# **ENVIRONMENTAL IMPACT ASSESSMENT**

# PROPOSED QVPI CEBU MARBLE AND AGGREGATES PROJECT

MUNICIPALITY OF PINAMUNGAHAN, CITY OF NAGA, AND CITY OF TOLEDO, CEBU

# **EXECUTIVE SUMMARY FOR THE PUBLIC**



# QUARRY VENTURES PHILIPPINES, INC.

117 Shaw Boulevard, Pasig City, 1600

March 2019

#### **EXECUTIVE SUMMARY**

#### I. Project Information

Name of Project	QVPI Cebu Marble and Aggregates Quarry Project		
Location	Parcel 1: Barangay T	agjaguimit, City of Naga and Barangay Lamac, Municipality	
	of Pinamungahan.		
	Parcel 2: Barangay T	agjaguimit, City of Naga.	
	Parcel 3: Barangays	Media Once, Bulongan, and Poog, City of Toledo	
	Parcel 5: Barangay C	Cogon, City of Naga	
MPSA No.	111-98-VII		
	Total MPSA Area:	607.50 hectares	
	Date granted:	May 26, 1998	
	Validity:	May 25, 2023	
ECC	07-07-07-27-0263-3	03A	
Nature of Project	Resource Extractive	Industry	
Size	Existing ECC:		
	Production Capacity	: 3,000 m³/y	
	Area: 14.02 hectares	5	
	Proposed Operation	n:	
	Production Capacity: 21,000MT/Yr of Marble, 973,900 MT/Yr of Limestone		
	Aggregates, and 924,000MT/Yr of Basalt, for <b>4 parcels</b>		
	Parcel 1: 6,000 cubic meter/yr (Marble Blocks)		
	Parcel 2: 16	,200 MT/Yr (Marble Blocks)	
	Parcel 3: 99	0,000 MT/Yr, broken down as follow:	
	16	,100 MT/yr Marble Blocks	
	97	3,900 MT/yr Aggregates	
	Parcel 5: 1,9	937,000 MT/Yr (Basalt)	
	Area: A total of 567	hectares, over <b>4 parcels</b> .	
	Parcel 1: 81 hectares (mine area = 2 8has )		
	Parcel 2: 81 hectares	, (mine area = 2.5has.)	
	Parcel 3: 324 hectar	es (mine area = 22.9has.)	
	Parcel 5: 81 hectares	s (mine area = 18.7has.)	
Commodity	Existing:		
	Marble Blocks and B	oulders	
	Proposed		
	limestone and has	alt which will be processed into marble and aggregate	
	products.	and which will be processed into marble and aggregate	
Mining Method	Surface Mining Met	hod (Quarrying) - unchanged	

In 1986, Teresa Marble Corporation (TMC), sister company of Quarry Ventures Phils. Inc. (QVPI), acquired a small-scale mining permit for an area in Sitio Gaway-gaway, Barangay Uling, Naga; also known as the Rosatta Quarry. For said operation, TMC hired six (6) skilled quarry men from Antipolo, Rizal ans started producing marble blocks using air compressor and jack hammers.

Come 1994, TMC turned over its mining rights to QVPI. The latter then applied for a Mineral Production Sharing Agreement (MPSA) in 1998; and in 1999, QVPI modernized the operations by using wiresaw, hydraulic jack, rotary drill and bigger backhoe. The company also bought the processing plant of Phoenix Marble in Brgy. Uling, Naga.

In 2006, QVPI started operating 5 hectares in Barangay Tagjaguimit Uling under a small-scale quarry permit.

QVPI applied for an Environmental Compliance Certificate for its quarry operation in Parcel 1. The ECC for such was eventually issued in 2008 denominated as 07-07-07-27-0263-303A. The Declaration of Mining Feasibility was also approved for Parcel 1 (14 hec.) in 2009.

# II. Proposed Project Components

Comparative Matrix of Existing and Proposed Project Components

Project Components		Existing	Planned
	Parcel 1	<ul> <li>Covered by MPSA No. 111-98-VII</li> <li>14.2 hectares</li> </ul>	<ul><li>Same MPSA</li><li>81 hectares</li></ul>
	Parcel 2		<ul> <li>Covered by MPSA No. 111-98- VII</li> <li>81 hectares</li> </ul>
	Parcel 3		<ul> <li>Covered by MPSA No. 111-98- VII</li> <li>324 hectares</li> </ul>
	Parcel 5		<ul> <li>Covered by MPSA No. 111-98-</li> <li>VII</li> <li>81 hectares</li> </ul>
Quarry	Quarry Facilities	<ul> <li>Stockpile</li> <li>Admin building, staff house, laboratory, motor pool and nursery</li> <li>Waste dump</li> </ul>	<ul> <li>Stockpile         <ul> <li>Parcel 1: 0.5 hectares</li> <li>Parcel 2: 0.5 hectares</li> <li>Parcel 3: 1 hectare</li> <li>Parcel 5: 1 hectare</li> <li>Admin building, staff house,</li> <li>laboratory, motor pool and</li> <li>nursery</li> <li>Parcel 1: 3,100m2</li> <li>Parcel 2: 1,100m2</li> <li>Parcel 3: 6,000m2</li> <li>Parcel 5: 4,100m2</li> <li>2 Crushers (Parcel 3 and 5)</li> <li>960,000 MT/yr.</li> <li>250MT/hr</li> </ul> </li> </ul>
	Extraction Method	Surface N	Aining – Quarrying
	Extraction Rate	- Parcel 1: 3,000 m <sup>3</sup> /y	<ul> <li>Parcel 1: 3,000 cubic meter/yr (Marble Blocks)</li> <li>Parcel 2: 16,200 MT/Yr (Marble Blocks)</li> </ul>

Project Components		Existing	Planned
	Total Project Area	Marble Blocks and	<ul> <li>Parcel 3: 990,000 MT/Yr, broken down as follows: 16,200 MT/yr Marble Blocks 973,800 MT/yr Aggregates</li> <li>Parcel 5: 1,937,000 MT/Yr (Basalt)</li> <li>567 hectares</li> <li>Limestone and basalt which will be processed into marble and</li> </ul>
		Boulders	aggregate products.
Waste Management	Quarry Pollution Control Structures		<ul> <li>Drainage systems</li> <li>settling ponds</li> <li>Parcel 1: 1</li> <li>Parcel 2: 1</li> <li>Parcel 3: 2</li> <li>Parcel 5: 1</li> <li>Silt collector sump</li> <li>Parcel 1: 2</li> <li>Parcel 2: 2</li> <li>Parcel 3: 9</li> <li>Parcel 5: 5</li> </ul>
	Domestic Wastewater Treatment	S	Septic tanks
	Solid-waste segregationSolidand-Materials Recovery FacilityHazardous waste-storage area (laydown): hazardous-haulage and treatment/disposal of hazardousthe EMB accredited treaters		cility ): hazardous t/disposal of hazardous wastes by eaters

#### III. Project Rationale

The proponent engaged the project, not just for profit, but for the development of the community. The sites were a good source of marble and aggregates, and the actual project site is not fit for agriculture. The National Government and the LGU will benefit from the project through taxes, fees, and duties it would garner. The project would also promote employment to the local community, and provisions of community development projects. The project will have significant impact in local and national economy. The key beneficiaries will include the local workforce and businesses allied to the mining operations. Education and development of new enterprises in the host communities will create employment and new skills.

Substantial earnings could be derived from direct employment while potential additional earning could be derived from entrepreneurship. Health and sanitation would be improved as support from the company in form of available medical team could be relied upon. Improvement of infrastructure will provide better services to the community. This will develop them into future better students and hopefully obtain good employment.

Skills acquired as a result of employment and technology transfer is useful for other opportunities that might come along. Revenues in form of taxes and other valuable monetary support from SDMP, EPEP and FMRDP could also be realized.

# IV. Process/Technology

## **Mining Method (Current Operation)**

# **Marble Block Operation**

After 2 working benches have been developed, the first step in the process is topping and or facing. Topping is the removal of the cracky portion and irregular surface wherein cutting is done horizontally. Facing on the other hand, is the removal of the cracky portion and undesired color/surface using wiresaw and cutting is done vertically. It will then be the bench height. Once planar surface is exposed, the quarry block is evaluated for color, solidity and its amenability to be cut into slabs or tiles. The bad and unsuitable marble quarry block is removed to access the inner and more likely good quality blocks.

The good quality deposit/block is the prepared for production through wire sawing. This entails drilling of intersecting holes. Vertical and horizontal holes are drilled using rotary drills, MPH-100. The intersected drill holes are where the diamond cable of the wiresaw is made to pass prior to actual cutting of the Quarry block. Cutting is both Vertical and Horizontal planes.

The quarry block is then cut into bancatta using diamond wire and wiresaw machines. First step is the horizontal cut, followed by vertical side cut to separate the quarry block from the solid mass. After cutting the horizontal and side channel, cutting of vertical cut is made from the nearest free face (Bancatta Cutting) once the bancatta is cut and or separated vertically and horizontally, it is then toppled by the use of either hydraulic jack (titano jack), air bags or hydro bags. Quarry waste materials consisting of clay, soil and small fragments are placed in front of bancatta to serve as cushion when bancatta is toppled down in order to prevent breaking of bancatta. The toppled bancatta then inspected and laid out to give the best block that can be produced with regards to soundness, color and tone. The end product of the marble block is also considered during the lay-out. Marble block sizes range around 1.5m (W) x 1.3m (H) x 2.0m to 3.0m (L). Marble blocks are separated from bancatta using wiresaw especially designated to cut smaller sizes and or by line drilling using jack hammers and splitted by wedging using steel plug and feathers.

When blocks are separated, it is then classified as to size, color tone and overall quality. Blocks are then marked with identification and coded. Each block produced has its own index card for references. Blocks are then loaded into a Reo 5 tonner truck for delivery to plant site together with each index card.

### **Limestone Boulders Operation**

By product of marble blocks are scraps and boulders. Scrap blocks are processed in the plant to produce marble strips, normally 300mm x random or 400mm by random. Boulders normally head size and below are being sold locally which are being used as backfilling materials and together with small sizes, clay etc are used for reclamation purposes.

# Mining Method (Proposed Operation)

Surface Mining Method, particularly, quarrying will be employed for the whole project operation. The quarry operation will be divided into two stages; the quarry development and the production stage.

Development phase is the stage in quarry where preparation for full blasts operation will be carried out. It will involve removal and grubbing of vegetative covers, stripping of overburden and establishment of production benches, drainage canals, settling ponds and access roads to the deposit.

The extraction or production stage is the actual removal of the deposit from the developed (cleared) benches. The major activities in this stage are drilling for quality control and simply ripping and dozing on soft and medium ground while drilling, cutting, and blasting for hard rock area followed by loading and hauling of quarry materials.



Figure 1: Drilling and Blasting Diagram

The marble extraction will utilize the use of diamond wiresaw complimented by rock drilling. When the blocks are already separated from the big mass or bancatta, it will undergo quality checking as to size, color, tone, and overall quality. The blocks that pass the quality checking will be mark with identification numbers and client codes prior to delivery to the processing plant.

Loosened/Blasted limestone and basalt materials from the bench will be loaded by either a wheel loader or backhoe (excavator) shovel into a 25-ton truck and will be transported to the crusher or nearby area. By the time the loosened materials are fully hauled out, a new loading area will be available. The cycle of drilling for quality control, blasting, excavation, loading and hauling continues until all programmed benches have been subjected for production and resource exhaustion.

### **Blasting Operation**

For soft ores, rippers and the excavator will be used to extract and load the limestone to the dump trucks. For hard ores, blasting will be employed. Only government authorized blasting contractors will be engaged in the blasting. Controlled blasting using delays will be used to minimize ground vibrations, fly rocks and misfires. Desired boulder size is less than 1m. The following blasting parameters will be used:

When blasting is needed, the quarry will be prepared for a conventional drill and blast operation with a bench height of 10 meters. Blasting and explosive materials will be provided by the blasting contractor.

Two drilling patterns will be used for the production blast: staggered pattern and square pattern. Timing system used is the hole by hole blasting with blast design composed of the following.

Free End Blast;

- Forward Echelon;
- Reversed Echelon; and
- "V" Blast.

# Blast Geometry/Parameter:

- Drill Hole Diameter 89 to 102mm
- Bench Height 10 m
- Sub-drill 1.00 m
- Burden 3.00 m
- Spacing 3.50 m

Typical loading of 10m hole:

- Explosive Column 7.60 m
- Stemming height 2.40 m
- Kilograms (kgs) of Explosive/hole 38 kgs



Source: Blasting and Explosives Quick Reference Guide, Dyno Nobel Asia Pacific, Pty Limited 2011

#### Figure 2: Blasting Nomenclature

#### **Crushing of Aggregates**

The Project is expected to produce a total of 973,800 MTPY of limestone aggregates and 924,000 MTPY of basalt aggregates covering two (2) 500 TPH crushing plants in Parcels 3 and 5 respectively.

The blasted materials will undergo crushing, screening and classifying processes with the introduction of water spray to eliminate dust, silt and other materials that are not part of the final product. The run-of-mine-ore will undergo three stages: (1) crushing, (2) screening and (3) classifying:

Below are the discussions on each stage of processing:

- a. Blasted materials from the quarry are fed into the feeding hopper to the reciprocating feeder and to the grizzly bars.
- b. The undersize from the grizzly bars will go to the primary crusher with a jaw opening of 3-inch.
- c. The crushed products from the primary jaw crusher is conveyed to the triple deck vibrating screen with an opening of 1 ½ inch, ¾ inch and 3/8 inch respectively.
- d. The oversize from the 11/2 inch opening is then fed into the secondary cone crusher for further grinding and then returned to the triple deck vibrating screen.

- e. The undersize passing through the <sup>3</sup>/<sub>4</sub> inch opening will be conveyed to the stockpile area designated as G-1, which is estimated to comprise about 35% of the total product ratio.
- f. The materials passing through the ¾ inch screen opening and retained at the 3/8 inch screen opening is conveyed to the stockpile area designated as G-3/4. This product is estimated to make up 31% of the total production.
- g. The materials passing through the 3/8 inch screen materials comprises the slimes and the G-3/8 product that is estimated to be about 18% of the total product. These materials are conveyed to the stockpile area for G-3/8.
- h. The slimes and silt goes to the sand classifier to separate the sand materials from the silt. The washed sand materials are transported through a conveyor to the S-1 stockpile while the waste water goes to the settling pond where it will undergo a series of settling process. Clear water sorted at the last pond is being recycled to the crusher. The settling ponds are regularly dredged to maintain its capacity and the collected silt materials are dried up at the adjacent drying beds. Silt materials are hauled to the base coarse stockpile for mixing.

SCHEMATIC DIAGRAM OF CRUSHING PLANT PRIMARY CRUSHER FEEDER HOPPER VIBRATING FEEDER JAW CRUSHER PRIMARY CONVEYOR WATER SPRINKLER SCREENING & WASHING DELIVERY CONVEYOR **3 DECK VIBRATING SCREEN** WATER SPRINKLER SAND CLASSIFIER SECONDARY CRUSHER CONE CRUSHER ROLL CRUSHER **RETURN CONVEYOR** STOCKPILING S-1 STACKER CONVEYOR G-3/8 STACKER G-3/4 STACKER CONVEYOR G-1 STACKER CONVEYOR

#### The crushing schematic diagram is shown below.

#### **Figure 3: Schematic Diagram of Crushing Plant**

#### Haul Road and Access Road

Quarry haul and access roads will be developed in the project area. The said facilities will be constructed following the topographic surface contour and shall have a maximum gradient of



8% to ensure safety and efficiency. Haul road and access road shall be ballasted with waste rock extracted from the quarry area to provide stability.



Figure 4: Loading and Hauling Diagram

## Stockpile and Dumps

For the expansion, stockpile and waste dumps will still be established within the quarry site. All good materials will be hauled from the quarry site to the stockpile area. Moreover, all quarry wastes specifically topsoil and boulders will be stockpiled in the waste dump area and will be utilized as a backfilling materials during progressive rehabilitation.

Stockpile slope will be kept at low angle and height to minimize slumping. The proposed height of the stockpile will depend on the angle-of-repose of the material. This is to ensure that the maximum volume of materials will be stockpiled without sacrificing safety.

Parcel	Covered Area
Parcel 1	0.5 hectare
Parcel 2	0.5 hectare
Parcel 3	1 hectare
Parcel 5	1 hectare

The stockpile and dumps to be constructed will have the following area:



Figure 5: Crushing, Conveying, and Stockpiling Diagram

#### **Support Facilities**

The following facilities will be constructed within the MPSA area to support the proposed project operation:

			Cover	ed Area	
Facility	Description	Parcel 1	Parcel	Parcel	Parcel 5
			2	3	
Admin Office	The Office Building shall be the headquarters	2,000		2,000	2,000 m <sup>2</sup>
Complex	of the Project managers. It will hold the	m²		m <sup>2</sup>	
	offices of the Resident Manager, Mine				
	Planning, MEPEO, CRO, Safety and Health,				
	clinic, survey and geology, administrative,				
	and finance personnel.				
Motorpool	The motorpool area shall be established for	1,000	1,000	2,000	2,000 m <sup>2</sup>
Area	the care and maintenance of all the	m <sup>2</sup>	m <sup>2</sup>	m <sup>2</sup>	
	necessary equipment in relation to the				
	project operation.				
Nursery	A nursery area will be establish to serve as			2,000	
	the main source of seedlings for the quarry			m <sup>2</sup>	
	project.				
Seedling	A seedling bank shall be constructed to	100 m <sup>2</sup>	100 m <sup>2</sup>		100 m <sup>2</sup>
Bank	support the revegetation and rehabilitation				
	activities of the project.				

#### Table 1: Proposed Support Facilities

### **Pollution Control Devices/Facilities**

### Siltation Pond/Settling Ponds

Sedimentation/settling ponds shall be constructed to trap the sediments coming from the project operation. This facility shall be made of compacted materials and shall be strategically located adjacent to the quarry and stockpile areas. The purpose of the sediment/settling ponds is to block the water runoff with silt and impound/trap the water to allow the silt to settle.

Settling ponds will be constructed in series. Sediments shall be impounded from the first to the third pond in succession. While, the second pond is utilized, the first pond shall be drained and allowed to dry and desilted. Recovered silt materials will be used to backfill mined out areas. The third pond shall act a buffer for the first two ponds and shall be the source of water for the road sprinkling.

Silt traps will also be constructed along the main drainage canals to initially trap sediments carried by heavy rain before going to main settling ponds.

# V. Project Location

The proposed Project of QVPI is located in the Municipalities of Pinamungahan, Naga City and Toledo City, all in the Province of Cebu. It has a total area of 567 hectares divided into four (4)

parcels covered by MPSA No. III – 98 - VII. The geographical coordinates and specific location per parcel is shown below:

Parcel 1 is located in Barangay Tagjaguimit, City of Naga and Barangay Lamac in the Municipality of Pinamungahan.

Corner	Latitude	Longitude
1	10°15′30″N	123°40′00″E
2	10°16′00″N	123°40'00"E
3	10°16′00″N	123°40′30″E
4	10°15′30″N	123°40′30″E
Total Area	81 hectares	

#### Table 2: Parcel 1 Coordinate Points

Parcel 2 is located in Barangay Lamac, Municipality of Pinamungahan.

#### Table 3: Parcel 2 Coordinate Points

Corner	Latitude	Longitude
1	10°16′30″N	123°40′00″E
2	10°17′00″N	123°40′00″E
3	10°17′00″N	123°40′30″E
4	10°16′30″N	123°40′30″E
Total Area	81 he	ctares

Parcel 3 is located in Barangays Media Once, BulOngan, and Poog, all in the City of Toledo.

#### **Table 4: Parcel 3 Coordinate Points**

Corner	Latitude	Longitude
1	10°18′00″N	123°39′30″E
2	10°19′00″N	123°39′30″E
3	10°19′00″N	123°40′00″E
4	10°19′30″N	123°40′00″E
5	10°19′30″N	123°40′30″E
6	10°18′30″N	123°40′30″E
7	10°18′30″N	123°40′00″E
8	10°18′00″N	123°40′00″E
Total Area	324 hectares	

Parcel 5 is located in Barangay Cogon, City of Naga.

#### Table 5: Parcel 5 Coordinate Points

Corner	Latitude	Longitude
1	10°17′00″N	123°44′00″E
2	10°17′30″N	123°44′00″E
3	10°17′30″N	123°44′30″E
4	10°17′00″N	123°44′30″E
Total Area	81 hectares	





Figure 6: Project Location Map

Quarry Ventures Philippines, Inc.



Figure 7: Project Location Map by Parcel



Figure 8: Drone Shot of Parcel 1



Figure 9: Drone Shot of Parcel 2

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Figure 10: Drone Shot of Parcel 3



Figure 11: Drone Shot of Parcel 5

#### VI. Proponent Profile

Proponent Name	Quarry Ventures Philippines, Inc.
Address	117 Shaw Boulevard, Pasig City, 1600
Contact Person	Engr. Ser Allain Pleyto
Contact Number	0917-5907233

#### VII. Preparer Profile

# AX celtechs, Inc.

Office Address:	Unit 10C, Lansbergh Place 170 Tomas Morato, Quezon City
Authorized Representative/ Contact Person (s):	ENGR. PAULO NONI T. TIDALGO Managing Director
Contact Number	(02) 376-0043

#### VIII. Development Plan, Description of Project Phases, and Corresponding Timeframes

### i. <u>Pre-Construction Phase</u>

This phase involves the hiring of skilled local employees in preparation for project development. During this phase all permits mandated by the government shall be acquired by the company prior to the construction phase.

The Information Education and Communication (IEC) campaign shall be continuously implemented to update the stakeholders on the current and future development of the project.

### ii. <u>Construction Phase</u>

This phase will require hiring of additional manpower to support the construction activities of the project. Local hiring of skilled individual will be prioritized/implemented by the company.

Construction of haul road and access road shall be the first activity during this phase. The construction of these facilities shall be conducted in a manner wherein minimal disturbance will be created. All roads shall follow the topographic contour of the area and shall be equipped with road drainage for further environmental measures.

Temporary settling ponds shall be developed within the construction area to cater the mitigation of possible siltation and water contamination. If the constructed ponds will no longer be usable during the operation phase, such facility shall be dewatered, backfilled and revegetated.

The construction of horizontal buildings shall conform to the Building Code of the Philippines to ensure safety and stability. Clearing, grubbing and compaction will be done at the region wherein construction will be conducted. The said activity shall be limited to the area wherein the facilities will be erected to minimize the expanse of disturbance.

A series of settling ponds will be established within the quarry area with the use of backhoe to facilitate the excavation of soil. All waste materials will be stockpiled at the waste dump and shall be utilized as a backfilling medium for progressive rehabilitation.

# iii. Operation Phase

Upon the completion of all the support facilities and other project components, operation phase will initiate. Surface mining method will be utilized by the project operation. Quarry operation will be started from clearing and grubbing of the identified quarry area, stripping of overburden materials, followed by the development of the production benches, bench sampling, actual quarrying and hauling of limestone (marble and aggregates) and basalt.

The topsoil or overburden will be transported to waste dump area or in a previously excavated/mined-out areas and/or designated topsoil stockpile area to be used in the progressive rehabilitation activity.

Water impounded in the settling pond shall be utilized as the source of water for the sprinkling of haul roads and access roads. Environmental management and monitoring shall be regularly implemented during this phase to alleviate further environmental contamination.

### iv. Abandonment/Decommissioning Phase

Consistent with the basic policy of the State to assure the availability, sustainability and equitable distribution of the country's natural resources, the Philippine Government adopts the policy that mining activities shall be managed in a technically, financially, socially, culturally and environmentally responsible manner to promote the general welfare of the country. One of objectives of this policy is the establishment of a functional post-disturbance land use capability.

Moreover, remediation and rehabilitation of abandoned mines shall be accorded top priority to address the negative impacts of past mining activities. This is through protection and conservation of environment by identification of appropriate rehabilitation and mitigating measures per project component to inhibit and/or prevent any possible risks or adverse impacts that could endanger human and its environment.

Listed below are the major objectives of Final Mine Rehabilitation Plan:

- Rehabilitate/re-vegetate all the disturbed areas within the MPSA affected by quarry operations by reshaping/re-contouring affected areas prior to re-vegetation;
- Progressively rehabilitate the area to a condition agreed/suggested by the community during the stakeholder consultation;
- Minimize long term visual impacts due to the inactivity of the mine site by employing effective mitigation and measures creating landforms with vegetation compatible with the surrounding thus establishing a functional post-disturbance land use capability;
- Eliminate safety and health risks of the inactive mine site to the surrounding communities;
- Remove all unnecessary mine facilities and equipment used in operations and rehabilitate the areas prior to abandonment; and
- Provide the estimated cost that will be incurred from the implementation of the identified rehabilitation and/or decommissioning strategies and the consequent final land use.

# IX. Delineation of Impact Areas

The area subjected to the EIA was based on the perceived direct and indirect impact areas of the proposed project. As stipulated in DAO 2017-15, known as the "*Guidelines on Public Participation under the Philippine Environmental Impact Statement System*," direct impact area shall be delineated based on the result of the assessment of the project's impact on air, water, land, and people.

Aspect	Direct Impact Area
Land	<ul> <li>Area within the MPSA and the periphery of the mining area</li> </ul>
Water	<ul> <li>Receiving bodies of water near the project site</li> </ul>
Water	- Underlying aquifer
Air	- Area within the MPSA, and the community
	- Brgy. Tagjaguimit and Cogon, City of Naga
People	- Brgy. Lamac, Municipality of Pinamungahan
	- Brgy. Bulongan, Media Once, and Poog, City of Toledo

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 Pinamungajan, City of Toledo, and City of Naga are considered as indirect impact areas. For social impacts, the study focused on six (6) direct impact barangays, consistent with the provision of DAO 2017-15.

## X. Commitment to Prevent Adverse Negative Impacts

# a. Pollution Control Devices

Sedimentation/settling ponds shall be constructed to trap the sediments coming from the project operation. This facility shall be made of compacted materials and shall be strategically located adjacent to the quarry and stockpile areas. The purpose of the sediment/settling ponds is to block the water runoff with silt and impound/trap the water to allow the silt to settle.

### b. Manpower

An additional of 80 manpower will be needed to facilitate the project operation. Parcel 1 and 2 is run with 53 personnel, and the same number of Plant/Maintenance Repair and Quarry Operation personnel will be needed for Parcel 3 and Parcel 5 each. The breakdown of the manpower requirement is given below.

Position	Current Personnel for Parcel 1 and 2	Additional for Parcel 3 and 5
Quarry Manager	1	
PCO	1	
CRO	1	
SHE	1	
MEPEO	1	
Tenement	1	
Admin	5	
Accounting / Finance	5	
Plant/Maintenance Repair	18	40 - 20
Quarry Operation	19	40
Total	153	

 Table 6: Manpower for Existing Operation and Expansion

# XI. Information Where to Get a Copy of the EPRMP

Full copies of the EIA can be accessed at the EMB website and the EMB Region VII office, while copies of the EIA Summary for the Public are available at the City Government of Naga and Toledo, Municipal Government of Pinamungahan, and the EMB website.