH sealed Belt Conveyor served with Two (2) units <b>41,67cu.m/min Pulse Jet Type Filter Dust Collector</b>; One (1) unit 250 TPH Sealed Belt Conveyor served with <b>41.67 cu.m/min Pulse Jet Type Bag Filter Dust Collector</b>; One (1) unit 400 TPH and 200 TPH Air Slide Conveyor served with common <b>60 cum/min Pulse Jet Type Bag Filter Dust Collector</b>; One (1) unit 470 TPH sealed Belt Conveyor served with Two (2) units <b>105 cu. m/min Pulse Jet Type Bag Filter Dust Collector</b>; One (1) unit 400 TPH Recirculation Belt Bucket Elevator and One (1) unit 400 TPH Belt Conveyor served with common <b>105 cu.m/min Pulse Jet Type Bag Filter Dust Collector</b>; One (1) set 400 TPH Belt Conveyor and One (1) unit 330 TPH Air Slide Conveyor served with <b>150 cum/min Pulse Jet Type Bag Filter Dust Collector</b>; One (1) unit 400 TPH Belt Bucket Elevator, One (1) unit each 60 and 80 TPH Air Slide Conveyor: One (1) unit 60 Tons Feed Bin; and One (1) unit</p>



Pollution Control Device	Description/Specification
	80 TPH Belt Bucket Elevator served with common <b>150 cu.m/min Pulse Jet Type Bag Filter Dust Collector.</b>
	<b>Material Proportioning, Raw Grinding and Homogenizing Section (Line 2c):</b> One (1) unit 20,000 Tons Raw Meal Silo served with <b>60 cum/min Pulse Jet Type Bag Filter Dust Collector</b> ; One (1) <b>unit 570,000 cu.m Gas Cooling Tower</b> and One (1) unit 305 TPH Vertical Roller Mill served with common <b>13,583.33 cum/min Electrostatic Precipitator</b> ; One (1) unit 350 TPH Belt Bucket Elevator (BBE); One (1) <b>unit 70 cu.m Proportioned Bin served with common 266.67 cu.m/min Pulse Jet Type Bag Filter Dust Collector</b> ; Two (2) units 350 TPH Air Slide Conveyor served with common <b>41.67 cum/min Pulse Jet Type Bag Filter Dust Collector</b> ; One (1) unit 350 TPH Belt Bucket Elevator and One (1) unit 175 TPH Air Slide Conveyor served with common <b>116. 67 cu. m/min Pulse Jet Type Bag Filter Dust Collector.</b>
	<b>Rotary Kiln, Raw Mill and Clinker Section:</b> One (1) unit 900 MTD capacity Rotary Kiln and One (1) unit Raw Mill commonly served with <b>Fourteen (14) compartment Wheelabrator</b> ; One (1) unit 2000 tons/day capacity Air Quenching Cooler served <b>with 4400 cu.m/m Electrostatic Precipitator.</b>
	<b>Raw Mix and Cement Silo Section:</b> Four (4) units Raw Mix Silo served with a <b>Fabric Filter Dust Collector System</b> ; Four (4) units Cement Silo served with <b>Fabric Filter Dust Collector System.</b>

**Table 4 - Proposed Pollution Control Devices**

Pollution Control Device	Description/Specification
	<b>LINE 1</b>
Bag House System	<b>Raw Material Preparation</b> Six (6) units 6,900 m3/hr capacity high efficiency Pulse Jet bag filters for Raw meal preparation dedusting; One (1) unit 780,000 m3/hr capacity high efficiency Pulse Jet Bag filter for Kiln, cooler, and Rawmill exhaust gases; One (1) unit 17,800 m3/hr capacity high efficiency Pulse Jet bag filter for raw meal to silo transport dedusting
	<b>Burning and Calcining</b> Five (5) units 6,900 m3/hr capacity high efficiency Pulse Jet bag filters for Kiln feed transport dedusting
	<b>Fuel Grinding &amp; Transport</b> Four (4) units 6,000 m3/hr Plenum Pulse bag filter (Anti-explosion and fire proof) for fuel grinding dedusting; One (1) unit 124,000 m3/hr Plenum

Pollution Control Device	Description/Specification
	Pulse bag filter (Anti-explosion and fire proof) for coal exhaust gas dedusting

#### 1.5.4.1 Solid Waste Management

Holcim Lugait practices the solid waste procedures under ISO 14001, such procedures are as follows:

##### 1.5.4.1.1 Waste Classification (see Attachment)

- Biodegradable/ Compostable
- Recyclable: Tin cans
- Non-biodegradable
- Hazardous waste

##### 1.5.4.1.2 Waste Segregation and Segregated Collection

- Where practicable, segregation shall be at source. Provide appropriate waste bins for all areas and offices, depending on the waste generated in the area. Label the bins according to the waste classification.
- Provide separate waste bins or collection areas for bulky waste materials such as metal scraps and wood.
- There will be segregated collection of wastes.
- Designated janitorial personnel/contractors collect segregated wastes from the production areas and offices daily. Waste handlers/collectors shall always wear appropriate PPEs.
- Transfer collected biodegradable waste to the MRF. Non-biodegradable with calorific value will be repacked at source and brought to the AFR are for feeding as fuel to the kiln.
- Where practicable, segregate further mixed wastes that were collected.

##### 1.5.4.1.3 Waste Handling, Temporary Storage and Transport

- Where appropriate, transfer collected waste to the MRF for temporary storage until sizeable volume has been accumulated for selling, donation, and/ or disposal. Observe



orderliness and proper housekeeping in the area. A waste disposal permit shall be issued by the Pollution Control upon disposal of waste at the MRF.

- Biodegradable and Non-Hazardous Wastes
  - ~ At the MRF, waste shall be kept and maintained properly to ensure that the orderliness and proper housekeeping is observed in the area.
  - ~ Cover the pit of biodegradable with soil for composting applying the sandwich method (waste-soil-waste).
- Hazardous Waste
  - ~ Temporary storage at the MRF's hazardous waste facility shall be secured and where appropriate, provided with proper containment.
  - ~ Only trained personnel shall handle hazardous wastes. Appropriate PPEs shall always be used. During handling and in-house transfer, a secured pushcart or forklifts shall be used.
  - ~ Containers & drums of hazardous waste shall be labeled with the following particulars (DAO29):
    - Name of hazardous waste
    - Class of the hazardous waste
    - Sub-Category
    - The waste number
    - Name & address of the company
    - Maximum capacity or volume
  - ~ Permit to transport hazardous wastes shall be obtained from EMB/DENR. For transport outside the company premises, a Hazardous Waste Manifest shall accompany the item. The Manifest shall include the following:
    - The name and address of the company.
    - The name of the waste transporter used to transport a load of hazardous waste.
    - The registration number of the waste transport vehicle.
    - The waste treatment license of the waste transporter.
    - The description of the hazardous waste transporter including its class and subcategories.
    - The quantity of hazardous waste transported.
    - The type of container used during the transport.

- The name and address of transit points and the final destination of the hazardous waste.
  - The intended method of hazardous waste treatment, storage, recycling, processing, reprocessing or disposal at destination.
- ~ The company shall only utilize transporters duly authorized by the DENR to transport hazardous waste.
- ~ The Hazardous Waste Manifest shall be in six copies. One (1) copy shall be retained for reference and five (5) copies shall be sent to the Treatment, Storage and Disposal (TSD) facility for acknowledgement.
- ~ The transporter and the authorized personnel of the company (i.e. Warehouse personnel and AFR Officer that is present at the time of the delivery) shall both acknowledge and sign the manifest.
- ~ If the company does not receive a copy of the manifest within 30 days from the date on which the waste was received by the first transporter, the company shall contact the transporter and the designated TSD premises to determine the whereabouts of the waste.
- ~ If within another 45 days the company does not receive the copy of the manifest from the designated TSD premise, the company shall report in writing along with the copy of the manifest signed by the transporter to the DENR. The labeling shall be conspicuously marked in paints, decals or other permanent form of marking.

#### **1.5.4.1.4 Waste reporting, Monitoring and Inventory**

- Waste generated in the plant will be recorded by the waste handler and reported to Pollution Control Officer.
- The Pollution Control Officer prepares monthly report on waste generated by the plant, and then summarizes, consolidate, and submit to DENR every quarter.
- The Pollution Control Officer will be responsible in the physical inventory and safekeeping of identified hazardous wastes stored in its respective containment areas.

#### **1.5.4.1.5 Disposal of Wastes**

- Disposal of waste at MRF - The company shall ensure that the collection, transport and disposal to MRF shall be in accordance to the following requirements:
  - ~ Secure waste disposal permit upon discarding of solid waste at MRF
  - ~ Indicate the weight of the solid wastes in waste disposal permit



- ~ Scrap metal shall be disposed to scrap yard warehouse area
- ~ Waste material containing metal shall be separated before disposal at MRF
- ~ Waste shall be place/dispose at MRF according to its designated location
  
- For selling (for treatment, re-use/recycle) – buyers shall be required to provide the company the details of their operation, including their methods on waste treatment, storage and disposal. Where appropriate, buyers of hazardous waste must be informed of the do's and don'ts associated to the wastes. Hazardous wastes are sold only to those buyers duly accredited by relevant regulatory bodies. Hazardous Waste Manifest must accompany transport.
- Ordinary Garbage (Compostable and Residual waste) – disposal to company owned landfill or Material Recovery Facility (MRF). The company shall ensure that the collection, transport and disposal to MRF shall be in accordance to the following requirements:
  - ~ Done by designated janitorial personnel/contractors provided with appropriate PPE's.
  - ~ Secure waste disposal permit upon discarding of solid waste at MRF
  - ~ Indicate the weight of the solid wastes in waste disposal permit
  - ~ Wastes shall be place/dispose at MRF according to its designated location
  
- Supplier of Returnable Materials – the company shall ensure that collection & transport are in accordance with the legal requirements:
  - ~ Where practicable, containers are labeled
  - ~ Secured storage and transport
  - ~ Appropriate PPE's are used during handling
  
- Treatment before Disposal/ Discharge – the treatment technology to be used, at minimum, shall satisfy applicable legal requirements.
  - ~ Wastewater generated from washing chemicals/oil containers and contaminated wastes will be neutralized and diluted on site before being directed to the sewer.
  - ~ Used chemicals will be neutralized and diluted on site before being directed to the sewer.
  - ~ Chemical containers classified as hazardous will be punctured at the bottom before disposal to ensure that these are not used for food or water storage.

#### **1.5.4.2 Waste Water Facility**

Lugait Plant has specific treatment facilities depending on the wastewater source and characteristics. Currently, the Plant uses the following facilities for treatment and will utilized the same facilities for the proposed expansion:

- Oil/Water Separators for the removal of oil and grease derived from equipment cooling and washing;
- Septic Tanks for treatment of toilet wastes (sewage)
- Waste Water Treatment Facility;
- Grease Traps for removal of grease, oil and/or solids from kitchen washings; and
- Settling/Siltation Ponds for and soil/cement particles i.e. from roads and other material run-off

The company make sure that the above facilities are operating within the prescribed standard of DENR.

#### **1.5.5 Utilities**

##### **1.5.5.1 Water Requirement**

Lugait plant source its water mainly from groundwater/deep well with average water withdrawal for industrial and domestic use of approximately 35,000 cubic meters per month. The deep wells are owned and operated by the plant with approved permits from National Water Regulatory Board (NWRB). With the new Line 1, the water consumption will double and will still be within the allowable withdrawal limits set by NWRB. The plant is equipped with water recycling facility for cooling process and shall continuously improve its processes to increase operational efficiency and reduce water consumption.

##### **1.5.5.2 Fuel Requirement**

Line 2 currently utilizes a mix of Indocoal and Semirara coal at 80:20 to up to 70/30 mix. Use of petcoke is also considered for the near future. Alternative fuel is also being utilized at average of 18-20% thermal substitution rate (TSR).

The typical characteristics of the coal are shown in the following table:

**Table 5 - Fuel Characteristic**

	Unit	Indo Coal	Semirara	Petcoke
Net Colorific Value	Kj/kg	24,386	21,117	34,608
Volatiles (dry)	%	41.2	39.8	11.7
Ash Content (dry)	%	6.4	5.1	0.3
Sulfur (dry)	% max	1.7	0.4	8.9
Total Moisture	% H <sub>2</sub> O	12.8	29.1	8.2
Inherent Moisture	% H <sub>2</sub> O	5.5	13.9	
HGI		49	49	62

The average volume considering the increase in clinker capacity is shown in the following table:

Volume	Indo Coal (75%)	Semirara Coal (25%)	AFR
Metric Tons	139,300	46,360	87,330

Line 1 will utilize the high VCM Indonesian coal used by Line 2 at annual average volume of 153,000 metric tons. Alternative fuel use is not yet oreseen.

#### 1.5.5.3 Power Requirement

The main power supply is connected from NGCP control centre 69kV substation to the Line 1 switchyard via 4.5 km of poles and wire 3- phase power transmissions highways. The electrical power supply is contracted with MORESCO 1 utility company. The current operation requires 26 MW to operate the project. To support the operation of Line 1 reactivation, the power requirement will increase to 40 MW.

### 1.6 Process Technology Options

#### 1.6.1 Line 1 Existing and Proposed Operation

Lugait Line 1 raw meal grinding and clinkering are not operational and equipment were mothballed. The project proposes to revive the Line 1 to replace the imported clinker being utilized in the current Line 2 operations. The Line 1 will also be using the dry process.



The pre-blended raw materials such as limestone and shale (93%), corrective limestone (5%), silica sand (1.8%) and copper slag (0.7%) will be coming from existing Line 2. Limestone and shale will be supplied by HMDC with quarry near the plant while silica sand and copper slag are purchased.

<i>Current Operation</i>	<i>Proposed Operation</i>
<b>Raw Meal Preparation</b>	
<b>No operation</b>	<p><b>Raw Mill Feed</b></p> <p>The feed for Line 1 shall originate from the Line 2 dosing building located near the Line 2 Raw Mill VRM. Two of the existing bins in this building will be used for Line 1 (as installed and current unused) and two new bins located in a new building will provide the remaining dosing bins required for the raw feed.</p> <p>The limestone/clay mix and the correctives will be transported from their feed bins to the raw grinding system via an extension of the Line 1 primary crusher belt and a new belt conveyor system to the raw mill.</p>
<b>No operation</b>	<p><b>Vertical Roller Mill (VRM)</b></p> <p>The proportioned raw materials are ground in a Vertical Roller Mill (VRM) with target minimum fineness of 14% residue on a 90-micron sieve. A three-fan system, consisting of raw mill fan, kiln ID fan and filter fan is envisaged for the raw mill system.</p> <p>Waste gas for drying purposes is taken out from the kiln preheater exhaust and Clinker Cooler exhaust (compound operation). At the mill outlet, the gas carrying the fine and dry particles passes first through a series of cyclones where the major part of the raw meal is separated out. The final dust removal takes place in the kiln exhaust filter. A Hot Gas Generator will also be installed as auxiliary heat source for the material drying. A set of belt conveyors transport the coarse material rejected from the mill to a recirculation bucket elevator for its reintroduction to the mill feed conveyor.</p>
<b>No operation</b>	<b>Raw Meal Transport and Storage</b>

<b>Current Operation</b>	<b>Proposed Operation</b>
	The raw meal collected in the mill cyclones is transported to the New homogenizing silos by means of airslide conveyors and bucket elevator.
<b><u>Clinker Manufacture</u></b>	
<b>No Operation</b>	<b>Raw Meal Transport to Kiln Feed</b>  From the New homogenizing silo the raw meal is extracted by a set of air slides and lifted-up by the new raw meal transport bucket elevators. Raw meal is transported from the homogenizing silos by an airslide system to the new kiln feed bucket.
<b>No Operation</b>	<b>Kiln Dedusting, Kiln Dust Handling</b>  The dedusting equipment of the preheater exhaust gas consists of the process gas ducts and the main bag filter (pulse-jet type filter) including filter fan and stack. During mill-off operation the preheater exhaust gas will be cooled down in the downcomer duct. Emergency fresh air intake before filter shall be installed to cool down the preheater exhaust gases during direct operation and up-set conditions.
<b>No Operation</b>	<b>Kiln Feed</b>  The kiln feed is transported via air slides and bucket elevator to the top stage cyclones of the preheater tower. The raw meal feed-rate to the pre-heater is controlled and as a stand-by system a flow meter shall be installed. The raw meal is lifted to the pre-heater inlets by means of a bucket elevator.  From the bucket elevator, a set of airslides will transport the raw meal to the pre-heater inlets. Rotary airlocks are to be installed at the pre-heater.
<b>No Operation</b>	<b>Preheating</b>  A single string 4-stage cyclone preheater, downcomer duct and ID fan will be installed. The preheater shall be equipped with meal split allowing for 4-stages operation, to provide sufficient heat for drying of raw materials during rainy season i.e. the kiln feed can be fully or partially fed to the second highest stage.
<b>No Operation</b>	<b>Precalcining</b>



<b>Current Operation</b>	<b>Proposed Operation</b>
	<p>This group consists of an in-line low NOx precalciner with controlled hot-spot, tertiary air duct (from the kiln hood). It is envisaged to use coal and petcoke as traditional fuel for the burning process. Light oil is used for kiln start-up.</p> <p>Fuel rate to precalciner (normal operation): <math>\leq 60\%</math> of total fuel energy requirement.</p>
<b>No Operation</b>	<p><b>Rotary Kiln</b></p> <p>The rotary kiln will operate from 0.8 to 4.0 rpm with a rated capacity of 3,000 tons per day. The precalcined raw meal flows down the kiln until it is completely calcined. The calcined material flows farther down the kiln until it reaches the burning zone with a temperature of 1350 to 1450 °C. Here, the material melts to form the clinker. The clinker is initially cooled at the cooling zone of the kiln before it drops to the clinker cooler.</p>
<b>No Operation</b>	<p><b>Clinker Cooler</b></p> <p>The rotary kiln is to be equipped with grate cooler including cooling fans with a heat recuperation rate higher than 70 % and equipped with roller crusher.</p>
<b>No Operation</b>	<p><b>Kiln Firing</b></p> <p>This group includes a high momentum burner for traditional fuels as main fuel and light fuel oil for start-up. It is envisaged to use coal and petcoke traditional fuel for the burning process. Diesel oil is also used for the kiln start-up and for emergency in case of lack of solid fuel.</p>
<b>No Operation</b>	<p><b>Clinker Transport and Storage</b></p> <p>The clinker from the clinker cooler and crusher is transported with a new apron conveyor to the new clinker silo, which will be connected to the existing clinker silo. An inclined deep pan apron conveyor is to be installed under the clinker cooler roller crusher discharge, for transporting of the clinker to the clinker silos.</p>
<b>No Operation</b>	<p><b>Coal Grinding</b></p> <p>From the feed bins the raw fuel is transported to the new vertical roller mill. For fuel grinding a single</p>

<b>Current Operation</b>	<b>Proposed Operation</b>
	<p>vertical roller mill complete with separator is considered. The grinding table and the mill fan will be equipped with VSD. Inert preheater exhaust gases are used for material drying.</p> <p>The raw fuel bins are equipped with extraction Belt conveyors feeding fuels to the mill feed screw conveyors.</p> <p>Ground fine fuels are collected in a bag filter, which is designed for fine fuels. The filter is equipped with a filter fan and stack.</p>
<b>No Operation</b>	<p><b>Coal Transport and Storage</b></p> <p>From the mill bag filter, the fine coal will be transferred to the two fine fuel storage silos by means of a screw conveyor. A coal sampler is to be installed after the screw conveyor. The fine fuel storage silos are mounted on weigh cells. Integration with CO2 combustion suppression systems. Bag filter(s) as required are mounted on bin roofs. The bins will be carefully designed as mass flow bins (total activation of all the materials stored in the bin). It will be equipped with Gas Analyzer.</p>
<b>Cement Production</b>	
<p><b>Finish Mill 1</b></p> <p>FM1 is a 110-tph, Polysius Double Rotator, two-compartment tube mill equipped with a 1st generation turbo separator. It is 4.4 m in diameter and 14.0 m in length.</p> <p>Clinker, additive limestone, additive premix and gypsum are extracted from the storage hall by an overhead crane then put in their respective hoppers. Vibratory feeders and belt conveyors transport these materials to proportioning bins and proportioned by weigh feeders before they are simultaneously fed to the mill to produce Portland cement. The finished product is conveyed either by a pneumatic pump or</p>	<p>The 2 1st generation Turbo separators shall be replaced with a 3rd generation separators to increase cement mill production rate. The resulting production rate shall increase to 120 TPH.</p>

<i>Current Operation</i>	<i>Proposed Operation</i>
<p>belt conveyors into the cement silos for storage prior to packing.</p> <p>FM1 has also a separate facility for fly ash dosing. Fly ash is delivered to the plant by bulk trucks then stored in the fly ash bin. From the bin, it is conveyed by airslide and screw conveyor to the mill feeding system at a flow rate set through the speed of the rotary feeder.</p>	

### **1.6.2 Line 2 Existing and Proposed Operation**

Holcim Philippines Inc., Lugait Plant has one operating line (Line 2) using the dry process. In this process, raw grinding is done without the aid of water to produce the raw mix.

The raw materials are pre-blended with limestone and shale (93%), corrective limestone (5%), silica sand (1.8%) and copper slag (0.7%). Limestone and shale are supplied by Holcim Mining and Development Corp (HMDC) with quarry near the plant while silica sand and copper slag are purchased.

<i>Current Operation</i>	<i>Proposed Operation</i>
<p><b>Raw Material Preparation (Crushing)</b></p> <p><b>Pre-blended Crushing</b></p> <p>Quarried limestone and shale are dumped into separate receiving hoppers, conveyed and proportioned at 70% -80% limestone and 20-30% % shale by individual apron feeders and discharged into a 1120-TPH Roller Crusher where the materials are crushed and reduced to less than 100-mm size particles. The crushed materials pass through a cross belt analyzer (PGNAA) while they are transported by series of long belt conveyors, received and stacked by a stacking equipment (Stacker) to a pre-blending yard. These materials are supplied by HMDC and delivered in the plant.</p> <p><b>Corrective and Additive Limestone and premix Crushing</b></p>	<p><i>No changes</i></p>



<b>Current Operation</b>	<b>Proposed Operation</b>
<p>Corrective and additive limestone and premix (70 pozzolana/30 limestone) are crushed separately and stacked in separate piles in a different storage shed.</p> <p><b>Additive Limestone and Additive Premix Crushing/Drying</b></p> <p>Additive limestone and additive premix (LST and Pozzolana) for cement grinding are crushed and dried by an Impact Crusher/Dryer with a capacity of 350 tph @ 4-8% H<sub>2</sub>O for limestone and 14% for pozzolana.</p> <p>Quarried limestone and crushed premix from the additive storage are transported by dumptrucks into the hopper, crushed up to a maximum size of 25 mm and 8/14% moisture then conveyed by belt conveyors and stacked separately in the storage hall.</p>	
<b>Raw Meal Preparation</b>	
<p><b>Preblended, Additives and Mill Feed Transport</b></p> <p>Preblended material is reclaimed by Bedeschi Reclaimer with a capacity of 630 tph and transported by belt conveyors to a bin in Raw Material Proportioning building.</p> <p>Corrective limestone, silica and copper slag are transported from the additive storage by a payloader that loads these materials to the hoppers with belt feeders then to belt conveyors until they reach to their respective feed bins in Raw Material Proportioning building.</p> <p>These materials are proportioned by weigh feeders before they are simultaneously fed to the mill. Metal separator and detector are installed to collect the metals from the mill feed before it enters the VRM.</p>	<p><b>No changes</b></p>

<b>Current Operation</b>	<b>Proposed Operation</b>
<p><b>Vertical Roller Mill (VRM)</b></p> <p>The proportioned raw materials are ground in a 330-tph Vertical Roller Mill (VRM) with target minimum fineness of 14% residue on a 90-micron sieve. The materials are introduced into the mill from the top, falling centrally into the grinding table. By centrifugal action, the raw meal is ground into fine sizes. An uprising hot air stream lift the fine material to a classifier situated at the top of the mill, where further separation of the fine and coarse particles takes place. The coarse ones return to the grinding table for further size reduction, while the finer particles are conveyed into the four cyclones that collect the raw meal from the gas and conveyed it directly to a silo. An Electrostatic Precipitator further recovers dust from the exhaust gas.</p>	
<p><b>Raw Meal Silo</b></p> <p>The raw meal in the storage silo is then sampled to check its quality. The blending process takes place in the silo itself based on the desired holding point or lime saturation factor. Homogeneity of raw mix is maintained by means of air aeration originating from the bottom of the silo. To homogenize the material, aeration blowers installed below the silo cause continuous turbulence in each chamber. The homogenized material is extracted at the bottom and transferred by airslide conveyor and bucket elevator to a kiln feed bin. A belt bucket elevator transports the weighed kiln feed to the top of the pre-heater tower.</p>	<p><b>No changes</b></p>
<p align="center"><b><u>Clinker Manufacture</u></b></p>	
<p><b>Pre-heater Tower</b></p> <p>The pre-heater tower is a four-stage cyclone system that heats up the raw meal up to 860°C. From the top of the pre-heater tower, the raw meal flows counter current with the hot kiln gases. The meal is fed between cyclone #1A and #1B where it is dispersed uniformly and initially heated by the upstream gas. During the process, the raw meal consequently</p>	<p><b>No changes</b></p>

<b>Current Operation</b>	<b>Proposed Operation</b>
<p>increases its temperature while the gas decreases its temperature according to what is required in the VRM system. The raw meal is pre-heated from 80 to 860°C as it descends the pre-heater tower. From the third cyclone, the raw meal is precalcined in an in-line calciner within the range of 85% to 95% by the heat from gases generated by the combustion of coal and hot air from the cooler. The meal-gas mixture is transferred from the precalciner to the fourth cyclone where another meal gas separation takes place. The pre-heated and precalcined material enters the kiln feed end. The calcination temperature is between 860 to 880oC. The kiln feed end temperature is maintained from 1020 to 1060°C.</p>	
<p><b>Rotary Kiln</b></p> <p>The rotary kiln operates from 0.8 to 4.0 rpm with a rated capacity of 3,562 tons per day. The precalcined raw meal flows down the kiln until it is completely calcined. The calcined material flows farther down the kiln until it reaches the burning zone with a temperature of 1350 to 1450 °C. Here, the material melts to form the clinker. The clinker is initially cooled at the cooling zone of the kiln before it drops to the clinker cooler.</p>	<p><i>Process optimazation of kiln cooler and</i></p>
<p><b>Firing System</b></p> <p>Coal is the main fuel. However, provisions for Bunker Fuel Oil (BFO) firing are also installed. BFO is used only during initial stages of pre-heating and emergency situations. The main kiln burner has provisions for controlling the air/fuel mixture for optimum control of flame intensity and shape. The precalciner firing system consists of a burner placed at the center of the the precalciner vessel. This burner is designed to accommodate BFO, coal and AFR fuels. These fuels can be fired either simultaneously or singly.</p> <p><b>AFR Feeding</b></p> <p>Alternative Fuels and Raw materials are co-processed in the clinker production. These</p>	<p><b>No changes</b></p>



<b>Current Operation</b>	<b>Proposed Operation</b>
materials undergo a strict quality control before they are fed so as not to compromise our desired clinker quality. The feeding facility is designed for a 30% thermal substitution rate (TSR). These materials are fed through belt conveyors and cleated conveyors to the precalciner burner.	
<b>Coal Mill</b>  Coal is pulverized in a 25-tph vertical roller mill. After drying and grinding to 5% H <sub>2</sub> O and 20% retained in the 90-micron sieve, the pulverized coal is stored in a fine coal bin of 100 ton capacity. The pulverized coal is fed by Pfister feeders and conveyed by positive displacement blowers to their respective firing points at the main kiln burner and at the precalciner burner.	<b>No changes</b>
<b>Clinker Cooler</b>  From the kiln discharge end, hot clinker drops to a static inlet section of the grate cooler. At a pre-set clinker bed height, the clinker is cooled down from 1200 to 90°C by 10 centrifugal fans. The air being injected at the first stage is heated up to 760 – 860°C, and then used as secondary and tertiary air sources for combustion requirements. The clinker passes thru a clinker roller crusher where the big lumps of clinker are to be crushed.	Process optimization of existing kiln cooler to improve efficiency and optimize heat recovery such as direct aeration process, clinker crushing and cooler water spray optimization.
<b>Clinker Silo</b>  From the grate cooler, the clinker is then conveyed by a drag chain conveyor and pan conveyor either to a cylindrical clinker silo with a capacity of 32,000 metric tons or to a smaller off-specs clinker silo of 1,300 metric ton capacity.	<b>No changes</b>
<b><u>Cement Production</u></b>	
Line 2 has 2 110-TPH, two-compartment cement tube mills.	Process optimization of existing ventilation fans to increase gas velocity inside the mill

<b>Current Operation</b>	<b>Proposed Operation</b>
<p><b>Finish Mill 2 and 3</b></p> <p>FM2 and FM3 are both Fortus 110-tph, two-compartment tube mill equipped with a 3<sup>rd</sup> generation ONODA separator. It measures 4.2 m in diameter and 13.5 m in length.</p> <p>Clinker is withdrawn from the clinker silo, conveyed by series of belt conveyors and pass through a metal separator before it goes into the clinker bin, then it is ground in the <i>pregrinder</i> to reduce its size before it is fed to the mill. Imported hopper is also provided for imported clinker. This clinker is conveyed with the clinker from the clinker silo.</p> <p>Additive limestone is extracted from the storage hall while gypsum is extracted from a nearby open stockyard, delivered by dumptrucks into the additive/gypsum hopper then conveyed by belt conveyors and bucket elevator to their respective bins. These materials are simultaneously fed to the tube mill and are proportioned by separate weigh feeders. The finished product is conveyed by airslides and bucket elevator to the cement silo for storage before packing, bulk truck loading and bulk ship loading.</p> <p><b>Pregrinder</b></p> <p>Pregrinder is an UBE 4-roller vertical roller mill with a capacity of 220 tph. It reduced the size of the clinker before it is fed to the tube mill. A vibrating screen with 8 mm mesh is installed after the pregrinder. The fine clinker goes to the tube mill while the course ones go back to the PG.</p> <p><b>Slag, fly ash and bottom ash facility</b></p> <p>Slag, fly ash and bottom ash are delivered to the plant by bulk trucks. From the trucks it is pumped to the bin before it is dosed to the cement transport system.</p> <p>Cement fineness is closely monitored and its strength maintained at required market</p>	<p>and improve feed transport system to increase cement mill production rate. The resulting production rate per mill shall increase to 135 TPH.</p>

<b>Current Operation</b>	<b>Proposed Operation</b>
values. The mill system is equipped with dust collectors to abate dust pollution.	
<b>Cement Silos</b>  Lugait plant has 7 cement silos grouped in 2. Four 4,300-MT capacity and three 11,500-MT capacity. Bulk ship loading and bulk truck loading are done from the 11,500-MT silos while packing is done from 4,300-MT silos. There is also an available conveying facility which can transfer cement product from the bigger silos to the smaller ones.	
<b>Packing, Bulk Truck and Ship Loading</b>	
<b>Packing</b>  Lugait plant has 4 Rotopackers, three (3) 2,200- bags/hr and one (1) 3,200 bags/hr capacity. Cement is withdrawn from the 4,300-MT silos and conveyed into the packer bins by airslide conveyors and bucket elevators. Cement is packed into WPP bag containers by four units of rotating packing machines called. The Rotopackers, with a capacity 2,200 and 3.200 bph are equipped with Automatic Bag Placers (ABP).  After filling each WPP bag with 40-kg cement, the rotopackers release the bag automatically into conveyor belts. The cement bags are then loaded into receiving trucks for distribution to customers. There is also an option to convey these bagged cement to a storage area near the pier for off-shore distribution. Cement bagging using tonner bags is available.  <b>Palletizer</b>  The plant has an automatic palletizer. It is inter-connected with rotopacker 4 and designed in such a way that one cannot operate without the other. Bagged cement from the rotopacker is conveyed by belt conveyors to the palletizer then into 48 bags per pallet before it is pulled out by forklift for storage.	<b>No changes</b>



<i>Current Operation</i>	<i>Proposed Operation</i>
<p><b>Bulk Truck Loading</b></p> <p>Bulk truck loading facility is only available at 11,500-MT silos, hence, bulk trucks can only be loaded from there.</p> <p><b>Bulk Ship Loading</b></p> <p>Bulk ship loading facility is a series of belt conveyors with a shiploader at its end - in the jetty. This is a double spout shiploader with a capacity of 1,000 tph for a 20,000 DWT vessel. Cement withdrawal for shiploading is only available at the 11,500-MT silos.</p>	

# Holcim Lugait plant Line 1

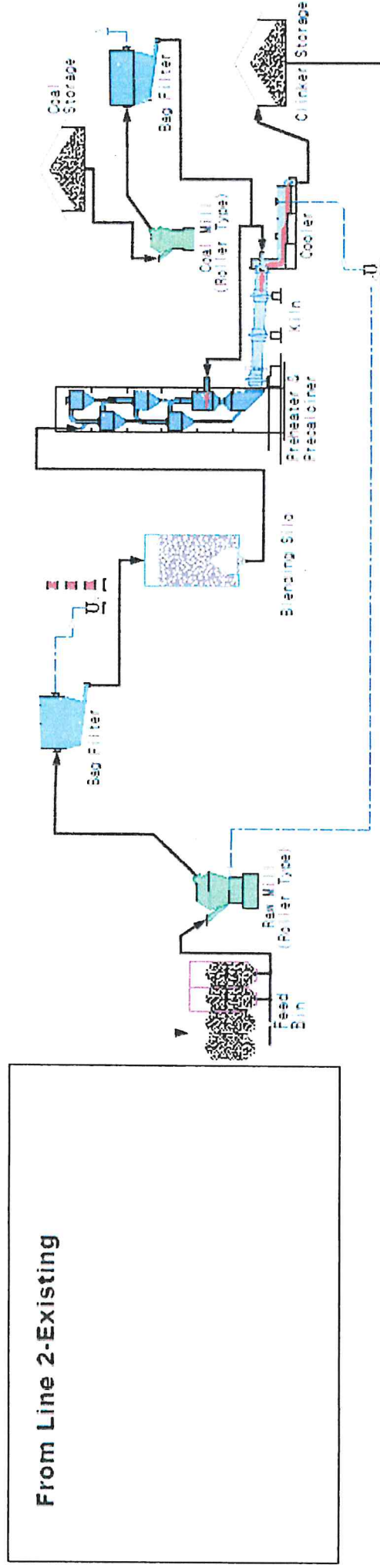
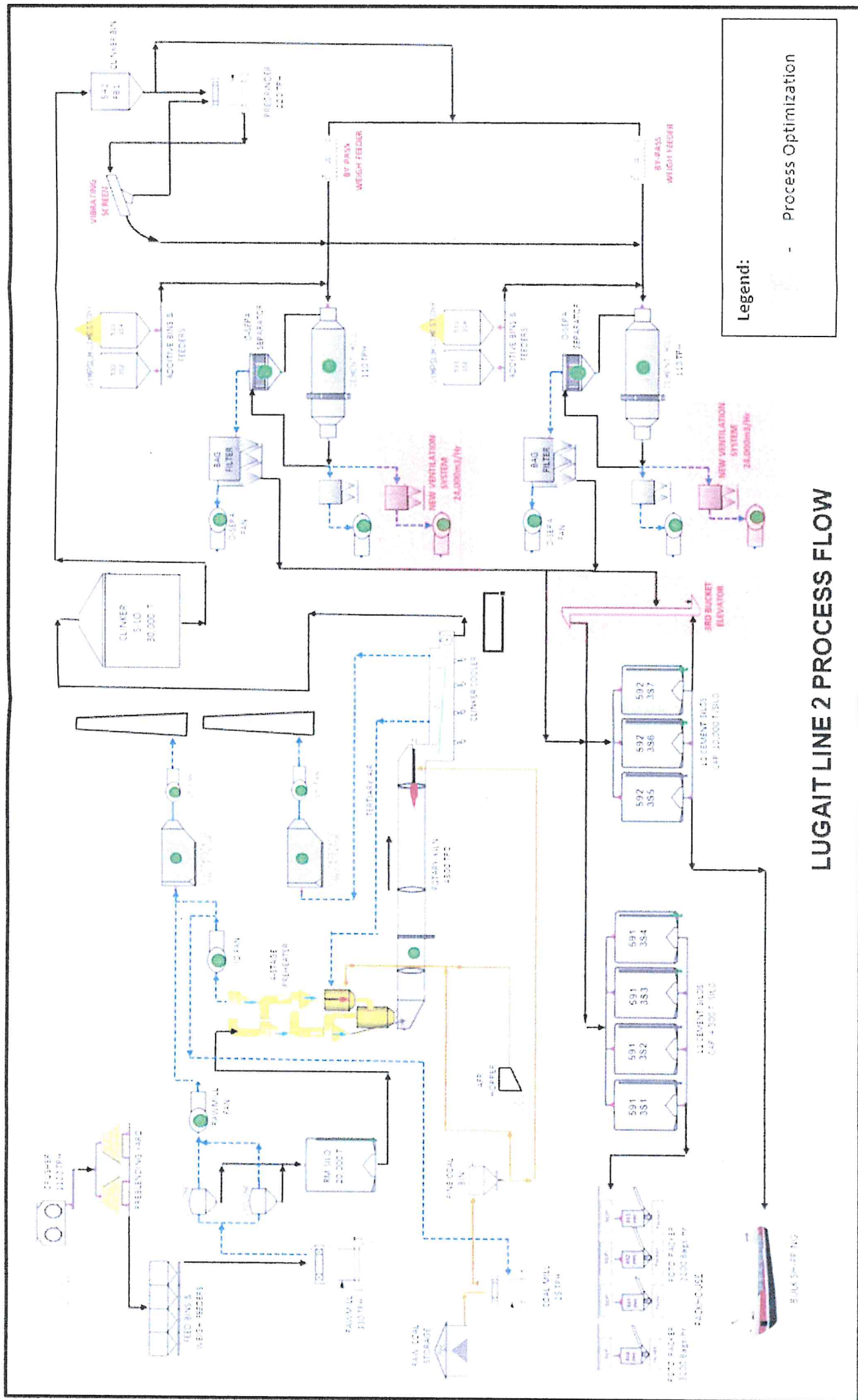
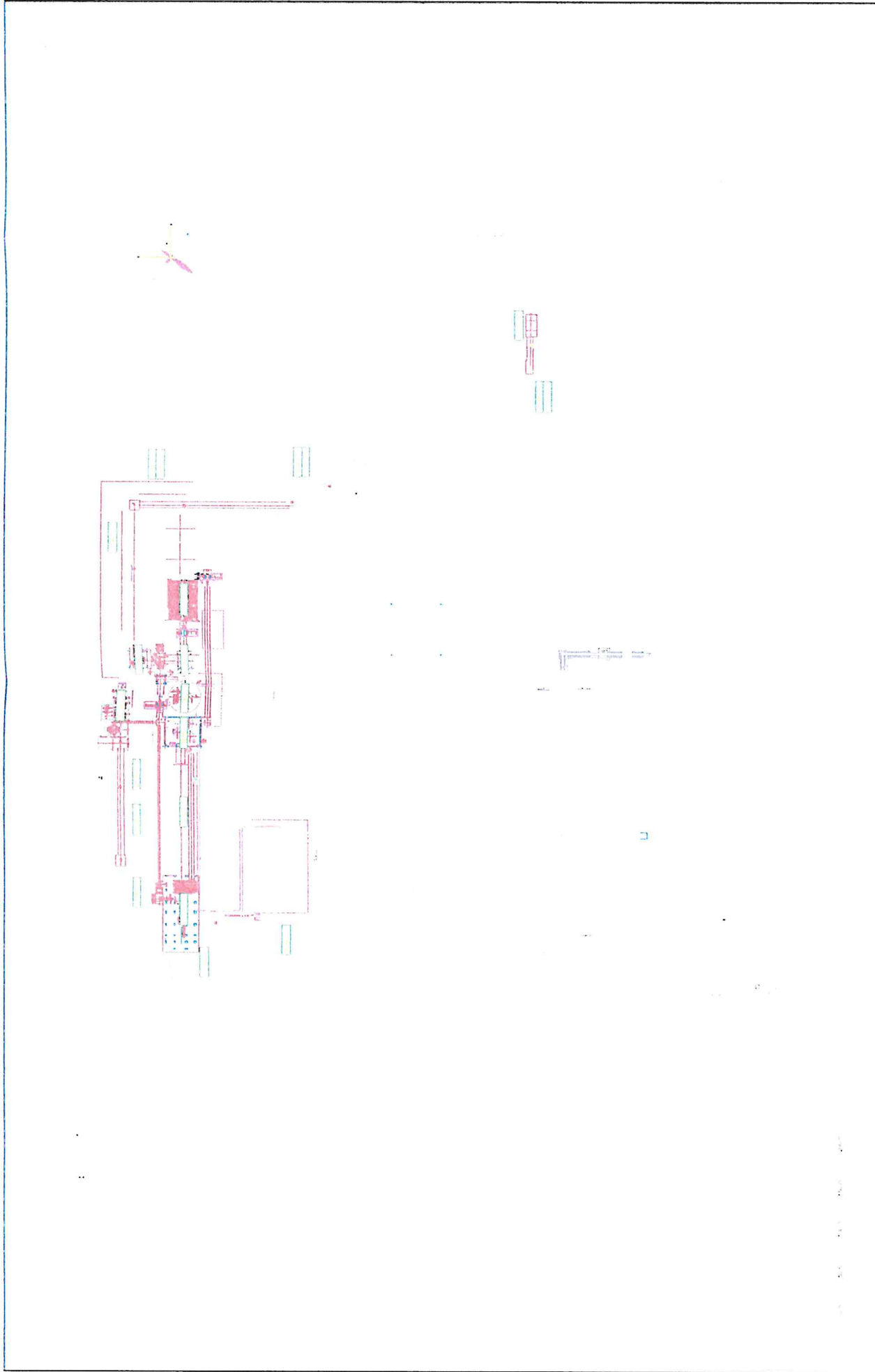



Figure 4 - Line 1 Process Flow Diagram







	KRR ANDALAN <small>KORPORASI BINA RAJA</small>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
---	---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

**1.7 Development Plan, Description of Project Phases, and Corresponding Timeframes****1.7.1 Pre-Construction Phase**

- Planning of technical design and finalization of construction method for the installation of the plant facilities;
- Soil investigation prior tendering of civil works;
- Securing of necessary permits.

In compliance to the commitment of environmental protection and community development, the activities stipulated in the existing Environmental Management Plan (EMP), Environmental Monitoring Plan (EMoP), and Social Development Plan (SDP) shall still be implemented.

**1.7.2 Construction Phase**

Construction phase involves the following:

- Hiring of qualified manpower required to complement the workers in the construction/rehabilitation works; and
- Construction of new plant facilities to support the proposed expansion.

The construction of equipment/facilities is projected to commence after the acquisition of all regulatory permits from government offices.

**1.7.3 Operation Phase**

The operation phase covers the production of cement products. During this phase, the company will also be implementing the activities stipulated in the EMP, EMoP, and and SDP; simultaneous with its operations to ensure environmental protection and community development.

**1.7.4 Abandonment/Decommissioning Phase**

The proponent will continuously operate and maintain the project as long as it is profitable and economically viable. Nonetheless, during the operation of the project, in case some of the components are no longer operational, such component will be replaced by new operational facilities.

If the proponent decided to stop the project operation, a decommissioning plan will be prepared and implemented.

## 1.8 Project Size

### 1.8.1 Production Capacity

Currently, Holcim Lugait has an allowable production capacity of 871,200 MT/year of cement for Line 1 and 1,700,000 MT/year of cement for Line 2. To support the growing demand of cement in the country, the company will re-activate the currently mothballed Line 1 to increase the production capacity to 1,060,000 MT/year of cement. Also, plant fine-tuning will be undertaken to increase the production capacity of Line 2 to 2,400,000 MT/year.

The comparison of the amount of raw materials for the current and proposed project is presented below:

LINE 2 (MT/y)		LINE 1 (MT/y)		LINE 1 + LINE 2 (MT/y)	
Existing	Proposed	Existing	Proposed	Existing	Proposed
<i>Cement Capacity</i>		<i>Cement Capacity</i>		<i>Cement Capacity</i>	
1,700,000	2,400,000	871,200	1,060,000	2,571,200	3,460,000
<i>Clinker Capacity</i>		<i>Clinker Capacity</i>		<i>Clinker Capacity</i>	
1,300,000	1,600,000	693,500	1,100,000	1,993,500	2,700,000
<i>Raw Materials</i>		<i>Raw Materials</i>		<i>Raw Materials</i>	
Limestone		Limestone		Limestone	
1,876,235	2,126,400		1,483,550	1,876,235	3,609,950
Silica		Silica		Silica	
43,130	48,900		34,100	43,130	83,000
Shale		Shale		Shale	
688,220.00	780,000		544,200	688,220	1,324,200
Copper Slag		Iron Slag		Iron Slag	
20,190.00	22,880		16,000	20,190	38,880
<i>Additives</i>		<i>Additives</i>		<i>Additives</i>	
Limestone		Limestone		Limestone	
169,640.00	295,050		131,140	169,640	426,190
Gypsum		Gypsum		Gypsum	
76,855.00	106,650		47,400	76,855	154,050
Pozzolan		Pozzolan		Pozzolan	
214,555.00	374,030		166,240	214,555	540,270
Ground Slag		Ground Slag		Ground Slag	
38,960.00	52,240		23,220	38,960	75,460
Fly Ash		Fly Ash		Fly Ash	
12,429.00	16,670		7,410	12,429	24,080



**1.8.2    Size**

The total area covered by the current project operation is 79.7282 hectares. There will be no area expansion for the proposed project modification.

**1.9    *Project Cost***

The estimated volume of investment for the project is presented below:

Activity	Cost (PhP)
Civil Works	264,794,700
Steel Structure	485,501,700
Mechanical Equipment	1,506,177,600
Electrical & Automation	789,282,600
Indirect Cost	305,338,200
Contingencies and Escalation	17,076,600
<b>Total</b>	<b>PhP 3,368,225,100</b>

Table 6 - Initial Impact Management Plan

Project Activity	Environmental Component to be likely Affected	Potential Impact	Prevention and Mitigation	Responsible Entity
Cement production operation	Ambient air quality	Air pollution (criteria pollutants and trace metals) from kiln operations	<u>Currently installed or implemented</u> <ul style="list-style-type: none"><li>• Proper operation and maintenance of the ESP</li><li>• Proper operation and maintenance of the CEMS</li><li>• Proper and regular monitoring at the off-site ambient air quality monitors</li></ul>	Holcim
		Air pollution (SOx, NOx, CO, and particulates) from other process sources	<u>Currently installed or implemented</u> <ul style="list-style-type: none"><li>▪ Maintenance of standby generators</li><li>▪ Regular compacting of unpaved access roads</li><li>• Proper operation and maintenance of air pollution control devices</li><li>• Implementation of a motor vehicle maintenance program, including emissions testing</li><li>• Proper and regular monitoring at the off-</li></ul>	Holcim

Project Activity	Environmental Component to be likely Affected	Potential Impact	Prevention and Mitigation	Responsible Entity
			site ambient air quality monitors	
	Ambient sound levels	Noise pollution	<u>Currently installed or implemented</u> <ul style="list-style-type: none"> <li>Regular maintenance of mufflers of standby generators and other pertinent equipment;</li> <li>Use of noise-attenuating materials for the plant structure and walling</li> <li>Maintaining buffer areas</li> </ul>	Holcim
Port Operation	Water Quality	Oil contamination	<ul style="list-style-type: none"> <li>Develop and implement an oil spill contingency plan;</li> <li>Readily Available Spill Kits/Spill boom</li> <li>Continuous training of personnel</li> <li>Impose a policy of no shipboard waste disposal</li> </ul>	Holcim and Contractors
Plant Operation - Use of water for domestic and industrial use	Availability of Water Supply	Water use competition	<ul style="list-style-type: none"> <li>Continuous implementation of water conservation measures</li> </ul>	Holcim



Project Activity	Environmental Component to be likely Affected	Potential Impact	Prevention and Mitigation	Responsible Entity
	Socio-Economic	<p>Generation of Local Benefits from the Proposed Project</p> <ul style="list-style-type: none"><li>■ Potential increase in income-earning opportunities will increase spending potential, providing opportunities to increase the demand and supply of goods and services indirectly increasing the overall wealth of the area</li><li>■ Introduction of new economic activities and establishment of new businesses will increase revenue collection of the LGUs from taxes and fees</li></ul>	<ul style="list-style-type: none"><li>■ Coordination with the Barangay and Municipal LGUs to ensure proper zoning of business area, peace and order, sanitation, and solid waste management</li><li>■ Holcim to ensure the payment of taxes and fees of their suppliers and service providers. This may be included as part of evaluation criteria for contract renewal</li><li>■ Offer training opportunities for business and livelihood development and management</li></ul>	

***Annexes:***

Annex A – Issued Environmental Compliance Certificate

Annex B – Lease Agreement Between HPHI and HMDC

Annex C – Information, Education and Communication (IEC) Documentation

Annex D – Result of Preliminary Perception Survey

# **Annex A – Issued Environmental Compliance Certificate**

---





Republic of the Philippines  
Department of Environment and Natural Resources  
ENVIRONMENTAL MANAGEMENT BUREAU  
DENR Compound, Visayas Avenue, Diliman, Quezon City 1116  
Telephone Nos., 927-15-17, 928-20-96  
Email : emb@emb.gov.ph  
Visit us at <http://www.emb.gov.ph>

JAN 13 2014

**MR. MICHAEL V. CABALDA**  
Sustainable Development Manager  
**HOLCIM PHILIPPINES, INC.**  
7<sup>th</sup> Floor Two World Square  
McKinley Hill, Fort Bonifacio  
Taguig City 1634

Subject: **Transfer of ownership**

Dear Mr. Cabalda,

This refers to your letter requesting for the transfer of ownership of the following Environmental Compliance Certificates issued to Holcim Philippines, Inc.:

ECC Reference No.	Proponent Name	Project Location
9402-004-302	Davao Union Cement Corporation	Davao City
9812-001-105	Davao Union Cement Corporation	Davao del Sur
0110-740-302	Davao Union Cement Corporation	La Union
(9012-000-100) 9612-006-106	Alsons Cement Corporation	Misamis Oriental
9607-001-104	Alsons Cement Corporation	Misamis Oriental

Based on our records, it has been determined that you lack submission of proof of compliance to ECC conditions as enumerated in the attached sheet. Hence, please submit ECC Compliance Monitoring Reports (CMR) for each ECC issued with an attached proof of compliance to ECC conditions in accordance with the format as provided for in Annex 3-1 of the Revised Procedural Manual for DAO 2003-30 before we act on your request.

For ECC Ref. No. 9612-006-106:

*Protect the environment... Protect life...*

20123-6-70

- o The ECC with Ref. No.9612-006-106 issued to Alsons Cement Corp. on 28 December 2000 was already superseded by ECC Ref. No. 0509-010-2231 issued to Holcim Philippines Manufacturing Corp. on 04 June 2007.

With respect to your other requests for transfer of ownership, this Office recommends you to coordinate with the following EMB Offices:

Reference No.	Recommendations
CCO-2001-0012 Hg	EMB-Central Office-EQD
ECC-10(43)05-02143915-00090	EMB-Region X
9507-03-105	EMB-Region XII
ECC-129908-05 0042-211	EMB-Region XII

Further for the Certificate of Non-Coverage (projects prior to 1982), please be advised to submit the necessary documents proving that quarry area is still within the scope of the EPEP approved by the Mines and Geo-Sciences Bureau (MGB) and the production output is still the same as what is stated in the CNC.

Please be guided accordingly.

Very truly yours,

  
**ATTY. MICHAEL DRAKE P. MATIAS**  
OIC-Chief, EIAM Division



Republic of the Philippines  
Department of Environment and Natural Resources  
Visayas Avenue, Diliman, Quezon City 1110  
Tel. Nos.: (632) 929-66-26 to 29 • (632) 929-65-52  
929-66-20 • 929-66-33 to 35  
929-70-41 to 43

FEB 25 2003

The President/General Manager  
**ALSONS CEMENT CORPORATION**  
Lugait, Misamis Oriental 9025

Attention: **Mr. Bobby F. Sajonia**  
VP-Manufacturing

Subject: **AMENDMENT OF ECC No. 9607-001-104C**

Dear Mr. Sajonia:

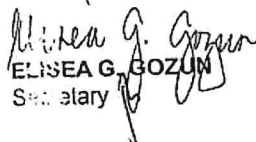
This refers to your request for an Amendment of the Environmental Compliance Certificate (Ref. No. 9607-001-104C) issued on April 16, 1997 for the Rehabilitation and Expansion of the Cement Plant in Bgy. Salimbal, Lugait, Misamis Oriental.

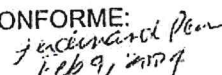
After careful evaluation of your application for ECC amendment and the supporting EIS Report, it was determined that the proposed modifications to substitute as much as 40% of the plant's thermal requirements with alternative fuels and to set-up the solid and liquid facilities accordingly is seen to address partially the urgent need to put in place an environmentally sound industrial waste management infrastructure. As a result, this Office hereby AMENDS the conditions of the ECC as follows:

1. This Certificate shall cover the rehabilitation and expansion of the existing plant with a rated capacity of 1,900 TPD clinker and 871,200 TPY cement, the construction/operation of a new cement plant with a capacity of 1,300,000 TPY clinker and 1,700,000 TPY cement and **to include the Alternative Fuel/Raw Materials Mix Revision Facilities** within the existing plant;
2. The plant operation shall conform to R.A. 6969 (Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990) and R.A. 9003 (An Act Providing for an Ecological Solid Waste Management Program);
3. The use of Alternative Fuel Resources (AFR) shall conform to the prescribed procedures in the submitted document – "Protocols for the Use of AFR in Cement Plants of Union Cement Corporation and Alsons Cement Corporation," – including procedures for preparation and pre-treatment to convert the incoming materials into acceptable fuel and/or raw material;
4. Likewise, an updated Environmental Management Program (EMP) shall be submitted to the EMB to include air emissions parameters subject for sampling and monitoring ninety (90) days upon approval of this Amendment. Results of analysis of AFR materials and air monitoring, however, shall be submitted quarterly to the EMB.

Non-compliance with any of the above conditions herein set forth shall be sufficient cause for suspension or cancellation of this Certificate and/or imposition of a fine in an amount not to exceed Fifty Thousand Pesos (PhP 50,000.00) for every violation thereof, at the discretion of the EMB in accordance with Section 9 of PD 1586.

Very truly yours,

  
**ELISEA G. GOZUN**  
Secretary

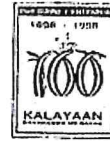
CONFORME:  
  
Feb 9, 2003

Signature over Printed Name & Date





Republic of the Philippines  
Department of Environment and Natural Resources  
Visayas Avenue, Diliman, Quezon City, 1100  
Tel. Nos. (632) 929-66-26 to 29 • (632) 929-62-52  
929-66-20 • 929-66-33 to 35  
929-70-41 to 43



### ENVIRONMENTAL COMPLIANCE CERTIFICATE

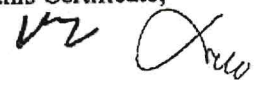
The Department of Environment and Natural Resources (DENR), through the Environmental Management Bureau (EMB) hereby grants this Environmental Compliance Certificate (ECC) to the proposed Rehabilitation of the Existing and Construction of a New Cement Plant of **ALSONS CEMENT CORPORATION** to be located at Lugait, Misamis Oriental, after complying with the Environmental Impact Assessment (EIA) requirement as prescribed in the promulgated guidelines implementing Section 3 (b) of P.D. 1121 and 1586.

This Certification is being issued subject to the following conditions:

1. This Certificate shall cover the rehabilitation and expansion of the existing plant with a rated capacity of One Thousand Nine Hundred tons per day (1,900 TPD) clinker and Eight Hundred Seventy One Thousand Two Hundred tons per year (871,200 TPY) cement and the construction/operation of a new cement plant with a capacity of One Million Three Hundred Thousand (1,300,000) TPY clinker and One Million Seven Hundred Thousand (1,700,000) TPY cement;
2. Adequate vegetation shall be maintained within the existing buffer zone;
3. All appropriate mitigating measures shall be instituted to minimize generation of noise, dust, silt, etc. during the construction phase;
4. Hauling operations shall not result to nuisances/damage from noise, vibrations, dust and other hazards;
5. All raw materials to be utilized by the project shall be stockpiled/stored properly to avoid their dispersion into the environment. Crushing, grinding, sacking and other material handling shall be kept indoors;
6. All pollution control equipment and facilities shall be approved by the DENR Region X and must be operated and properly maintained at all times to attain maximum efficiency;
7. The proponent shall put up a continuous emissions monitoring system at the stack of the plant duly approved by the EMB and the DENR Region X. Regular monitoring of kiln operation and self-control system shall be implemented;
8. The proponent shall coordinate with the DENR Region X regarding a joint project with the industries in the area to implement a continuous automatic/computerized ambient air quality monitoring for air emissions which shall be connected to a public information board that automatically records the results in real time for the public to see. The ambient air quality monitoring stations shall be set up in impact areas/sensitive receptors in coordination with the DENR regional units;
9. All effluent discharges, gaseous and noise emissions from the plant(s) and their appurtenances shall conform with the DENR set standards; in the event that such are exceeded, plant operations shall be temporarily suspended and remedial measures instituted;

*DENR Cares. DENR Dares.*

10. Appropriate measures to avoid spills of hazardous materials being used by the plant shall be undertaken;
11. Proper collection and disposal of hazardous liquid, gaseous and solid wastes generated shall be strictly implemented and the transport/disposal of the hazardous ones shall be subject to the requirements of Republic Act 6969;
12. The proponent shall practice water conservation and controlled extraction of water in accordance with the limits set by the National Water Resources Board (NWRB) to minimize depletion of groundwater and prevent sea water intrusion in the coastal aquifer;
13. The proponent shall implement the mitigating measures and environmental management program stated in the submitted EIS of the said project.
14. Safety gadgets shall be provided to all workers to prevent health and occupational hazards and regular medical check-up shall be undertaken for the employees;
15. The proponent shall undertake a continuing health study on the surrounding communities, with emphasis on the children and the elderly, the design of which shall be approved by the relevant unit of the Department of Health (DOH) and the EMB, the results of which shall be submitted to the DENR Region X and the EMB on a semi-annual basis;
16. Qualified affected residents and women in the impact area and vicinities shall be given priority in employment and in proponent-initiated livelihood, health, education and social development and welfare services. A MOA between and among the LGU concerned, the affected community and the proponent to this effect must be finalized and carried out, copy furnished the EMB and the DENR regional units;
17. The proponent shall maintain a quarterly consultation with the host community especially affected parties as regards to the impacts of air quality and noise, an annual report of such consultations shall be submitted to the EMB and the DENR regional units;
18. The proponent shall undertake an effective and wide Information, Education and Communication (IEC) Campaign to explain publicly its mitigative measures as well as the conditions of this ECC. It shall open opportunities to educate the public especially the affected community, interested academic institutions and other parties on the environment and human health safety features of the project.  
  
To ensure the objectivity of presentation, the IEC activities shall be funded by the proponent but implemented by a joint team of the proponent, the DENR and a local environmental NGO;
19. An Environmental Unit (EU) shall be created by the management to handle the environment-related aspects of the project. The EU shall submit environmental monitoring reports in accordance with the format duly approved by the EMB, to the DENR regional units and the EMB on a quarterly basis;
20. The proponent shall submit to the EMB and the DENR Regional units the newly established water sampling station with consideration of the point of discharge of the plant's effluents within thirty (30) days from the receipt of this Certificate;

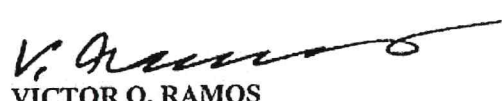





21. The proponent shall submit to the EMB and the DENR Region X an Environmental Risk Assessment within ninety (90) days from the receipt of this Certificate. An Annual auditing of risks and hazards shall be undertaken, a report of which shall be submitted to the EMB and the DENR regional units;
22. The proponent shall set up an Environmental Guarantee Fund (EGF) within ninety (90) days upon receipt of this Certificate to cover expenses for the indemnification of damages caused by the project to life, health, property and environment, including rehabilitation and/or restoration of areas affected by the project's implementation, the amount and mechanics of which shall be determined by the DENR-EMB and the proponent;
23. The proponent shall organize within sixty (60) days upon receipt of this Certificate a Multi-Partite Monitoring Team (MMT) which shall be composed of representatives from the proponent, the EMB, the DENR Regional units, the community affected, the LGU(s) involved, and a local environmental NGO to undertake environmental compliance monitoring of the project. A MOA shall be effected which shall include the setting up of a Multi-Partite Monitoring Fund to support the activities of the team including training meals, accommodation, transportation, etc.;
24. On-the-spot monitoring and inspection may be conducted by the DENR Region X or the EMB anytime in coordination with the concerned groups;
25. All other required government permits shall be secured by the proponent prior to the project's construction and operations; and
26. Transfer of ownership of this project carries the same conditions in the ECC for which written notification shall be made within fifteen (15) days from such transfer.

Non-compliance with any of the above condition shall be sufficient cause for the suspension or cancellation of this Certificate and/or imposition of a fine in an amount not to exceed Fifty Thousand Pesos (50,000.00 PHP) for every violation thereof, at the discretion of the EMB (Section 9 of P.D. 1586).

Given this APR 16 1997 th day of APRIL, 1997.

  
**VICTOR O. RAMOS**  
Secretary

Recommending Approval:

  
**DELFIN J. GANAPIN, JR.**  
Undersecretary for Environment  
and Programs Development





Republic of the Philippines  
Department of Environment and Natural Resources  
**OFFICE OF THE REGIONAL EXECUTIVE DIRECTOR**  
Region 12, Cotabato City, 9600  
Tel. Nos. (064) 421-31-54 / 421-35-63

12 98 12 \_\_\_\_\_ 0050 -303

~~DEC 18 1998~~

Mr. Generoso F. Balmeo  
Manager  
Alsons Cement Corporation  
Bgy. Dalipuga, Iligan City

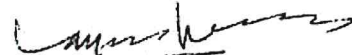
Dear Sir:

This has reference to your Alsons Center for Technology and Research project to be located at the RCp Compound, Bgy. Mapalad, Iligan City.

After careful review and evaluation of the Initial Environmental Examination (IEE) and Additional Information (AI) submitted on the aforesaid project, this Office has decided to grant the same an Environmental Compliance Certificate (ECC).

You may proceed with project implementation after securing all the necessary permits from the pertinent government agencies. Please be advised, however, that this Office will be monitoring the project periodically to ensure your compliance with the stipulations cited in the attached ECC. Further, any expansion of the currently approved operation will be subject to Environmental Impact Assessment (EIA) requirement.

Very truly yours,

  
SULTAN LINO M. INDOL  
Regional Executive Director

cc: Dir. EMB-DENR QC  
CENRO/PENRO XII-Iligan City  
file

cc: 95, acc'd 12/18/98, 0050-120, same



Republic of the Philippines  
**Department of Environment and Natural Resources**  
REGION X  
Macabalar, Cagayan de Oro City  
Tel. Nos. 72-53-27; 72-62-43  
FAX No. 72-62-80



**ENVIRONMENTAL COMPLIANCE CERTIFICATE**  
95-ECC-REC-1043-843

The Department of Environment and Natural Resources (DENR), hereby grants this Environmental Compliance Certificate to the Pier Expansion Project (construction of Jetty and one (1) hectare reclamation) of ALSONS CEMENT CORPORATION located at Barangay Salimbal, Lugait, Misamis Oriental after complying with the Environmental Impact Assessment (EIA) requirements as prescribed in the promulgated guidelines of Section 3 (b) of P.D. 1121 and 1586.

This Certificate is being issued subject to the conditions as stated hereunder. Non-compliance with any of the above stipulations will be sufficient grounds for the cancellation or suspension of this Certificate and/or a fine in an amount not to exceed Fifty Thousand Pesos (P50,000.00) for every violation thereof, at the discretion of this Office (Section 9 of P.D. 1586).

**A. GENERAL PROVISIONS:**

1. That this Certificate is valid only for the Pier Expansion Project (construction of jetty and one (1.0) hectare reclamation project) to be located along a 485 meter strip of the Lugait shoreline in Lugait, Misamis Oriental;
2. That any expansion of the reclaimed area shall be covered by another ECC;
3. That permit shall be secured in extraction and transport of filling materials to the site;
4. That the proponent shall initiate protection and preservation of the aquatic resources and marine life found in the area;
5. That suitable tree species shall be planted in double rows along the periphery of the reclaimed area;
6. That materials containing putrescibles, toxic matter or any waste that will cause water contamination shall not be used as filling materials;
7. That any misrepresentation or false information in the document submitted will be ground for automatic revocation of the ECC issued;
8. That all other necessary clearances/permits from other government agencies shall be ground for automatic revocation of the ECC issued; and
9. That transfer of ownership of the project carries the same conditions in this ECC for which written notification shall be within fifteen (15) days from such transfer.

*Grow a Tree for Legacy*

Republic of the Philippines  
**Department of Environment and Natural Resources**  
REGION X  
Macabalan, Cagayan de Oro City  
Tel. Nos. 72-53-27; 72-62-43  
FAX No. 72-62-80

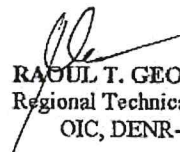
**B. CONSTRUCTION AND OPERATION PHASES:**

1. That the construction of project's structures shall be carried out with the supervision of the proponent to ensure optimum/appropriate engineering designs, materials specifications and standards are strictly followed;
2. That rock armour fencing shall be strictly implemented prior to backfilling of the proposed reclamation area;
3. That mitigating measures shall be instituted to control noise, air and dust emission and other forms of nuisance during reclamation;
4. That dust emission, noise and other forms of nuisance shall be adequately controlled and confined within the plant compound;
5. That the reclamation shall be undertaken without obstructing sea navigation and passage of local fishermen;
6. That solid wastes generated during reclamation shall be properly disposed;
7. That no untreated wastewater or any other types of waste materials that will cause deterioration of the water quality and aesthetic value shall be disposed into the bay; and
8. That adequate lighting facilities shall be installed to avoid navigational accidents.

**C. MONITORING MECHANISM:**

1. That on-the-spot multi-partite monitoring and inspection can be initiated by the DENR-10 anytime in coordination with concerned groups;
2. That quarterly water quality monitoring shall be implemented with results submitted to DENR on quarterly basis; and
3. That the proponent shall put up an Environmental Guarantee Fund (EGF) to cover expenses for multi-partite monitoring, Resource Base Inventory, and other related concerns.

Given this 14th day of December, Nineteen Hundred and Ninety Five.

  
**RAOUL T. GEOLLEGUE**  
Regional Technical Director  
OIC, DENR-10

Processing Fee ----- P250.00  
Filing fee ----- 50.00  
L R F ----- 10.00  
O.R. NO. 9143552  
Date: December 15, 1995

*Grow a Tree for Legacy*

FN:PEIRECC



## **Annex B – Lease Agreement Between HPHI and HMDC**

*Execution Copy***LEASE AGREEMENT**

KNOW ALL MEN BY THESE PRESENTS:

This **LEASE AGREEMENT** (the "Agreement") dated as of \_\_\_\_\_ by and between:

**HOLCIM MINING AND DEVELOPMENT CORPORATION (HMDC)**, a corporation duly organized and existing pursuant to and by virtue of the laws of the Philippines with principal office at 5<sup>th</sup> Floor One Campus Place Building, Tower B, 1080 Campus Avenue, McKinley Town Center, Fort Bonifacio, Taguig City, represented herein by its General Manager, Ms. Maria Allen M. Arbis (hereinafter referred to as the "LESSOR");

-and -

**HOLCIM PHILIPPINES, INC. (HPHI)**, a corporation duly organized and existing pursuant to and by virtue of the laws of the Philippines with principal office at 7<sup>th</sup> Floor Venice Corporate Centre, 8 Turin Road, McKinley Hill, Fort Bonifacio, Taguig City, represented herein by its President & Chief Executive Officer, Mr. Eduardo A. Sahagun (hereinafter referred to as the "LESSEE").

HMDC and HPHI are at times individually referred to herein as a "Party" and collectively, as the "Parties".

**WITNESSETH: That -**

WHEREAS, the LESSOR is the registered owner of several properties more particularly described in Schedule "A" (hereinafter referred to as the "Leased Properties").

WHEREAS, the LESSOR has offered to lease the Leased Properties to the LESSEE, which offer the LESSEE accepted.

NOW, THEREFORE, for and in consideration of the foregoing premises and the covenants hereinafter stipulated the Parties agree as follows:

**ARTICLE I  
PROPERTIES FOR LEASE**

Section 1. *Leased Properties* – The LESSOR hereby transfers and conveys by way of lease in favor of the LESSEE the Leased Properties. 4

---

Execution Copy

**ARTICLE II  
CONSIDERATION**

Section 1. *Rental payment* – The LESSEE shall pay the LESSOR (i) land rental fee based on fair rental value of the Leased Properties determined by an independent, mutually agreed upon reputable third party appraiser, and (ii) cost of stranded assets computed based on the book value of the Leased Properties multiplied by statistical weighted average cost of capital of 4.23%. For purposes of (i), the appraisal of the Leased Properties shall be carried out every two (2) years starting from January 1, 2016 while the weighted average cost of capital shall be annually agreed by both parties and confirmed by external auditors of the LESSOR. Real property taxes will initially be shouldered by the LESSOR and charged back to the LESSEE at cost.

As initial rates of rental payment, the LESSEE hereby agrees to pay the LESSOR, a monthly rental of Five Million Three Hundred Forty Six Thousand Nine Hundred Forty Four and 37/100 Pesos (Php 5,346,944.37), exclusive of VAT and subject to withholding tax, computed as follows:

Monthly Land Rental	Php	6,895,165.53
Monthly Stranded Cost		<u>1,694,922.17</u>
Sub-total		8,590,087.70
Add: 12% VAT		1,030,810.52
Less: 5% CWT		<u>429,504.39</u>
Total Monthly Rental Payment	Php	<u>9,191,393.83</u>

The foregoing initial rates of rental payment shall be subject to adjustment as set forth in the first paragraph of this Section 1.

**ARTICLE III  
TERM OF LEASE**

Section 1. *Term* – Unless earlier terminated for reasons specified under Article VI hereof, this Agreement shall be valid for a period of twenty-five (25) years commencing from 1 January 2016.

Section 2. *Renewal* – This Agreement may be renewed for a further twenty-five (25) year period or such longer period as may be allowed by law at that time upon mutual consent in writing by the Parties; provided, that the renewed agreement may be earlier terminated for reasons specified herein; and, provided, further, that the LESSEE shall convey to the LESSOR a written notice of renewal at least six (6) months prior to the expiration of this Lease Agreement.



*Execution Copy*

**ARTICLE IV  
PURPOSE OF THE LEASE**

Section 1. *Use of the Leased Properties* – The LESSEE shall use and operate the Leased Properties exclusively in connection with its cement manufacturing and other lawful business.

Section 2. *Sub-Lease* – The LESSEE shall not sub-lease the Leased Properties without the prior written consent of the LESSOR; provided that in the event of a sub-lease, the provisions of this Agreement are incorporated by reference in the sub-lease; Provided further, that the purpose of the sub-lease will be substantially similar to that of the original lease.

Section 3. *Peaceful and Quiet Possession* -- The LESSOR shall ensure the LESSEE's quiet and peaceful possession and enjoyment of the Leased Properties and to defend the LESSEE from any disturbances and nuisances which endanger the LESSEE's quiet and peaceful possession of the Leased Properties.

Section 4. *Annotation of the Agreement*. -- The Parties shall cause this Agreement to be immediately annotated on the current and future titles to all the Leased Properties and registered with the relevant Registrars of Deeds. The Parties shall jointly shoulder the costs of such annotation and registration.

**ARTICLE V  
SALE OR MORTGAGE OF THE LEASED PROPERTIES**

Section 1. *Offer for Sale* -- If the LESSOR desires to sell the Leased Properties or any part thereof (the "Option Property"), the LESSOR shall, before offering the Option Property for sale to any other party, offer to sell (the "Offer"), in writing, the Option Property to the LESSEE at a price and on terms and conditions as the LESSOR may, in its discretion, stipulate. The LESSEE may within fifteen (15) days from receipt of the Offer, in writing, either:

- (a) accept the Offer, or
- (b) reject the Offer.

Failure of the LESSEE to accept the Offer within the said fifteen (15)-day period shall be conclusively deemed to be a rejection of the Offer. Likewise, failure of the LESSEE to pay the price, upon terms and conditions of the LESSOR, of the Offer within a period of thirty (30) days from acceptance of the Offer, shall be considered a rejection of the Offer.

In the event of a rejection of the Offer by the LESSEE, the LESSOR may at any time thereafter offer to sell and sell the Option Property at a price and under terms and conditions not more favorable than that contained in the Offer, and upon completion of any such sale, this first opportunity to purchase of the LESSEE shall cease and be at an end.

If the LESSEE is not qualified to purchase the Leased Properties, or any part thereof, which is subject of the Offer, it may assign such right to a qualified person or designee.

Section 2. *Mortgage or Encumbrance* – The LESSOR shall not mortgage or in any manner encumber or dispose of the Leased Properties or any part thereof to any person without the prior written approval of the LESSEE. The LESSEE may impose conditions for such approval as it may deem appropriate, including without limitation a requirement upon

Execution Copy

the LESSOR to warrant, and obtain the written approval of the mortgagee, or encumbrance holder, that such mortgagee, or encumbrance holder shall assume and agree to be bound by all of the terms and conditions of this Agreement.

Section 3. *Void contracts.* -- Any sale, mortgage, encumbrance or disposition of the Leased Premises in violation of the foregoing provisions shall be null and void.

#### **ARTICLE VI DEFAULT**

Section 1. *Grounds for Termination* -- Without prejudice to the Shareholders Agreement in respect of the LESSOR, a Party may cancel or terminate this Agreement upon a material violation or default by the other Party of any of the terms and conditions of this Agreement and such material violation or default, if curable, is not cured or remedied within sixty (60) days from the time written notice of such violation or default is given by the non-defaulting Party.

This Agreement may also be cancelled or terminated upon mutual agreement of the Parties in writing.

#### **ARTICLE VII REPRESENTATIONS AND WARRANTIES**

Section 1. *LESSOR's Warranties and Covenants* -- The LESSOR represents, warrants and covenants in favor of the LESSEE that:

(a) it is the legal and beneficial owner and shall be the absolute and registered owner of the Leased Properties and has full right and interest to grant the lease of the Leased Properties to the LESSEE;

(b) unless otherwise prevented by Force Majeure, it shall maintain the LESSEE in full and peaceful possession of the Leased Properties during the Lease Term and any renewal thereof. For purposes of this Agreement, Force Majeure shall mean an act, event or cause which is unexpected or unforeseen, or if foreseen, must be impossible to avoid, and which is beyond the control of the LESSOR or the LESSEE. This term includes rebellion, insurrection, expropriation, eminent domain, labor unrest, lockout, work stoppage, strikes on a citywide or nationwide scale, flood, typhoon, earthquake, robbery, theft, terrorism, or any other crime; and

(d) the LESSOR shall defend the title to the Leased Properties granted to the LESSEE under and by way of lease and to possess, occupy and use the Leased Properties for the purpose, and indemnify the LESSEE for any breach of this undertaking.

Section 2. *Mutual Warranties* -- LESSOR and LESSEE represent and warrant in favor of each other that:

(a) Each has full power, authority and legal right to execute, deliver and perform this Agreement and has taken all the necessary corporate action to authorize the foregoing;

(b) This Agreement constitutes the legal, valid and binding obligation of the LESSOR and LESSEE, enforceable in accordance with its terms; and



Execution Copy

(c) The execution, delivery and performance of this Agreement do not and will not violate any provision of, or result in a breach of or constitute a default under any law, regulation or judgment, or violate any agreement binding upon either of them or any of their property.

Section 2. *Survival of Representations and Warranties* -- The representations and warranties of each of the Parties hereto shall be deemed continuing representations and warranties and shall survive the execution of this Agreement.

#### ARTICLE VIII MISCELLANEOUS

Section 1. *Improvements* -- The LESSEE may make any structural changes, alterations, additions or improvements on the Leased Properties in order to effect the purpose(s) or use(s) agreed upon by the Parties and stated herein. Any permanent alterations or permanent or immovable improvements made or introduced by the LESSEE on the Leased Properties shall, upon the termination of this Agreement, automatically be owned by the LESSOR without any obligation on the part of the LESSOR to pay or refund its value or cost to the LESSEE. The LESSEE may remove all other improvements or alterations introduced by it on the Leased Properties, provided that such removal shall not cause any damage on the Leased Properties or any part thereof.

Section 2. *General Maintenance, Sanitation and Repairs* -- The cost of general maintenance and upkeep of the Leased Properties shall be for the account of the LESSEE. The LESSEE shall keep the Leased Properties in a clean, safe and sanitary condition and introduce all the needed repairs at all times.

Section 3. *Assignment* -- Unless otherwise provided in this Agreement, the benefits and obligations conferred by this Agreement upon each of the Parties are personal to that Party and may not be assigned, delegated, transferred or otherwise disposed of except with the prior written consent of the other Party.

The LESSEE, however, has and reserves the right to assign, sublease, transfer or encumber any of its rights and interests under this Agreement to any of its associates, subsidiaries or affiliates with written notice to the LESSOR, provided that the rights and interests of the LESSOR under this Agreement shall be respected and observed in its entirety by such assignee, transferee, sublease or mortgage, and for the entire term hereof unless otherwise mutually agreed upon.

Section 4. *Return of Premises* -- Upon the termination of this Agreement for any reason whatsoever, the LESSEE shall peacefully and immediately vacate the Leased Properties and return possession thereof to the LESSOR in good condition.

Section 5. *Indemnity* -- The Parties shall hold each other free and harmless from any loss or damage suffered by one Party, its agents or employees, guests or customers or other third person arising out of the use of the Leased Properties including, but not limited to, claims for property damage, personal injury or wrongful death, or losses or damage occasioned by reason of any event or cause which could not be foreseen, or which though foreseen, were inevitable such as but not limited to fire, earthquake, lightning, typhoons, flood, volcanic eruption, robbery, theft or other crimes.

Section 6. *Other Charges* -- The LESSOR shall not impose any additional charges on the LESSEE which will effectively increase the Lessor's expenses in respect of of the Leased Properties.



Execution Copy

Section 7. *Amendments* – Any amendments or additional terms and conditions to this Agreement must be in writing and agreed upon by the Parties.

Section 8. *Applicable Law* – This Agreement and any and all amendments hereto shall be subject to and interpreted in accordance with the laws of the Republic of the Philippines.

**IN WITNESS WHEREOF**, the Parties have caused these presents to be signed by their respective authorized representatives on the date indicated in the acknowledgement.

**HOLCIM MINING AND DEVELOPMENT  
CORPORATION**  
Lessor

**HOLCIM PHILIPPINES, INC.**  
Lessee

By:

By:

  
\_\_\_\_\_  
MARIA ALLEN M. ARBIS

  
\_\_\_\_\_  
EDUARDO A. SAHAGUN

SIGNED IN THE PRESENCE OF:

\_\_\_\_\_  \_\_\_\_\_

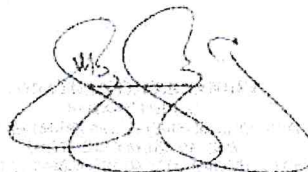
Execution Copy

**ACKNOWLEDGMENT**REPUBLIC OF THE PHILIPPINES)  
TAGUIG CITY ) S.S.

BEFORE ME, a duly commissioned Notary Public in and for the City of Makati, Philippines, personally appeared:

Name	Passport	Date/ Place Issued
Maria Allen M. Arbis	EC0516817	3-8-2014/DFA NCR South
Eduardo A. Sahagun	EC 3944235	4-15-2015/DFA Manila

known to me and to me known to be the same persons who executed the foregoing Lease Agreement and who acknowledged to me that the same is their free and voluntary act and deed, and that they have the authority to sign on behalf of the entities they represent.

WITNESS MY HAND AND SEAL on this 27 day of JUN 27 2016 in TAGUIG CITY, Philippines.Doc. No. 457  
Page No. 92  
Book No. 2  
Series of 2016.

# **Annex C – Information, Education and Communication (IEC) Documentation**

---



**IEC/ Barangay Consultation in Barangay Poblacion, Lugait**  
Lugait Multi-purpose Hall, Poblacion, Municipality of Lugait, Misamis Oriental  
February 13, 2019; 9:00 am

**Registration**





Ms. Molinda P. Francisco (Axceltechs Inc.) with the introduction of participants





Ms. Czarina M. Olores (Axceltechs Inc.) with the EIA presentation





Mr. Orville Sacayle (HPHI) with the presentation of project description



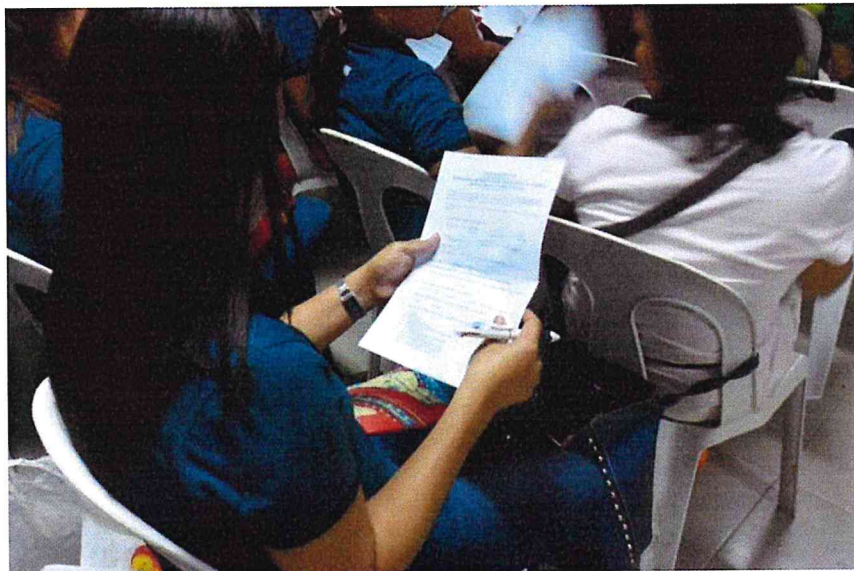


**Open Forum**





Initial perception survey





**Coordination/ Key Informant Interview (KII) with MPDC Teofilo A. Augusto  
Municipal Planning and Development Office (MPDO), Municipal Hall of Lugait,  
February 14, 2019, 9:30 am**



Coordination with Medtech Rodelyn Limocon,  
Municipal Health Office (MHO), Barangay Poblacion, Lugait, Misamis Oriental  
February 14, 2019, 10:00 am





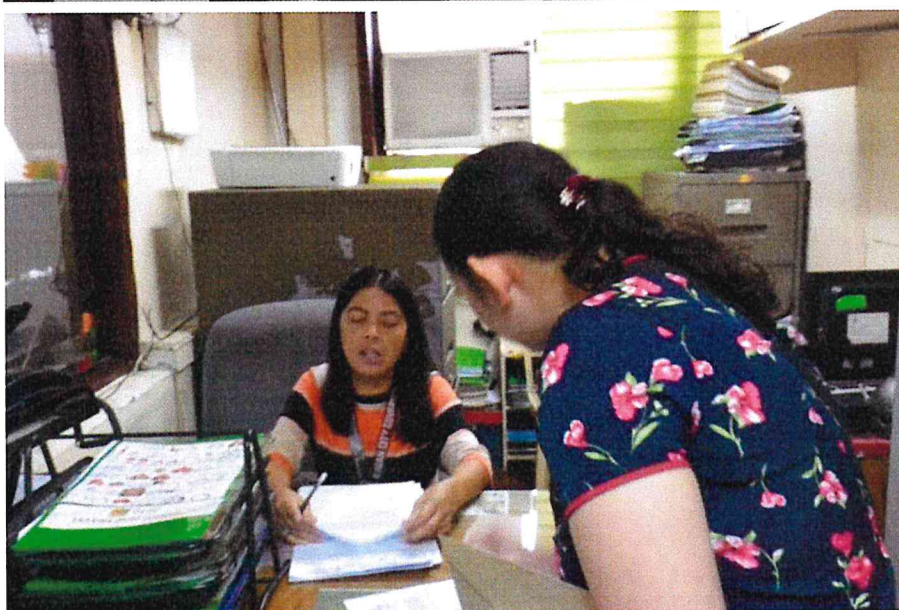
**Coordination with Barangay Secretary Mierra A. Yurong  
Barangay Hall of Poblacion, Lugait, Misamis Oriental  
February 14, 2019, 10:15 am**





Coordination with the Office of the Mayor, Iligan City Hall, Lanao del Norte

February 14, 2019, 11:00 am





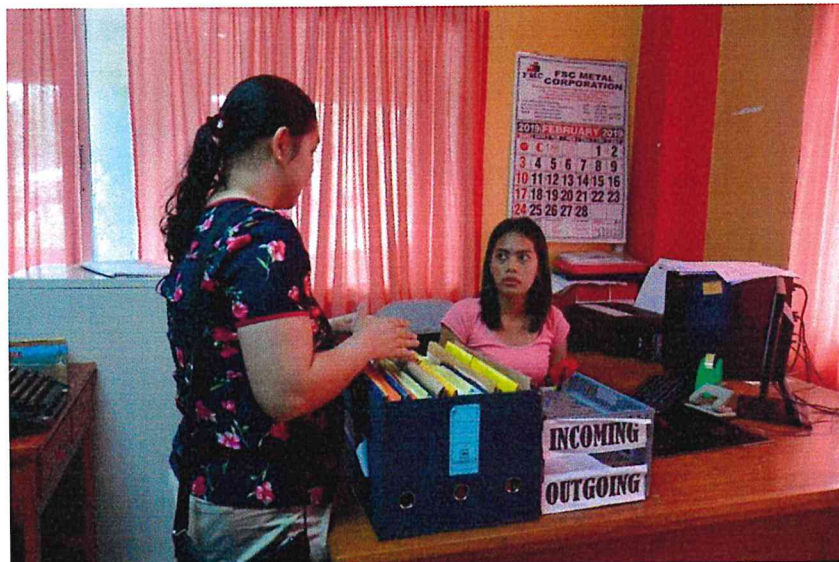
**Coordination with the City Planning and Development Office (CPDO), Iligan City Hall, Lanao  
del Norte**

**February 14, 2019, 11:00 am**





Coordination with Barangay Secretary Jhenielyn Ebarat,  
Barangay Hall of Dalipuga, Iligan City, Lanao del Norte  
February 15, 2019, 2:30 pm





**Coordination with Cherrylyn Pabua (Barangay Health Worker)**

**Dalipuga Barangay Health Center, Iligan City, Lanao del Norte**

**February 14, 2019, 3:00 pm**



**Coordination with the Lugait Municipal Police Station**

**Barangay Poblacion, Lugait, Misamis Oriental**

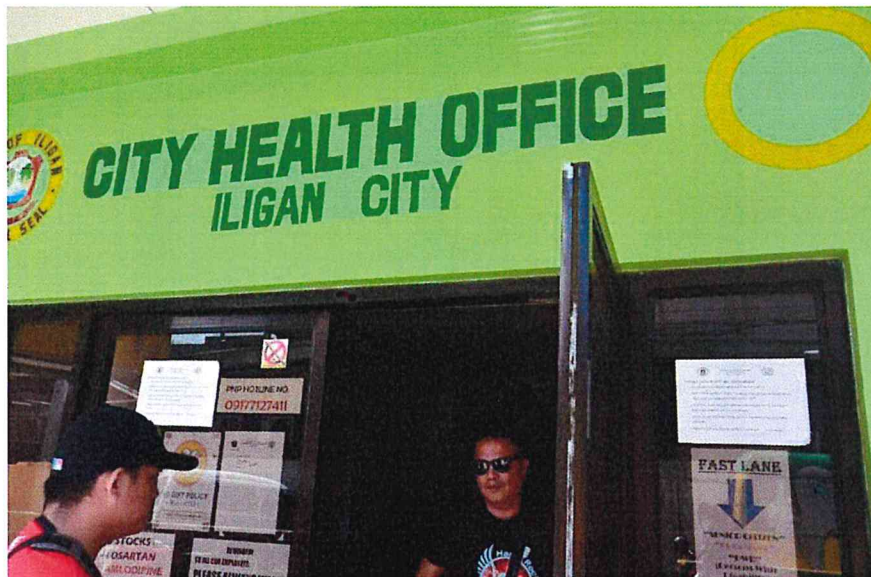
**February 15, 2019, 10:00 am**





**Coordination with the City Health Office, Iligan City, Lanao del Norte**

**February 15, 2019, 10:00 am**



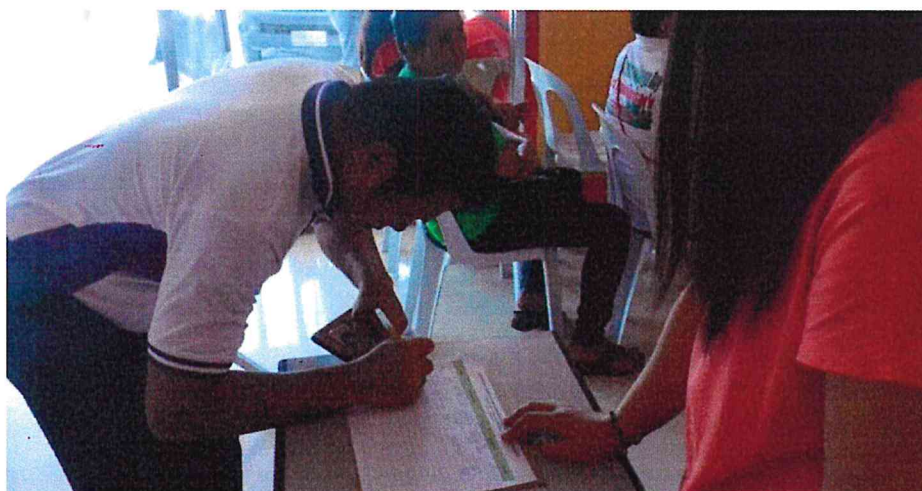


**IEC/ Barangay Consultation in Barangay Dalipuga, Iligan City**

Barangay Hall, Dalipuga, Iligan City, Lanao del Norte

February 15, 2019; 3:00 pm

**Registration**













Ms. Molinda P. Francisco (Axceltechs Inc.) with the EIA presentation





Mr. Orville Sacayle (HPHI) with the project presentation





Open Forum









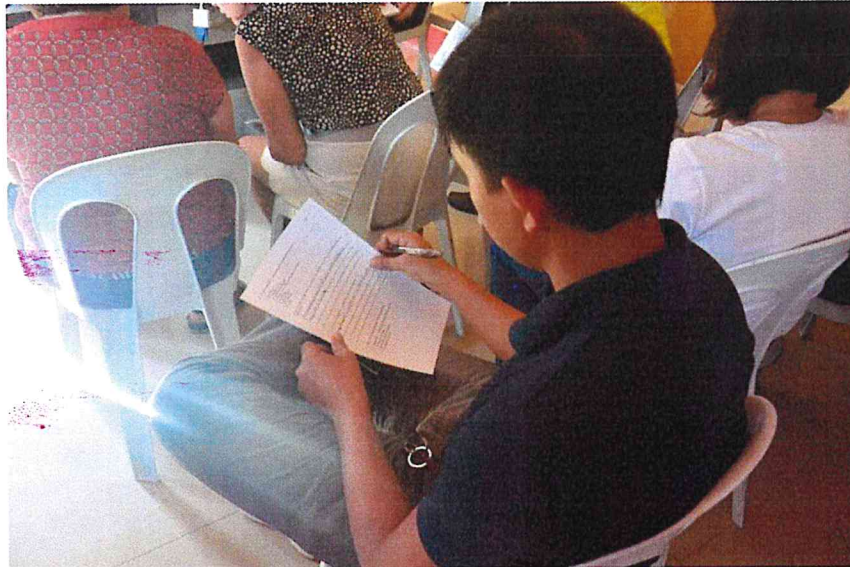




**Initial Perception Survey**









**INFORMATION, EDUCATION AND COMMUNICATION (IEC) ACTIVITIES for the  
PROPOSED LUGAIT PLANT EXPANSION PROJECT**

<b>LGUs Covered by IEC</b>	<b>IEC Schedule/Dates</b>	<b>Issues Raised/ Suggestions</b>	<b>Proponent's Response</b>
Barangay Poblacion, Lugait	Lugait Multi- purpose Hall, Barangay Poblacion, Lugait; February 12, 2019	Air Pollution <i>The project presentation may be too technical but we only want that no air pollution will affect the community like what happened before in the Floro Cement Plant</i>	<p>The proposed expansion will definitely address the air emission from the cement plant wherein the machineries and equipment are armed with modern technology and is fuel efficient. This is to ensure that the air quality emission from the HPHI Lugait Cement Plant is within the DENR standards. Presently, the cement plant is being managed by Holcim Philippines Inc. (HPHI), formerly owned by Floro Cement Corporation. Unlike the previous operation of Floro Cement, HPHI employs Continuous Emission Monitoring System (CEMS) where the regular monitoring of air emission with respect to the air quality standards is being done with the computer database and regularly reported to the DENR. HPHI was compliant with its environmental responsibilities wherein the impacts to the communities and environment were regularly monitored and reported to the EMB Region 10 Office.</p> <p>The proposed expansion and the existing operation will still be under the strict monitoring of the Multi-partite Monitoring Team (MMT) which is composed of the representatives from different stakeholders. This is also one of the mechanisms of the local people to report their concerns through MMT members which will be conveyed to the HPHI and provide necessary actions and coordination for such concerns. In addition, the representative</p>

### Proposed Lugait Plant Expansion Project

LGUs Covered by IEC	IEC Schedule/Dates	Issues Raised/ Suggestions	Proponent's Response
			from EMB-Region 10 assured the participants that close monitoring on the plant operation will be done regularly to ensure that the different activities are compliant to the regulations and laws enforced by the EMB-DENR.
		Project Presentation <i>It was suggested that the project description should be presented in a more simplified one and it would be better if there is a video presentation</i>	The suggested modification of project presentation will be improved for better understanding of the people about the project. Video presentation will be considered in the succeeding community consultation or in the public scoping.
		Start of the proposed expansion	The reactivation of Line 1 is projected to commence on the month of August this year. A demolition permit will be secured by the company to address the current issue on Asbestos Containing Materials and the decommissioning of equipment that needs to be replaced.
		Landslide and flashflood <i>The expansion will require additional raw materials that will be mined in the area which may potentially pose risk on landslide and flashflood in the area</i>	The expansion consists of increasing the production of cement product in the HPHI Lugait Cement Plant Facility. There will be no landslide and flashflood that will come from expansion activities. However, the raw materials that will be obtained from the Holcim Resources and Development Corporation (HRDC) will come from the mining operation wherein the possible risk of landslide and flashflood are regularly monitored to ensure that no such incident will happen in the area at all times. In the case of the proposed



Proposed Lugait Plant Expansion Project

LGUs Covered by IEC	IEC Schedule/Dates	Issues Raised/ Suggestions	Proponent's Response
Municipal Planning and Development Office (MPDO)	Coordination with Engr. Teofilo A. Augusto (MPDC), Municipal Planning and Development Office (MPDO), Municipal Hall of Lugait; February 14, 2019		expansion of the Lugait Processing Plant, addressing the possible landslide and other geological hazard will be assessed and included in the Environmental Performance Report and Management Plan (EPRMP) that will be submitted to the Environmental Management Bureau of the DENR for the ECC amendment application for the proposed expansion.
		Educational Support of the project to the Lugait Central School	It was suggested that the project will continue to bring economic development and progress in the barangay as well as to the entire Lugait especially in the Lugait Central School (LCS). Hope that the assistance program will be extended to LCS and bring positive changes on the poor state of school facilities, lack of enough classrooms and reducing if not totally eliminated the significant number of non-readers among the attending pupils in LCS.
		EIA study team activity	The study team of Axceltechs Inc. was commissioned by HPHI to conduct the EIA for the ECC amendment application for the proposed expansion of Lugait Cement Plant. The study team is conducting an IEC, where project information is being disseminated to the host LGUs and other project stakeholders within the community.
		<i>Why did HPHI separated from mining and excluded in the SDMP?</i>	It is based on the Memorandum Circular released by the Mines and Geosciences Bureau (MGB) on the issuance of Mineral Processing Permit (MPP). Basically, the operation of Lugait Cement Plant falls on manufacturing which exclude them from securing MPP. It is

**Proposed Lugait Plant Expansion Project**

LGUs Covered by IEC	IEC Schedule/Dates	Issues Raised/ Suggestions	Proponent's Response
			also a matter of streamlining their respective activities in terms of compliance to the concerned government agencies. Holcim Resources Development Corporation (HRDC) is on the mining component while Holcim Philippines Inc. (HPHI) is on the processing of cement. Each company have different business activities and a matter of complying to SDMP regulated by the MGB-DENR only pertains to the operation of HRDC and nothing to do with the processing facility. However, this concern will be properly documented and bring to the knowledge of the proponent to provide necessary action and coordination.
		The production expansion of HPHI will only earn them more income while getting the raw materials for free from the HRDC	The agreement on the acquisition of the raw materials of HPHI from the HRDC may have supported by legal arrangement as a two different company registered in the Securities and Exchange Commission (SEC). While the statement of Mr. Augusto of getting free raw materials from HRDC was hardly significant matter, the study team assured that this concern will be properly documented to bring to the knowledge of the proponent to provide necessary correction and clarification on the matter. As a background information, Mr. Augusto is also part of the MMT of the HRDC.
City Health Office of Iligan City		EIA study team activity	The study team of Axceltechs Inc. was commissioned by HPHI to conduct the EIA for the ECC amendment application for the proposed expansion of Lugait Cement Plant. The study team is conducting an IEC, where project information is being



LGUs Covered by IEC	IEC Schedule/Dates	Issues Raised/ Suggestions	Proponent's Response
			disseminated to the host LGUs and other project stakeholders within the community.
		Data gathering	As suggested by Mr. Manarpaac, the best health data that the study team could acquire from the Iligan side is the barangay health data of Dalipuga due to its proximity to the HPHI processing plant. However, it was assured by Mr. Manarpaac that the HPHI was compliant in the standard air quality emission despite the dust generation. Being a resident in Dalipuga, Mr. Manarpaac also mentioned that no complaint ever been filed to their office about the project's operation and serious impact to health.
		Health status in the area	As explained by Mr. Manarpaac, the Barangay Dalipuga and other areas in Iligan is an industrial zone. For those areas containing chemical industries, the city health generally observes some skin disease while those industry emitting dusts including Barangay Dalipuga, some observed diseases were respiratory related sickness. However, these are merely a general observation and do not point out certain industry that causes such diseases.
Barangay Dalipuga, Iligan City	Barangay Hall of Dalipuga; February 15, 2019; 2:30 pm	Air pollution monitoring	The proposed expansion will definitely address the air emission from the cement plant wherein the machineries and equipment are armed with modern technology and is fuel efficient. This is to ensure that the air quality emission from the HPHI Lugait Cement Plant is within the DENR standards. Presently, the cement plant is being managed by Holcim Philippines Inc. (HPHI), formerly owned

LGUs Covered by IEC	IEC Schedule/Dates	Issues Raised/ Suggestions	Proponent's Response
			by Floro Cement Corporation. Unlike the previous operation of Floro Cement, HPHI employs Continuous Emission Monitoring System (CEMS) where the regular monitoring of air emission with respect to the air quality standards is being done with the computer database and regularly reported to the DENR. HPHI was compliant with its environmental responsibilities wherein the impacts to the communities and environment were regularly monitored and reported to the EMB Region 10 Office.
		Guarantee of the people that the air quality monitoring will not exceed on the DENR standards	The air pollution monitoring or the CEMS of the plant facility will provide close monitoring and automatically give signal to alarm the facility as well as DENR Regional Office if ever the emission exceeds on the air quality standards. The quarterly monitoring report also contain the results of air monitoring, a copy of this document can be requested from Barangay Dalipuga through Barangay Captain Hanoy for transparency purposes. As mentioned by Ms. Dorato of EMB Region 10, they will also monitor the air quality emission and will immediately provide necessary actions if ever the facility exceeds with the standards to ensure and address the possible adverse impacts to the community.
		Posting the air quality testing result	As suggested by the representative of EMB Region 10, air quality monitoring results can be posted in a conspicuous place in the barangay for the public to see. The management of HPHI may also consider the provision of putting viewing monitor within the plant



*Proposed Lugait Plant Expansion Project*

LGUs Covered by IEC	IEC Schedule/Dates	Issues Raised/ Suggestions	Proponent's Response
			premises that display the air quality result coming from the monitoring system of the plant facility. This suggestion will be considered by the management of HPHI.
		Indigenous People involvement in the project	As suggested by the Higaonon leader representing the indigenous people in the barangay, IPs should be considered in the formation of MMT. In this way collaborative efforts will be obtained along with the equal privileges given to the community for employment, project benefits and community programs. Moreover, flashfloods and other disaster will be prevented through collaborative planning wherein the indigenous communities and ancestral land will be protected.

**PRO-FORMA STAKEHOLDER IDENTIFICATION MATRIX**

Potential Impact Areas		Basis for selection of sector as a stakeholder of the project	Sectors/Sub-sectors Identified by Proponent to be Likely Stakeholders of the Project	Specific Organizations/Entities Likely to be Invited to IEC/Site Scoping as Representing the Sectoral Stakeholders
A	Direct Impact Area			
1	Poblacion	Local government of the barangay has direct political jurisdiction over the portions of the project area	Local Government Unit of Barangay Poblacion Residents of Barangay Poblacion	Barangay officials/ Barangay Council  Purok and Sitio Leaders and representatives  Residents near the Lugait Cement Manufacturing Plant premises

Potential Impact Areas		Basis for selection of sector as a stakeholder of the project	Sectors/Sub-sectors identified by Proponent to be Likely Stakeholders of the Project	Specific Organizations/Entities Likely to be Invited to IEC/Site Scoping as Representing the Sectoral Stakeholders
				Representative from local organizations  Members of Multi-partite monitoring team (MMT) of HPHI Project
2	Barangay Dalipuga	Local government of the barangay has direct political jurisdiction over the portions of the project area	Local Government Unit of Barangay Dalipuga  Residents of Barangay Dalipuga	Barangay officials/ Barangay Council  Purok and Sitio Leaders and representatives  Residents near the Lugait Cement Manufacturing Plant premises  Representative from local organizations  Members of Multi-partite monitoring team (MMT) of HPHI Project
B	LGUs with political jurisdiction over the project area			
1	Municipality of Lugait, Misamis Oriental	Barangay Poblacion is located within the Municipality	Municipal Office  City Environmental and Natural Resources Office (CENRO)  Municipal Health Office  Municipal Planning and Development Office (MPDC)	Mayor / Representative  CENRO Officer/Representative  Municipal Health Officer/ Representative  Municipal Planning and Development Coordinator (MPDC)  Representatives from different sectors in Lugait, Misamis Oriental



**Proposed Lugait Plant Expansion Project**

Potential Impact Areas		Basis for selection of sector as a stakeholder of the project	Sectors/Sub-sectors Identified by Proponent to be Likely Stakeholders of the Project	Specific Organizations/Entities Likely to be Invited to IEC/Site Scoping as Representing the Sectoral Stakeholders
2	Iligan City	Barangay Dalipuga is located within the City of Iligan	Office of the Mayor City Environmental and Management Office (CEMO) City Health Office City Planning and Development Office (CPDC)	Mayor / Representative CEMO Officer/Representative Municipal Health Officer/ Representative Municipal Planning and Development Coordinator (CPDC) Representatives from different sectors in Iligan City
3	Province of Misamis Oriental	Lugait is one of the municipalities within the province of Misamis Oriental	Provincial Office Provincial Environmental and Natural Resources Office (PENRO)	Governor/ Vice Governor / Representative Representative of PENRO
4	Province of Lanao del Norte	Iligan City is geographically located within the province of Lanao del Norte	Provincial Office Provincial Environmental and Natural Resources Office (PENRO)	Governor/ Vice Governor / Representative Representative of PENRO
C	Other evident pre-identified areas of potential impact (may be candidates for Indirect Impact Areas, subject to EIA Findings)			
1	Barangay Biga, Lugait	Barangay is the adjacent barangay next to Poblacion within the municipality of Lugait	Nearby communities and barangay officials	Barangay Captain / Representative Barangay Officials Barangay Kagawad for Environment Sector/Representative

Potential Impact Areas		Basis for selection of sector as a stakeholder of the project	Sectors/Sub-sectors Identified by Proponent to be Likely Stakeholders of the Project	Specific Organizations/Entities Likely to be Invited to IEC/Site Scoping as Representing the Sectoral Stakeholders
				Representative/official of other concerned local organizations in the barangay
2	Barangay Lower Talacogon, Lugait	Barangay is the adjacent barangay next to Poblacion within the municipality of Lugait	Nearby communities and barangay officials	Barangay Captain / Representative Barangay Officials  Barangay Kagawad for Environment Sector/Representative
3	Barangay Upper Talacogon, Lugait	Barangay is the adjacent barangay next to Poblacion within the municipality of Lugait	Nearby communities and barangay officials	Representative/official of other concerned local organizations in the barangay  Barangay Captain / Representative Barangay Officials  Barangay Kagawad for Environment Sector/Representative
4	Barangay Bunawan, Iligan City	Barangay is the adjacent barangay next to Dalipuga within the city of Iligan	Nearby communities and barangay officials	Representative/official of other concerned local organizations in the barangay  Barangay Captain / Representative Barangay Officials  Barangay Kagawad for Environment Sector/Representative



Potential Impact Areas		Basis for selection of sector as a stakeholder of the project	Sectors/Sub-sectors Identified by Proponent to be Likely Stakeholders of the Project	Specific Organizations/Entities Likely to be Invited to IEC/Site Scoping as Representing the Sectoral Stakeholders
5	Barangay Kiwalan, Iligan City	Barangay is the adjacent barangay next to Dalipuga within the city of Iligan	Nearby communities and barangay officials	Barangay Captain / Representative Barangay Officials  Barangay Kagawad for Environment Sector/Representative  Representative/official of other concerned local organizations in the barangay

Prepared by:

Molinda P. Francisco  
EIA People Module Preparer

## **Annex D – Result of Preliminary Perception Survey**

---



Based on DENR Administrative Order No. 2017-5 (Guidelines on Public Participation under the Philippine Environmental Impact Statement (EIS) System, stakeholder involvement shall be initiated early through Information and Education Communication (IEC) and preliminary perception survey prior to scoping activities.

Initial stakeholder identification was undertaken, the direct impact areas or host barangays are Barangay Poblacion, Lugait, Misamis Oriental and Sitio Mapalad, Barangay Dalipuga, Iligan City, Lanao del Norte. The indirect barangays within the municipality of Lugait are Barangays Biga, Lower Talacogon, Upper Talacogon, while those indirect barangays within the side of Iligan City are Barangays Bunawan and Kiwalan.

IEC was conducted in the 2 direct impact barangays of Poblacion, Lugait and Dalipuga, Iligan City through barangay consultations. This was attended by different stakeholders from the barangay and host municipality and city. Environmental Impact Assessment (EIA) process and brief project description were presented during the barangay consultation which was followed the open forum where the participants raised their issues and concerns. The following groups and representatives of the different concerned LGUs and government offices have been the audience of the IEC conducted on February 13-15, 2019;

**Misamis Oriental – Host Province**

- 1) Environmental Management Bureau Region 10 (EMB-10)
- 2) Department of Trade and Industry (DTI)
- 3) Provincial Environment and Natural Resource Office, Misamis Oriental (PENRO-MISOR)

**Lugait, Misamis Oriental – Host Municipality**

- 1) Municipal Planning and Development Office (MPDO)

**Barangay Poblacion - Host Barangay**

- 1) Members of Barangay officials/ Barangay Council
  - 2) Purok Leaders and representatives
  - 3) Senior Citizen's Association
  - 4) Farmer's Association
  - 5) Fisherfolks
  - 6) Barangay Health Workers (BHWs)
  - 7) CDW
  - 8) Sangguniang Kabataan (SK)
  - 9) Lugait Central School
  - 10) Women's Association
-

**Iligan City, Lanao del Norte**

- 1) Environmental Management Bureau Region 10 (EMB-10)
- 2) Department of Education (DepED)
- 3) City Environment and Natural Resource Office, Iligan City (CENRO)
- 4) City Health Office

**Barangay Dalipuga - Host Barangay (FGDs)**

- 1) Members of Barangay officials/ Barangay Council
- 2) Purok Leaders and representatives
- 3) Daycare workers
- 4) IPMR
- 5) Senior Citizen's Association
- 6) Religious sector
- 7) Fisherfolks
- 8) Barangay Health Workers (BHWs)
- 9) Barangay Nutrition Scholar
- 10) Women's Association

An initial perception survey was performed right after the open forum participated by the IEC attendees. An overall total of 68 survey forms were completed representing 45 survey respondents from Barangay Poblacion, Lugait and 22 respondents from Barangay Dalipuga, Iligan City.

The results of the initial perception surveys are presented in this report. In addition, a summary of findings as well as the recommendations on how to further improve project information dissemination were also tackled.

---



**Proposed Lugait Plant Expansion Project**  
**Initial Perception Survey Results**

**Project Background Information**

Holderbank Financiere Glaris, the old name of Holcim started its presence in the Philippines as early as 1970's in partnership with Iligan Cement owned by Alcantara Group and another cement plant in Surigao City, PACEMCO. But eventually opt to sell its stake in those 2 plants and concentrated in Union and Alsons in the late 90's. Holcim Lugait Plant was originally built as Floro Cement Corporation and started commercial operations in 1972 with a brief closure in 1985 and re-opened in 1988.

Acquired by the Alcantara Group of Companies in 1991 and was renamed Alsons Cement Corporation. Alsons Merged with Phinma Group of Companies in 2003 under the company name Union Cement Corporation.

In 2005, Union Cement Corporation becomes what is now Holcim Philippines Inc. with 4 plants operating at Full Capacity (La Union, Bulacan, Lugait and Davao Plants with Cement Terminal in Batangas and Grinding Plant in Mabini Batangas.)

In 2015, Holcim Philippines Inc. became a member of the LafargeHolcim Group which was formed by the merger of cement companies Lafarge and Holcim.

With the growing demand of cement products in the country, HPHI Lugait proposes to reactivate the currently mothballed Line 1 and to optimize the production process of Line 2 to support the increase in cement production capacity. With the proposed modification, HPHI will undergo an ECC amendment to be applied at the DENR-EMB Central Office. Part of the Environmental Impact Assessment pre-scoping process is the conduct of preliminary perception survey and Information, Education and Communication (IEC).

**Awareness and General Understanding on the Proposed Project**

**A. Awareness on the Lugait Cement Plant**

**Table A.1** shows the percentage of awareness about the Lugait cement processing plant operation. Almost Eighty-seven percent (87%) are aware about the HPHI facility and existing operation while around 13% were unaware on the project operation. Almost 56% of the total 59 aware respondents stated that they know the cement plant operation for more than 5 years while

around 37% only known the project's existence for less than 5 years. The details were presented in the following table.

**Table A.1 Awareness on the Cement Processing Plant Operation. 2019**

Awareness of the Existing operation of HPHI Lugait PLant	Poblacion		Dalipuga		Total	
	#	%	#	%	#	%
Aware	45	97.83%	14	63.64%	59	86.76%
Not aware	1	2.17%	8	36.36%	9	13.24%
<b>Total</b>	<b>46</b>	<b>100.00%</b>	<b>22</b>	<b>100.00%</b>	<b>68</b>	<b>100.00%</b>
How long have you known the cement processing plant operation?	#	%	#	%	#	%
Less than 1 year	15	33.33%	5	35.71%	20	33.90%
1 to 3 years	0	0.00%	1	7.14%	1	1.69%
3 to 5 years	1	2.22%	0	0.00%	1	1.69%
More than 5 years	27	60.00%	6	42.86%	33	55.93%
No answer	2	4.44%	2	14.29%	4	6.78%
<b>Total</b>	<b>45</b>	<b>100.00%</b>	<b>14</b>	<b>100.00%</b>	<b>59</b>	<b>100.00%</b>

*Source: Perception Survey February 12 and 15, 2019*

#### **B. Awareness on the Proposed Expansion Project**

The respondents were asked if they are aware about the proposed expansion of the HPHI Lugait Plant. Fifty-eight of the respondents said that they are aware of the planned expansion, while 10 respondents are not aware on the proposed expansion. The respondents who were aware of the expansion project (58 respondents) were then asked about their sources of information about the project expansion. Twenty-six respondents (45%) learned about the project expansion from consultation conducted in the barangay while 16 respondents (28%) learned about the proposed expansion from project employees. Nine respondents (16%) of the total aware respondents learned it from barangay officials. Around 10% (6 respondents) learned about the project expansion from other sources such as TV and radios, from family members, neighbors and community sectors or barangay workers. The details of the project awareness and sources of information were presented in the following table.



**Table B.1 Awareness on the Lugait Processing Plant Proposed Expansion. 2019**

Awareness of the HPHI Lugait Expansion Project	Poblacion		Dalipuga		Total	
	#	%	#	%	#	%
Aware	4		1		5	
	4	95.65%	4	63.64%	8	85.29%
Not aware					1	
	2	4.35%	8	36.36%	0	14.71%
Total	4	100.00	2		6	100.00
	6	%	2	100.00%	8	%
Sources of Project Information	#	%	#	%	#	%
Consultation conducted in the barangay	1				2	
	9	43.18%	7	50.00%	6	44.83%
Project employee	1				1	
	3	29.55%	3	21.43%	6	27.59%
Barangay/City Officials	8	18.18%	1	7.14%	9	15.52%
Neighbor	3	6.82%	0	0.00%	3	5.17%
Family/ household members	1	2.27%	0	0.00%	1	1.72%
Radio	0	0.00%	1	7.14%	1	1.72%
Television	0	0.00%	1	7.14%	1	1.72%
No answer	0	0.00%	1	7.14%	1	1.72%
Total	4	100.00	1		5	100.00
	4	%	4	100.00%	8	%

Source: Perception Survey February 12 and 15, 2019

The survey also asked the respondents to identify the proponent of the processing plant. Only Six respondents (9%) identified the project proponent as HPHI, while 24 respondents (35%) simply knew the proponent as Holcim which can be Holcim Philippines Inc. (HPHI) or the Holcim Resources and Development Corporation (HRDC), responsible on the quarrying component in the area. About 6 respondents (9%) thought that the project is owned by Holcim Cement Corporation while 2 respondents from Dalipuga identified the proponent as Alcantara Group of Companies.

**Table B.2 Awareness on the Project Proponent. 2019**

Lugait Cement Plant Project Proponent	Poblacion		Dalipuga		Total	
	#	%	#	%	#	%
Holcim	22	47.83%	2	9.09%	24	35.29%
Holcim Philippines Inc. (HPHI)	4	8.70%	2	9.09%	6	8.82%
Holcim Cement Corporation	6	13.04%	0	0.00%	6	8.82%

Lugait Cement Plant Project Proponent	Poblacion		Dalipuga		Total	
	#	%	#	%	#	%
Alcantara Group of Companies	0	0.00%	2	9.09%	2	2.94%
No answer	14	30.43%	16	72.73%	30	44.12%
<b>Total</b>	<b>46</b>	<b>100.00%</b>	<b>22</b>	<b>100.00%</b>	<b>68</b>	<b>100.00%</b>

Source: Perception Survey February 12 and 15, 2019

The results presented in the above **Table B.2** showed that not all people are aware of the official name of the proponent of the cement manufacturing plant being presently run by HPHI. The results seem to show that the arrangements between HPHI and HRDC is not clear to many of the respondents. It is necessary for the company to continuously disseminate the correct information about HRDC, as a holder of the MPSA while HPHI as a processing company that manufacture the cement products. It is also necessary to provide brief information about the history of the company where the Alcantara Group of Companies were introduced as the former plant operator prior to HPHI.

### C. Perceived Impacts of the Proposed Project

The respondents were asked about their opinions on the benefits of the proposed expansion of the cement plant. The question can accommodate multiple answers. Hence, the seventh column contains the percentage in relation to the total number of responses. The eight column contains the percentage in relation to the number of respondents.

Employment opportunities from expansion project was cited by 57 respondents (84%) and represents 20% of total responses. This high expectation on employment opportunities should be tempered because the project expansion is only about the increase of production capacity and only limited if no additional employee is required for the expansion. However, employment opportunity may still come from sub-contractor of the company that provides services inside the pre-construction stage activities in Line 1 and Line 2 facilities of the project.

The next six answers (medical mission, assistance to LGU projects, scholarship, skills training, additional income and business opportunity) represents 79% of total responses and usually acquired by the people through the SDMP formerly provided by both HPHI and HRDC and the CSR programs from previous years. This SDMP is presently being implemented by HRDC, while HPHI focused on the CSR programs for the community. Respondents were not fully aware of this arrangement and perceived that because of the expansion project, the amount allocated to fund the SDMP as well as CSR programs will increase and be used as additional funds to finance these benefits. It is important to provide correct information about this topic including the basis of



exclusion of HPHI in providing funds for the SDMP and the on-going CSR programs of the HPHI for the community. The details are shown in the following **Table C.1 Benefits of the Proposed Project. 2019.**

**Table C.1 Benefits of the Proposed Project. 2019**

Benefits of the proposed project expansion	Poblacion		Dalipuga		Total		% of Respondents
	#	%	#	%	#	%	
Employment	39	18.22%	18	23.38%	57	19.59%	83.82%
Medical mission	33	15.42%	11	14.29%	44	15.12%	64.71%
Assistance on the barangay and community projects of the municipality/city	30	14.02%	13	16.88%	43	14.78%	63.24%
Scholarship	32	14.95%	11	14.29%	43	14.78%	63.24%
Skills training	29	13.55%	9	11.69%	38	13.06%	55.88%
Additional income	26	12.15%	9	11.69%	35	12.03%	51.47%
Business opportunity	22	10.28%	4	5.19%	26	8.93%	38.24%
School reading Lab for Lugait Center	2	0.93%	0	0.00%	2	0.69%	2.94%
No idea/no comment	1	0.47%	2	2.60%	3	1.03%	4.41%
<b>Total</b>	<b>214</b>	<b>100.00 %</b>	<b>77</b>	<b>100.00 %</b>	<b>291</b>	<b>100.00%</b>	
* Multiple answers							

*Source: Perception Survey February 12 and 15, 2019*

In terms of project's impact to the communities, 52 respondents (54%) expressed positive opinions in favor of the project. Thirty-seven respondents (54%) were in the opinion that the proposed expansion will provide employment opportunities and additional income while 13 respondents (19%) were expecting that different projects will continue to assist the LGU projects, social and economic program and overall development of environment, health and safety of the community.

Five respondents (7%) perceived negatively on the expansion project. Despite the development being provided by the company, 3 respondents (4%) thought that the expansion project will still continue to pose a threat on the health of the community through the dusts or air emission that will escape from the filtering mechanism of the facility while 2 respondents (3%) are thinking that the expansion will create water pollution that will affect the receiving water bodies and livelihood

of the fishermen. The details are shown in **Table C.1 Impacts of the Proposed Project to the Community. 2019.**

**Table C.1 Impacts of the Proposed Project to the Community. 2019**

Project's Impact to People	Poblacion		Dalipuga		Total	
	#	%	#	%	#	%
<b>Positive Impacts</b>						
Employment opportunity and additional income	31	67.39%	6	27.27%	37	54.41%
Assistance to the community development programs of the barangay	4	8.70%	3	13.64%	7	10.29%
Possible increase of Social & Economic Program	0	0.00%	3	13.64%	3	4.41%
Improvement on the environment, health and safety of the community	2	4.35%	1	4.55%	3	4.41%
Business and economic development	1	2.17%	1	4.55%	2	2.94%
<b>Sub-total</b>	<b>6</b>	<b>13.04%</b>	<b>14</b>	<b>63.64%</b>	<b>52</b>	<b>76.47%</b>
<b>Negative impacts</b>						
Air pollution that will affect the health of the community	1	2.17%	2	9.09%	3	4.41%
Water pollution that will affect the fishermen's livelihood	1	2.17%	1	4.55%	2	2.94%
<b>Sub-total</b>	<b>2</b>	<b>4.348%</b>	<b>3</b>	<b>13.64%</b>	<b>5</b>	<b>7.35%</b>
None	3	6.52%	1	4.55%	4	5.88%
No idea/No comment	3	6.52%	4	18.18%	7	10.29%
<b>Sub-total</b>	<b>6</b>	<b>13.04%</b>	<b>5</b>	<b>22.73%</b>	<b>11</b>	<b>16.18%</b>
<b>Grand total</b>	<b>14</b>	<b>30.43%</b>	<b>22</b>	<b>100.00%</b>	<b>68</b>	<b>100.00%</b>

*Source: Perception Survey February 12 and 15, 2019*

It should be pointed out that 11 respondents (16%) did not give any positive or negative impacts on the proposed expansion project on their communities. Seven respondents (10%) did not express their opinions while 4 respondents (6%) did not see any impacts arising out of the expansion project.

The respondents were asked about the possible impacts of the expansion project on their environment. Thirty-four respondents (50%) expressed positive opinions on the expansion project impacts on the environment while 11 respondents (16%) had their negative opinions about the project. Twenty-three respondents (34%) did not give any positive or negative opinions on the proposed expansion



Twenty-four respondents believe that the project expansion will promote clean environment as long as the safety process is secured and all the mitigating measures were properly implemented at all times. Around 10% of the respondents perceived that the project expansion will increase taxes that finance the LGU programs in bringing overall development in the environment and to the community as well. Two respondents perceived of employment opportunity while 1 respondent provide suggestion in increasing information drive about the project's impact to environment.

Nine out of the 11 negative impacts believe that the project expansion will cause air pollution while the other 2 responses is about pollution arising from improper disposal of solid waste and flooding originated from mining activities. The other details are shown in the following **Table C.1 Impacts of the Proposed Project to the Environment. 2019**

**Table C.1 Impacts of the Proposed Project to the Environment. 2019**

Project's Impact to Environment	Poblacion		Dalipuga		Total	
	#	%	#	%	#	%
<b>Positive Impacts</b>						
Cleaner environment because of the safety process of cement manufacturing and continuous environmental management measures	18	39.13%	6	27.27%	24	35.29%
Increase of taxes bringing overall development of the barangay as well as environmental improvement	3	6.52%	1	4.55%	4	5.88%
It will help the community	1	2.17%	2	9.09%	3	4.41%
Employment opportunity	1	2.17%	1	4.55%	2	2.94%
Needs more information drive/ Advocacy on Environmental Effect.	0	0.00%	1	4.55%	1	1.47%
<b>Sub-total</b>	<b>23</b>	<b>50.00%</b>	<b>11</b>	<b>50.00%</b>	<b>34</b>	<b>50.00%</b>
<b>Negative Impacts</b>						
Air pollution	5	10.87%	4	18.18%	9	13.24%
Solid waste generation and overall pollution	1	2.17%	0	0.00%	1	1.47%
Flooding due to mining	1	2.17%	0	0.00%	1	1.47%
<b>Sub-total</b>	<b>7</b>	<b>15.22%</b>	<b>4</b>	<b>18.18%</b>	<b>11</b>	<b>16.18%</b>
No idea/No comment	14	30.43%	7	31.82%	21	30.88%
None	2	4.35%	0	0.00%	2	2.94%
<b>Sub-total</b>	<b>16</b>	<b>34.78%</b>	<b>7</b>	<b>31.82%</b>	<b>23</b>	<b>33.82%</b>

Project's Impact to Environment	Poblacion		Dalipuga		Total	
	#	%	#	%	#	%
<b>Grand total</b>	<b>46</b>	<b>100.00%</b>	<b>22</b>	<b>100.00%</b>	<b>68</b>	<b>100.00%</b>

Source: Perception Survey February 12 and 15, 2019

#### D. General Opinion about the Proposed Project Expansion

Finally, the respondents were asked about their opinion on the proposed project. Forty-six respondents (68%) thought that the project will help the communities while 10 respondents (15%) thought that the project will be able to help their communities but not much. Overall, the positive opinions represent 56 respondents or merely 82% of total number of respondents. Three respondents (4%) thought that the project will be detrimental and will only bring negative impacts to the community while 1 respondent (1%) thought that the project will not help the community at all. The details are shown in the following **Table D.1 Opinion about the Proposed Project Expansion. 2019.**

**Table D.1 Opinion about the Proposed Project Expansion. 2019**

General opinion on the Project	Poblacion		Dalipuga		Total	
	#	%	#	%	#	%
Will help a lot the community and local residents	36	78.26%	10	45.45%	46	67.65%
Will be able to help but not much	4	8.70%	6	27.27%	10	14.71%
Will not help the community at all	1	2.17%	0	0.00%	1	1.47%
Will be detrimental to the community	2	4.35%	1	4.55%	3	4.41%
No answer	3	6.52%	5	22.73%	8	11.76%
<b>Total</b>	<b>46</b>	<b>100.00%</b>	<b>22</b>	<b>100.00%</b>	<b>68</b>	<b>100.00%</b>

Source: Perception Survey February 12 and 15, 2019

#### E. Conclusions

The Holcim's project operation in Lugait had been in the area for more than decades now and its existence was reflected in the survey. Around 87% of respondents were aware of the Lugait Plant operation and out of the respondents who were aware 56% had known the cement manufacturing plant for more than 5 years.



Fifty-eight respondents (85%) were aware of the planned expansion project of Lugait Plant of HPHI and the primary source of information came from IEC barangay consultation (45%) and project employees (28%).

On awareness of project proponent, majority of the respondents simply identified the proponent as Holcim which generally leave the impression among the people that the mining component and manufacturing plant facility were still in the same management scheme of one company. It also reflected in the survey where some of the respondents perceived negative impacts that identify flooding threat due to mining activities. Respondents were not very familiar with the separation of mining and manufacturing facility as well as the management and corporate arrangement between HPHI and HRDC.

The track records of the two companies on providing benefits to the surrounding communities is properly documented in the results of the survey. The primary benefit derived from the overall project is employment and community projects under the SDMP and CSR programs of both companies.

Some respondents perceived that the expansion project will continue to pose a threat on health of the community despite the air pollution control equipment installed and will be enhanced to trap the air pollutants and comply with the air quality standards of the DENR. Some are still worried that certain amount of pollutants will escape from the filtering device that will still cause pollution and health problems. It should be pointed out that the present performance of air quality emission complies with the standards, otherwise the facility will be ordered to stop in operation by the EMB-DENR if significant amount of air pollutants escape in the filtering device and exceed in the required air quality standard. The expansion will also replace existing machineries to provide a more efficient filtering device to trap a smaller particle and produce less pollutants on the air emission to the environment.

On the opinion of respondents about the proposed project expansion, more than 80% of the respondents expressed positive opinions about the proposed project. These responses came mainly from the different benefits and community projects from SDMP projects in the previous years which the community already received.

#### **F. Recommendations**

While these results provide the initial perception of the people about the proposed project, it is important to continuously disseminate the correct and detailed project information to the people in Lugait and Iligan City to avoid misconceptions about the project.

---

Generally, from the consultation conducted, few participants suggested to have a more simplified project presentation for better understanding about the project. IEC leaflet material can be reproduced by the proponent as part of the continuous IEC being conducted by the Community Relations (COMREL) Department of HPHI for distribution to local residents especially those situated near the Lugait cement plant facility and other concerned groups and local residents. The contents of the IEC leaflet material should comply with the requirements set forth in Section 6 of DAO No. 2017-5. However, it is still necessary to provide a more intensive IEC activities where the concerned residents will be given the opportunity to raise their concerns about the proposed project.

While the project proponent is HPHI, recommendations may also be extended to HRDC because whatever one company is doing will inevitably affect the other. Perceptions of residents with the operations of HRDC will also affect HPHI and inversely, the operations of HPHI will also affect the perceptions on HRDC.

Under one umbrella corporation, HPHI and HRDC have encouraged transparency especially in their working relationships with the communities. Getting feedbacks on their operations from the host communities is a strategy to foster honesty, trust and a mechanism to further improve their operations through comments and observations from the residents. Hence, further efforts should be exerted to encourage more openness from the host communities.

---