PROJECT DESCRIPTION

1. Basic Project Information

Project Proponent

The Project Proponent **Republic Cement Mindanao Inc. (RCMI)** is a member of the Republic Cement Group. It owns and operates a cement manufacturing plant in Iligan City.

The Proposed Expansion Project

RMCI has been granted by the DENR Central Office an Environmental Compliance Certificate ECC No. 0803-009-2231 covering "Consolidation of Quarry Project". The then new cement mill expansion project, Limestone, Shale and Pozzolana Quarry and New Pier are covered by this ECC Expansion

Additional expansion of the cement milling and associated facilities, the quarrying operations and an upgrade of the existing pier are planned and are the coverage of the ECC amendment being filed for.

ITEM	Project Information	
Nature of Project	Proposed Increse in Milling and Quarry Capacities and Pier	
	Upgrade	
Project Location	Brgy. Klwalan, Iligan City, Province of Lanao del Norte	
Nature of Project Amendment	Increase in Cement Milling capacity	
	Increase in limestone and shale quarrying capacity	
	Start of pozzolan quarrying	
	Upgrade of pier facilities	
Project Size	4.3 Million Metric Tons Per Year Cement Milling Capacity	
	1.09 Million Metric Tons Per Year of shale quarrying capacity	
	5.0 Million Metric Tons Per Year of limestone quarrying capacity	
	0.40 Million Metric Tons Per Year of pozzolan quarrying capacity	
	L-shaped pier (perpendicular and parallel to shoreline)	

Table PD-1. Project Fact Sheet/PD Summary

Table PD-2. Project Proponent/EIA Preparer

ITEM	Project Information	
Project Proponent	Republic Cement Mindanao Inc. (RCMI)	
Proponent Address and Contact Details	Menarco Tower, 32nd Street	
	Bonifacio Global City, Taguig City	
Responsible Officer	Michael M. Madayag – Vice President for Operations and Plant	
	Manager	
EIA Preparer	Technotrix Consultancy Services Inc. (TCSI)	
Preparer Contact Person	Edgardo G. Alabastro Ph.D.	
Preparer Address and Contact Details	Unit 305 FMSG Building, #9 Balete Dr. Cor. 3rd St. QC 1101	
	Telephone Nos.: (02) 416-4625 and (02) 745 5602	
	Mobile No.: 09178255203	
	E-mail address: technotrixinc@gmail.com	

2. Project Location, Area and Description

The facilities to be expanded, i.e., the cement production, limestone quarry, the shale quarry, and the start of pozzolan quarrying within the shale quarry, are located within the facilities and quarry sites of the RCMI which are located in Iligan City, shown in **Figure PD-1**.



Timagery Date: 8/6/2013 8º17'14.34" N 124º15'54.32" E elev 11 m eye Figure PD-1. Site Map of the RCMI Facilities Showing Also the Adjacent RCII Facilities



Figure PD-2. Map of MPSAs - RCII (Yellow & Green) and RCMI (red)



Figure PD-3. Map of the Facilities Showing Also the Proposed Pier Upgrade

Iligan City is bounded to the north by the Province of Misamis Oriental, east by the Provinces of Bukidnon and Lanao del Sur, south by the Province of Lanao del Norte and west by Iligan Bay. The city is about 83 kilometer road distance southeast of Cagayan de Oro City where a major airport is located. The existing operations/facilities of RCMI occupy an area located in Barangay Kiwalan, Iligan City, Province of Lanao del Norte.

2.1 Geographical Coordinates

The geographical coordinates of the RCMI MPSA project site/land and quarles (MPSAs) are given in **Table PD-3**.

Table PD-3 Geographical Coordinates of RCMI FACILITIES AND QUARRIES (MPSA) in WGS 84

PROJECT FACILITIES (As shown in Figures PD-1 and PD-3)			
Point	North Latitude	East Latitude	
1	To follow	To follow	
2	To follow	To follow	
3	To follow	To follow	
4	To follow	To follow	
5	To follow	To follow	
6	To follow	To follow	
7	To follow	To follow	
THE QUARRIES (MPSAs)			
	North Latitude	East Longitude	
SHALE AND POZZOLAN QUARRY			
1	8°17'55.25"N	124°15'48.82"E	
2	8°17'48.34"N	124°15'20.20"E	
3	8°18'15.19"N	124°15'20.38"E	
4	8°18'26.60"N	124°16'8.11"E	
5	8°17'35.95"N	124°16'20.28"E	
6	8°17'29.89"N	124°15'54.87"E	
LIMESTONE QUARRY			
7	8°17'55.91"N	124°16'15.48"E	
8	8°18'0.91"N	124°16'36.46"E	
9	8°17'20.76"N	124°16'46.12"E	
10	8°17'19.18"N	124°16'39.51"E	
11	8°17'22.86"N	124°16'39.51"E	
12	8°17'22.86"N	124°16'23.43"E	
13	8°17'35.95"N	124°16'20.28"E	
14	8°17'8.96"N	124°16'19.39"E	
15	8°17'4.56"N	124°16'0.95"E	
16	8°17'29.88"N	124°15'54.86"E	
17	8°17'35.95"N	124°16'20.28"E	



Figure PD-4. Google earth map of RCMI MPSA

2.2 Map showing sitio, barangay, municipality, province, region boundaries, vicinity, proposed buffers surrounding the area

Figure PD-5 shows the vicinity map while Figure PD-6 shows the political boundaries of the project site.



Figure PD-5. Vicinity Map of Proposed Project Site



Figure PD-6. Map Showing the Political Boundaries of the Project Site

2.3 Accessibility

As may be seen in **Figure PD-5**, the site could be readily accessible to all forms of transportation, i.e. by land (road network seen in yellow lines), sea (the Iligan Bay at the West) and air (by helicopter to site).

The long stretch of national highway and the Iligan Bay gives easy accessibility by land and by water respectively, for the transport of equipment, fuel and materials.

2.4 Primary & Secondary Impact Areas

Rationale for selection primary & secondary impact areas

The guidelines provided by the Revised Procedural Manual are used in the delineation of the DIA and IIA, to wit:

- a) Direct impact area (DIA) is ... the area where ALL project facilities are proposed to be constructed/situated and where all operations are proposed to be undertaken. For most projects, the DIA is equivalent to the total area applied for an ECC.
- b) Indirect Impact Area (IIA) ...an IIA can be the stretch of the river/s OUTSIDE the project area but draining the project site which can potentially transport Total Suspended Solids and other discharges from the project towards downstream communities.
- c) ...Further, the interphase/overlap of the biophysical DIA with socio-cultural environment shall define the socio-cultural DIA after the EIA is completed...

The EIA study area will focus on the identified direct and indirect impact areas of the Project.

- The DIAs covers the RCMI facilities (plant and quarries).
- Major creeks and rivers considered part of the DIAs are the Tag-ibo creek and Matuog creek(**Being verified**).
- The IIAs include areas outside the project boundaries that may be affected by the project; i.e. the public road and the barangays which will benefit from the Social Development Program of the Company, principally Acmac, Bunawan and Bonbonon.

Table PD-4 provides the summary of the impacts and impact areas.

Table PD-4. Impact Areas

Major Impacts	Remarks	Impact Barangays		
DIRECT IMPACT AREA				
LAND				
Change in Landform	Applicable to quarrying	Brgys Kiwalan and Dalipuga		
Generation of solid and domestic wastes	Insignificant. Scraps and garbage during construction to be managed by Contractor. Will comply with RA 9003.	Brgy Kiwalan		
	Soil wastes from quarrying are stockpiled and reused.	Brgy Kiwalan and Dalipuga		
Disturbance of terrestrial species	Potentially in access roads	Brgys Kiwalan and Dalipuga		
WATER				
Disturbance of marine ecology (Pier construction)	Will confirm but deemed	Bgy Kiwalan		

Proposed Increase in Milling and Quarry Capacities and Pier Upgrade REPUBLIC CEMENT MINDANAO INC. (RCMI) Brgy. Kiwalan, Iligan City, Province of Lanao del Norte

Major Impacts	Remarks	Impact Barangays			
	insignificant				
Changes in oceanography (Pier construction)	Same as above	Bgy Kiwalan			
AIR					
Degradation of air quality	Unlikely. To be confirmed	Brgys. Kiwalan and			
	No Air Pollution Source	Dalipuga			
	Equipment (APSE).				
	Only fugitive dusts which unlikely				
	to reach ESRs (Environmentally				
	Sensitive Receptors).				
Noise/Vibration	From blasting (quarrying)	Brgys. Kiwalan and			
		Dalipuga			
PEOPLE					
No significant adverse impacts on public	Population distant from project	Not Relevant			
	sites				
INDIRECT IMPACT AREA					
LAND					
Impacts on public roads & public access	Deemed not significant				
Impacts on traffic	Deemed not significant				
WATER					
Potential water resource competition	Not significant; underground water abstraction limited to 2				
	existing deepwells.				
AIR					
Deemed no significant impacts	Distant from ESRs	Not relevant			
PEOPLE					
BenefitS from the Company's SDMP	Enhancement	Brgys. Kiwalan, Dalipuga,			
		Bonbonon, Sta Filomena,			
		Bunawan, and Acmac			
Threat to public health and safety	Not significant; No hazardous wastes, Safety and Health				
	Protocols in place for all phases of production. Blasting is				
	personally monitored by MGB	 vibration always within 			
	allowable levels				

The map of the DIA and IIA is shown in Figure PD-7.



Figure PD-7. Map of the Direct Impact Area (DIA) and the Indirect Impact Area (IIA)

3. Project Rationale

RCMI believes that the construction of this project will contribute to the national and local economic development, to the sustainable development agenda and the current development thrusts of the Philippines as this project will be able to:

- Increase the cement production capacity from 2.0 million metric tons per year to 4.30 million metric tons per year, Shale Quarrying production from 0.26 million metric tons per year to 1.09 million metric tons per year, Limestone Quarrying production from 0.81 million metric tons per year to 5.0 million metric tons per year, Pozzolana from 0 to 0.40 million metric tons per year and upgrade of pier facility in order to balance cement production with the future kiln capacity of RCII;
- Support and meet the fast growing demand of urbanization by increasing cement production capacity and that will contribute to increased local employment and increased tax revenue for the host community;
- Meet the increasing cement market demand by the private sector to support housing and industrial projects as well as that of the Philippine Government to support its Build-Build-Build Program.

4. **Project Alternatives**

There are no other project alternatives considering that the project involes only the expansion and or upgrading of the existing facilities.

4.1 Criteria for Process/Technology Selection

The standard process and technology will be applied by RCMI; these are based on the standards and process/technology of the Republic Cement Group adopting global standards and technologies and best practices.

4.2 Criteria for Resource Utilization

The resources to be involved are already existing, i.e. the quarry and support facilities (energy, power and water system) and no extraordinary criteria are thus involved.

4.3 Alternatives Considered in the Decision of Proposed Location of Project Facilities / Components

There are no better and more feasible alternatives for the location than the existing sites.

5. Project Components

The coverage of this EPRMP for the expansion project is shown below:

Current/Existing ECC	Proposed ECC		
Cement Production: 2.0 MMTY	Cement Production: 4.30 MMTY		
Shale Quarrying Production: 0.26 MMTY	Shale Quarrying Production: 1.09 MMTY		
Limestone Quarrying Production: 0.81 MMTY	Limestone Quarrying Production: 5.0 MMTY		
Pozzolana: none	Pozzolana: 0.40 MMTY		
Dilapidated Pier – not in use	Upgraded Pier Facility		

Table PD-5. EPRMP Coverage

*MMTY : Million Metric Tons Per Year

5.1 Support Facilities (i.e. energy/power generating facility, water supply system)

There will be no major facilities to be constructed in the area to provide additional support facilities. The state-owned National Power Corporation supplies the power requirement of the facilities.

Water for domestic consumption, water spraying for dust control along roads and process water are taken from 2 existing company-owned deepwells.

5.2 Pollution control devices and corresponding facilities being served or connected

Table below shows the proposed additional cement mill list of major components, support pollution control devices and other environmental management safeguards used in project operation.

	EXISTING		PROPOSED	
COMPONENTS		OPERATING		OPERATING
	RATE	HOURS/DAY	RATE	HOURS/DAY
FM 6 COMBI MILL (PROJECT)				
Assorted Conveyor Equipment	nil	nil		24
Assorted Material Bins & Feeders	nil	nil		24
Roller Press	nil	nil	3200.0 kW	24
Ball Mill	nil	nil	2100.0 kW	24
V Seperator	nil	nil		24
High Efficiency Separator	nil	nil	335.0 kW	24
Hot Gas Generator	nil	nil	11.1 Mkcal	/hr 24
311BF1 Dust Collector	nil	nil	6700.0 m3/hr	24
311BF2 Dust Collector	nil	nil	12500.0 m3/hr	24
311BF3 Dust Collector	nil	nil	7750.0 m3/hr	24
311BF4 Dust Collector	nil	nil	7750.0 m3/hr	24
511BF1 Dust Collector	nil	nil	12000.0 m3/hr	24
531BF1 Dust Collector	nil	nil	12500.0 m3/hr	24
531BF2 Dust Collector	nil	nil	11000.0 m3/hr	24
531BF3 Dust Collector	nil	nil	11000.0 m3/hr	24
531BF4 Dust Collector	nil	nil	9000.0 m3/hr	24
531BF5 Dust Collector	nil	nil	6000.0 m3/hr	24
531BF6 Dust Collector	nil	nil	13500.0 m3/hr	24
531BF7 Dust Collector	nil	nil	3500.0 m3/hr	24
541BF1 Roller Press Dust Collector	nil	nil	30000.0 m3/hr	24
541BF2 Dust Collector	nil	nil	2100.0 m3/hr	24
591BF1 Separator Bag Filter	nil	nil	195000.0 m3/hr	24
591BF2 Dust Collector	nil	nil	3000.0 m3/hr	24
591CN1-4 Separator Cyclones	nil	nil	3200.0 mm	24
561BF1 Ball Mill Bag Filter	nil	nil	52000.0 m3/hr	24
561BF2 Dust Collector	nil	nil	3000.0 m3/hr	24
561BF3 Dust Collector	nil	nil	5000.0 m3/hr	24
562BF1 Dust Collector	nil	nil	12000.0 m3/hr	24
562BF2 Dust Collector	nil	nil	7500.0 m3/hr	24
562BF3 Dust Collector	nil	nil	7500.0 m3/hr	24
591BF3 Dust Collector	nil	nil	6500.0 m3/hr	24
591BF4 Dust Collector	nil	nil	5000.0 m3/hr	24
New cement silo	nil	nil	11000.0 T	24

Table PD-6. Major Components of Additional Cement Mill

Legend: tpd = metric ton per day; tph = metric ton per hour; m3/s = cubic meter per second; m3/h = cubic meter per hour

6. Process / Technology

6.1 Process and Technology

The process involved in the planned project expansion is illustrated diagramatically below:



Figure PD-8. Process Diagram for the Planned Expansion Project

The raw material clinker will be supplied by the RCII facilities. In cement manufacturing process, only cement milling, storage, packing, and dispatching are part of RCMI.

Finish Grinding

The finish milling section consists of 3 units of feed bins for clinker, gypsum and pozzolan. Currently, finish grinding operations also utilize the grinding mill of RCMI, manned by RCII personnel. Clinker and gypsum are conveyed to the ball mill at a pre-determined proportion to produce Type 1 cement, while Clinker, gypsum and pozzolan are conveyed to ball mil to produce T-P cement. These are the two main types of cement the RCII is producing, although there are experimental type and other trials done to suit the requirements of the customer. The ball mill is capable of reducing material feed size to specific surface area of 3100 cm2/g for type 1 and 4100 cm2/g for T-P. In terms of fineness, this ball mill can reduce to at most 4% retained residue on a 200 mesh Tyler screen (or 75µm diameter). After the ball mill, the product is stored at the cement storage silo and ready for packing.

Packing

Cement product from finish grinding mill is conveyed by pneumatic transport pump into Cement Silos. Currently, packing operations also utilize the packing plant of Republic Cement Mindanao, Inc. From cement silos it is being withdrawn into control bins and bagged by three packers at 25,000 bags production per shift for two shifts daily. This is equivalent to monthly production of 1,000,000 bags or 12 million bags annually. Sixty five percent of it is on offshore, loaded to ships and barges by means of conveyor and boom cranes, while 35 percent is on overland trucking. Aside from the conventional 40 kg type bag cement, RCII is also producing 1- ton big bag type cement, which is about 4% of the total annual production.

The overall cement manufacturing process to which the expansion project will be integrated is shown in **Figure PD-9**.



Figure PD-9. The Overall RCMI Cement Manufacturing Process

Quarrying Methods

Extraction of raw materials is done using the quarrying method. Quarrying is done from top to bottom to ensure safety in mining operation.

Limestone materials are broken with combinations of drilling and blasting and bulldozer ripping. About 80% of all limestone materials are broken by explosives, while the 20% by bulldozer ripping. Broken materials are then loaded by 6-7 cubic yard pay-loader on to 35-ton off-highway trucks, for delivery to the RCII crusher over a 1.0 Km. haulage road. Blasting is done twice a month using the "full system" initiation technique. Powder factor will be maintained at 0.12 kg explosive per MT limestone quarried. Main explosive charge will be ANFO; with one (1) 55 mm X 400 mm dynamite (emulsion explosive) as primer. In-hole delay will be at 300-400 MS while surface delays will be at 25MS and 42/65MS for control and echelon rows, respectively. Blasting pattern is at 3m x 4m at 8.5m deep with 89 mm diameter blast-hole.

Shale quarry operations involves mainly bulldozer ripping, dozing and stockpiling to designated loading levels. Stockpiled shale materials are loaded by 6-7 yard wheel loaders to 35-ton off-highway trucks for delivery to the nearby crusher of RCII. Active benches will be pushed back at 5-meter bench heights but final bench height will be at 10 meters height with 7 meters sub-benches to guarantee slope stability.

6.2 Power Generation and Water Supply Systems

The proposed expansion will utilize the same annual power consumption. The electricity requirement will be tapped from the National Power Corporation (NPC) lines.

6.3 Waste Management System

Based on the experiences gathered from its existing quarrying operations, which have now spanned several years, there are no wastes of significance.

Soil wastes (overburden) from the quarrying operations are used for backfilling of low-lying areas, and/or for the rehabilitation of mined-out areas.

Hazardous wastes generated will be brought to hazardous waste storage area and eventually transported and treated by 3rd party which is DENR-EMB accredited.

7. Project Size

Project Size		
4.3 Million Metric Tons Per Year Cement Milling Capacity		
1.09 Million Metric Tons Per Year of shale quarrying capacity		
5.0 Million Metric Tons Per Year of limestone quarrying capacity		
0.40 Million Metric Tons Per Year of pozzolan quarrying capacity		
L-shaped pier perpendicular and parallel to shoreline		

8. Development Plan, Description of Project Phases and Corresponding Timeframes

A description of the activities during the various project phase will provide inputs for impact Identification, environmental management plan and social impacts/appropriate socially-oriented program.

8.1 Pre-construction/ Pre-operational phase

This involves the exploration stage, project planning, the securing of appropriate Clearance(s) and permit(s) from the DENR / EMB principally the ECC and from the MGB, such as the MPSAs. Feasibility studies which include economics evaluation are integral part of this phase.

8.2 Construction/Development phase

Site preparation is essentially minimal because the land on which the facilities are to be constructed are already developed.



Typical Photograph of RCMI for the Limestone and Shale Quarry



Figure PD-10. Map of RCMI Plant, Quarry and Support Facilities

8.3 Operational phase

This involves the activities illustrated in the Process Technology.

8.4 Abandonment phase

By nature of the project there will be no residual effects on land, water and air arising from abandonment or decommissioning of the cement manufacturing plant facilities to be expanded.

For the quarrying operations, the abandonment shall be subject to the requirements and regulations of the MGB and the conditions for the MPSAs.

Activity	Timeline (Month/Year)
Project Start-up and engineering (i.e. technical study, layout, costing)	July 2018 - Sept 2019
Permitting	Sept 2018 - Sept 2019
Contracting and acquisition of machinery	Jul 2020 - Mar 2021
Construction works and installation of machinery	Apr 2021 - Jan 2023
Commissioning	Jan 2023

8.5 Projected Timeframe

9. Manpower

Manpower requirement during construction will be handled by a Contractor(s) with an estimated number of 500 workers hired from the community where possible (except for certain specialists). During operations, RCMI will tap its existing manpower.

Most of the workers of RCMI, including workers of its contractors, come from Iligan.

10. Indicative Project Investment Cost

The indicative project investment cost is approximately Php 1.70 billion.

11. Initial Environmental Impacts and Management Plan (IMP)

Environmental Aspects	Major Impacts	Option for Mitigation
LAND	Disturbance of the existing terrestrial flora and	Revegetation if necessary
	fauna; Minimal, land is developed.	Progressive Rehabilitation
	Potential disturearbance of some trees in quarry	Replacement of trees that may be cut
	Disturbance of the site topography/landform	Insignificant for the main facilities
	Disturbance of the supervisites	Overning methodeless:
	Disturbance of the quarry sites	Quarrying methodology
		Dead construction by 2rd north, contractor's
	Construction of new access roads	Road construction by 3 rd party contractor s
		Net relevent
	Plant	Not relevant, site is generally flat and already
		developed
	Quarty	Benching siltation ponds
	Quarry	Quarrying methodology approved by MGG
	Generation of Domestic and Solid Wastes	Septic Vaults
	From construction workers and plant operators.	Recycling, segregation, proper disposal
		Compliance with RA 9003.
WATER	Potential disturbance of aquifers	Minimal underground water extraction limited
	Discharge of treated wastewater to adjacent	to quarry
	surface water bodies	Process is dry. No significant process effluent
		waste discharges; Waste water from domestic
		sources.
AIR	Degradation of air quality	Buffer zones
		Water sprinkling of dusty roads and areas
		Proper equipment maintenance
	Normal vehicle impact (noise, vibration) on	Use of silencers and mufflers for heavy
	properties of the households residing along the	equipment
	haul and access roads for the proposed project.	
PEOPLE	The host barangay/municipality which will benefit	Enhancement
	from the Company's SDP	
	I hreat to public health and safety	IEC, medical missions, rigid observance of
		Satety and Health protocols
		No significant usages of hazardous

Table PD-7. Initial IMP

Proposed Increase in Milling and Quarry Capacities and Pier Upgrade REPUBLIC CEMENT MINDANAO INC. (RCMI)

REPUBLIC CEMENT MINDANAO INC. (RCMI) Brgy. Kiwalan, Iligan City, Province of Lanao del Norte

Environmental Aspects	Major Impacts	Option for Mitigation
		substances
		No significant generation of hazar acas wastee

12. Current Compliances and Performance Reports

RCMI is in faithful compliance to the conditions attached to its existing ECCs and there are no registered valid complaints against the current operations of RCMI.

Typical SMR and CMR reports are shown in the Annexes.