SILICA SAND QUARRY EXPANSION PROJECT

EIS SUMMARY FOR THE PUBLIC (ESP)

OCTOBER 2020

SEDC SOLID EARTH DEVELOPMENT CORPORATION

RHR Consult Services, Inc.

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1 PROJECT INFORMATION

PROJECT PROFILE	
PROJECT NAME	**SILICEOUS CLAY QUARRY EXPANSION PROJECT**
NATURE OF PROJECT	Quarrying - Extraction of Non-metallic minerals specifically Silica Sand
PROJECT LOCATION/S	Barangays of Duangan, Lut-od, Punod, Sibago and Guimbawian, Municipality of Pinamungajan, Province of Cebu, Region VII, Philippines
PROJECT SIZE	Annual Production Capacity of 660,000 MT of Silica Sand
PROJECT COST	PhP 61,120,000.00
PROPONENT PROFILE	
PROPONENT'S NAME	**SOLID EARTH DEVELOPMENT CORPORATION (SEDC)**
OFFICE ADDRESS	9th Floor Insular Life Business Center, Cebu Business Park, Cebu City
AUTHORIZED SIGNATORY	Atty. Dennis B. Tenefrancia President
CONTACT DETAILS	Tel. No.: (032) 350 290/Fax. No. (032) 234 2795
EIA PREPARER PROFILE	
EPRMP PREPARERS	**RHR CONSULT SERVICES, INC.**
OFFICE ADDRESS	Unit 606, 6th Floor, FSS Building II, Scout Tuazon corner Scout Castor, Barangay Laging Handa, Quezon City
AUTHORIZED SIGNATORY	Jess M. Addawe Project Manager
CONTACT DETAILS	(02) 7798-0020 / 0945-195-7833 /0999-455-4577 info.rhrconsult@gmail.com

The SEDC Silica Sand Quarry Expansion Project proposes an amendment increasing the annual production capacity from 200,000 MT to 660,000 MT. This shall be sourced out from the existing production area of 229.50 hectares located within MPSA 314-2010-VII and MPSA 323-2010-VII. The existing production area and production capacity is covered by the existing ECC with Ref. No. CO-1512-0027 which was issued on 17 June 2016.

Since 2016, there was no quarrying activity or any major development conducted as the SEDC is still applying for a DMPF. A small-scale mining located in Barangay Duangan was done by a different proponent under a different ECC.

2 PROJECT LOCATION

The Proposed Silica Sand Quarry Expansion is within MPSA 314-2010-VII and MPSA 323-2010-VII; specifically, in Barangays of Duangan, Lut-od, Punod, Sibago and Guimbawian, Municipality of Pinamungajan, Cebu Province.

The quarry area is approximately 21 kilometers from the TCPI's Plant in Municipality of San Fernando, Cebu. The quarry sits at 60 meters to 270 meters above sea level (masl). The project can be reached

via the Cebu South Road through the Naga-Toledo- Pinamungajan access road or the Manipis Road along the Mananga watershed. Travel time from Pinamungajan is about two hours going to Cebu City, depending on the traffic. It would take another 10 minutes to reach Barangay Lut-od, the nearest section claim. Buses and other public utility vehicles are plying the Cebu City-Pinamungajan route. To reach the mountainous areas, one can hire motorbike which is locally known as "habal-habal".

The project site is accessible by a 1-hour flight from Manila through its nearest airport – Mactan-Cebu International Airport (MCIA). MCIA is approximately 42 kilometers away from the project site. Furthermore, the project is more than 35 kilometers away from the Cebu International Port making it accessible by a 20-hour maritime travel to Manila.

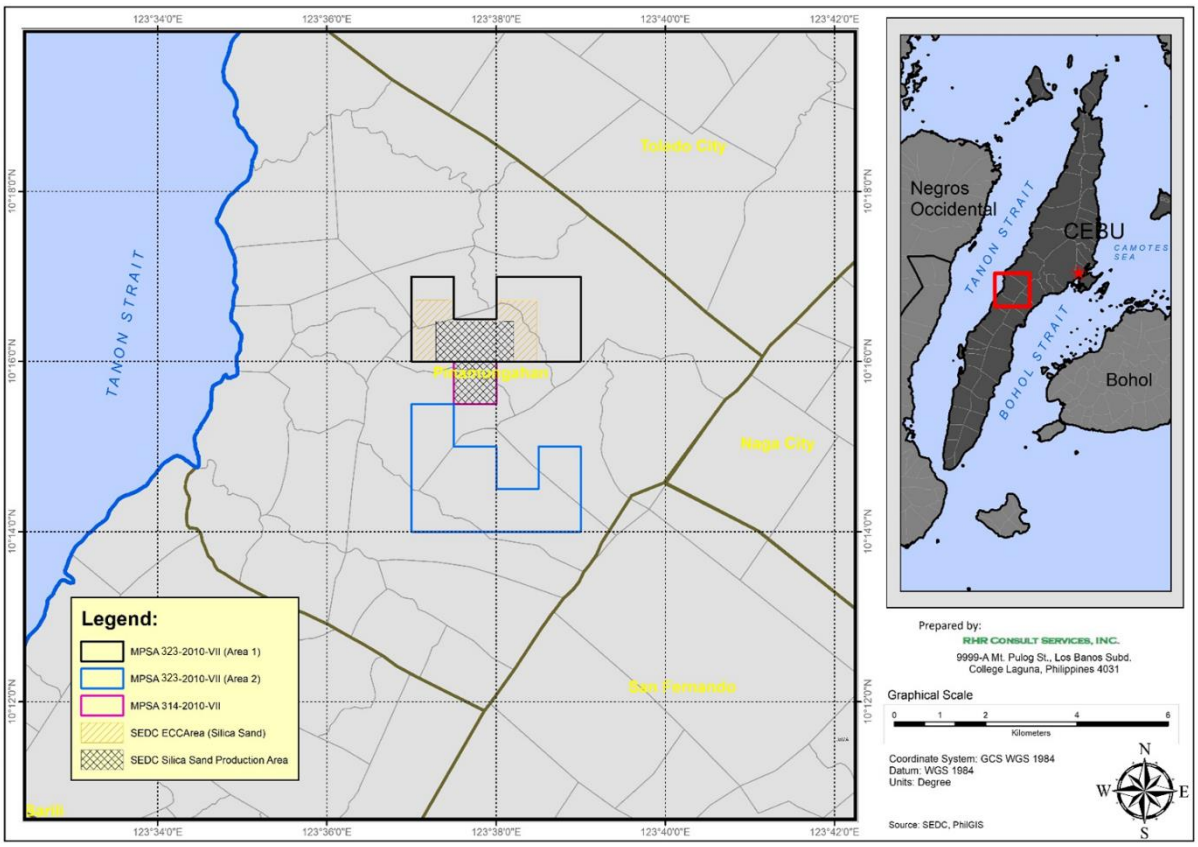

Figure 1. Location Map of the Proposed Silica Sand Quarry Expansion Project

3 PROJECT DESCRIPTION

3.1 PROJECT RATIONALE

The increasing demand for local cement and shortage in the supply resulted to postponement of the infrastructure and development programs of the Philippine Government. Hence, requires an immediate action from the local cement producers and manufacturers. To address this, the Solid Earth Development Corporation proposes an expansion of its annual production capacity. With this proposed project, further boost in the local and national economy is anticipated as it will contribute in reducing importation of cement, promotes more employment and livelihood opportunities,

indicates continuous support to rural infrastructure developments, and generates national and local revenues.

3.2 GOAL OF THE PROJECT

By taking advantage of the opportunity and necessity to expand, SEDC aims to increase its total annual production of Silica Sand from its existing capacity of 200,000 MT to a total of 660,000 MT. This shall be sourced from the existing production area of 229.50 hectares located within MPSA 314-2010-VII and MPSA 323-2010-VII.

3.3 PROJECT SIZE

3.3.1 ECC AREA

No amendment is proposed for the existing ECC area of 389. 44 hectares.

3.3.2 PRODUCTION AREA AND PRODUCTION CAPACITY

Similarly, the proposed expansion in the annual production from 200,000 MT to 660,000 MT will extracted from the existing 229.50 hectare-production area.

3.3.3 MINERAL RESERVES

A total of 11,000,000 MT of silica sand is identified as mineable reserve within the project area. A total of 2,000,000 MT of sand will come from MPSA 314-2010-VII while 9,000,000 MT is identified as active mineable reserves from MPSA 323-2010-VII.

Table 1. Existing and Proposed ECC Area, Production Area, Production Capacity, and Mineral Reserves for the Proposed Silica Sand Quarry Expansion

ECC No.	MPSA / LOCATION	ECC AREA (in ha)		PRODUCTION AREA (in ha)		MINERAL RESERVE (MT)	ANNUAL PRODUCTION (MT)	
		EXISTING	PROPOSED	EXISTING	PROPOSED		EXISTING	PROPOSED
ECC-CO-1512-0027	**MPSA 314** 1. Barangay Duangan 2. Barangay Binabag*	84	84	229.50	229.50	2,000,000	200,000	660,000
	MPSA 323 1. Barangay Lut-od 2. Barangay Punod 3. Barangay Sibago 4. Barangay Guimbawi-an	305.44	305.44			9,000,000		
TOTAL		389.44 hectares	**389.44 hectares (No Changes)**	229.50 hectares	**229.50 hectares (No Changes)**	**11,000,000 MT**	**200,000 MT**	**660,000 MT**

3.4 PROJECT COST

The estimated Volume of Investment for the Silica Sand Quarry Expansion Project is approximately PhP 61,120,000.00 covering the mining properties and equipment. The estimated Production Costs are pegged at the following first 10 commercial production years:

Year 1 : P 342.00 / MT
Year 2 : P 356.00 / MT
Year 3 : P 370.00 / MT
Year 4 : P 385.00 / MT
Year 5 : P 400.00 / MT
Year 6 : P 416.00 / MT
Year 7 : P 433.00 /MT
Year 8 : P 450.00 / MT
Year 9 : P 468.00 / MT
Year 10 : P 487.00 / MT

3.5 PROJECT MANPOWER REQUIREMENT

Once the project will be implemented, as may be observed from the table below, employment opportunities supported by this project totals 69 positions. Out of 69 positions, 58 may be filled by males and 42 by females. The constraints for female employees in certain positions are also listed in the same table. Workforce to fill employee replacements or fill day-work (extra) job opportunities are sourced by SEDC from a pool of qualified workers recommended from the Local Government Units.

Table 2. Needed Workforce for the Silica Sand Quarry Expansion Project

Description	Quarry/ Production			Services			Security			Hauling			Total Gender		
	No	M	F	No	M	F	No	M	F	No	M	F	No	M	F
Manager	1	x	x	0			0			0			1	1	1
Safety Officer	1	x	x	0			0			0			1	1	1
Supervisor	1	x	x	1	x	x	1	x	x	1	x	x	4	4	4
Foreman	0			1	x	x	0			0			1	1	1
Mechanic	4	x		0			0			1	x		3	3	0
Equipment Operators	3	x		0			0			0			3	3	0
Drivers	10	x		2	x	x	0			4	x		16	7	1
Welder	2	x		0			0			0			2	1	0
Electrician	2	x		0			0			0			2	1	0
Equipment Spotters	2	x	x	0			0			0			2	2	2
Utility Aide	2	x	x	4	x	x	0			4	x		6	6	4
Survey Aide	0			8	x	x	0			0			8	8	8
Accounting Staff	2		x	0			0			0			2	2	2
Administrative	2	x	x	0			0			0			2	2	2

Description	Quarry/ Production			Services			Security			Hauling			Total Gender		
	No	M	F	No	M	F	No	M	F	No	M	F	No	M	F
Staff															
Plant Nursery Staff	0			2	x	x	0			0			2	2	2
Security Guards	0			0			14	x	x	0			14	14	14
TOTAL	32	19	7	18	10	10	15	8	8	10	5	1	69	58	42

3.6 PROJECT ALTERNATIVES

3.6.1 PROJECT SITING

The geological explorations conducted ensured that the quarry sites within MPSA 314-2010-VII and MPSA 323-2010-VII will meet the material quality criteria and are economically viable for the operations of TCPI. The following are the criteria used for site and technology selection:

- Functionality of the site location which refers to accessibility and mobility of the ore body with respect to the transport system to the market and the resources available essential for the sustained operations of the quarry and the manufacturing counterpart.
- Complementarity, and compatibility between and with various uses of adjacent lands, and associated activities they serve.
- Consistency with the natural resources plans and policies, and environmental regulations that guide the cities, province, region, and the national government.
- Mining facility design and operational requirements as established by others, including the Mining and Geosciences Bureau, the industry, and requirements of the market, among others.
- Implied in the choice of area would be the relatively stable peace and order situation.
- Input and participation from local stakeholders, and appropriate regional and national oversight agencies.
- Cost effectiveness – the value returned to the proponent for the investments to be made, and the contributions to the national and local governments, and the other stakeholders, including contributions to social development and management, environmental protection and enhancement, safety and health, mine rehabilitation and decommissioning.
- Development design factored in provisions for health and human safety, including the provisions for mining operations as provided by the Mines and Geosciences Bureau for set back; and guidelines to protect humans, and their sources of livelihood, for example providing allowances to protect equipment used to minimize environmental impact due to operations.

3.6.2 TECHNOLOGY SELECTION

3.6.2.1 QUARRY

The Silica Sand deposits will be extracted using an open cut mining method using backhoes, front-end loaders, and dump trucks for earthworks. The quarry operation shall use backhoes for the ripping and stockpiling; backhoes and payloaders for loading into trucks; and 20-tonner dump trucks for transporting the extracted materials to the crusher. The quarry operations will produce silica sand suitable for cement manufacture, with a Silica (SiO_2) cut-off grade of 70%. The lowest working level will be maintained at +60 meters above sea level (masl). The benches shall be limited to 5 meters in height with 70-degrees slope. The final pit figure will be terraced to prevent sloughing of materials from higher elevations. Final pit bottom will not be lower than the existing national road elevation. Cut-off drainage channels with baffles or rock pile velocity decelerators/sediment settling sumps will be established to separate background surface run-off from quarry areas; then channel these to natural surface drainage systems to reduce the load and silt spill-over coming from the settling ponds. A canal will be constructed within the quarry zone adjacent to and parallel to the public road in order to prevent sediment overtopping on public roadway.

An initial quarry area of 40 hectares has been defined taking into account the presence of roads, minimizing direct impact on creeks, houses, schools, farms, etc. Its pit bottom will either be the nearest public road or creek level, whichever is shallower. The average overburden is one meter thick and waste material accounts for about 1%. Silica sand weighs about 1,220 kg per cubic meter, with about 20% moisture content.

3.6.3 RESOURCES

3.6.3.1 POWER

No generator set will be necessary as the project is right beside the Provincial road and power supply from the Visayas Electric Company (VECO) is readily available. The project will also operate primarily using day light, with operations at most starting at 6am and ending in 6pm in maximum condition. Back-up illumination of one or two LED beacon lights are expected to be used for lighting dusk operations (at 6pm) only if these become necessary.

3.6.3.2 WATER

Current water consumption by the quarry operation was mainly used for dust suppression in the area and this was sourced from the recycled water from TCPI reservoir. SEDC plans to develop a deep well in Barangay Magsico in order to supply the estimated consumption of 14,400 m3 for the proposed expansion. This is to avoid resource competition with the nearby communities. Lastly, drinking water will be brought-in from a local purified water supplier.

4 PROJECT COMPONENTS

The major and supporting project components are enumerated on the table below. Equipment to be used during the project development stage and production phase are listed in **Table 4**.

Table 3. Project Components

PROJECT COMPONENT	DESCRIPTION / SPECIFICATIONS	
	EXISTING / APPROVED	**PROPOSED MODIFICATIONS FOR EXPANSION**
Quarry	Open Cut Mining Method	Open Cut Mining Method
	Annual Production: 200,000 MT	Annual Production: 660,000 MT
	Stripping Ratio: 0.01:1	Stripping Ratio: 0.01:1 (no changes)
	Pit Slope: 45 degrees	Pit Slope: 45 degrees (no changes)
	Bench Slope: 70 degrees	Bench Slope: 70 degrees (no changes)
	Bench Width & Height: 5m X 5m	Bench Width & Height: 5m X 5m
SUPPORTING PROJECT COMPONENTS		
Small unit office	none	• 1 small unit office at Lut-od Quarry
Equipment Lay-By Area	none	• 1 Equipment Lay-By Area at Duangan Quarry • 1 Equipment Lay-By Area at Lut-od Quarry
Pollution Control:		
1. Silt pond	none	• 22 siltation ponds with total capacity of 19,800 m3
2. Material Recovery Facility (MRF)	none	• 1 MRF at Duangan Quarry
3. Septic Tank	1 septic tank at Duangan Quarry	• 1 Septic tank at Lut-od Quarry
4. Oil-Water Separator	none	• 1 Oil-Water Separator at Duangan Quarry
5. Motor pool	none	• 1 motor pool at Duangan Quarry

Table 4. List of Equipment for the Development and Production Stage of the proposed Expansion

PROJECT PHASE / STAGE	EQUIPMENT TYPE	UNIT TYPE	EXISTING		PROPOSED		OWNERSHIP	USE/ DESCRIPTION
			CAPACITY	NO. OF UNITS	CAPACITY	NO. OF UNITS		
FOR DEVELOPMENT	Backhoe	CAT 330	–	–	1.5 M T	1	Leased	For access road excavation, material loading, and siltation pond construction
	Dump Trucks	ISUZU	–	–	17 MT	2		For hauling
FOR PRODUCTION	Backhoe	CAT 330	1.5 MT	2	1.5 MT	3	Contractor	For excavation and loading
	Dump Truck	ISUZU / HOWO	18 Ton	10	20-25 MT	26		For loading
	Road grader	KOMATSU GD31	4.5 MT	1	4.5 MT	1		For road maintenance
	Pay Loader/ Front end loader	XCMG LW500FN	4.5 MT	1	4.5 MT	1		For loading
	Bulldozer	CAT D8R	8 MT	2	5 MT	1		For hauling, dozing,
	Water Truck	ISUZU	12,000 Liters	1	12,000 Liters	1		For wetting haul roads
	Truck with Crane		5 ton	1	–	–		–
	Backhoe with Breaker		1.5 cubic meter	1	1.5 to 2.0 cubic meter	4		For breaking boulders
	Lube Truck	ISUZU	-	-	4,000 liters	1		For onsite refill services
	Service Vehicle	ISUZU	-	-	Isuzu Elf	1		For personnel transport
	Note: Preventive Maintenance Servicing (PMS) for heavy equipment- frequency is every 500 engine running hours; and for dumping truck- frequency is every 5,000 kilometers.							

5 IDENTIFIED STAKEHOLDERS

The following are the identified stakeholders for the Public Hearing:

Table 5. Identified Stakeholders for the Public Hearing

Agency/Institution	Name of Representative	Designation	Address	Contact Information
Barangay Agencies				
Pinamungajan: Barangays Lut-od, Duangan, Punod and Guimbawian	(1) Godofredo L. Albellar	Barangay Captain	Lut-od, Pinamungajan, Cebu	0919-3378777
	(2) Felix O. Bagahansol	Barangay Captain	Punod, Pinamungajan, Cebu	0949-4948139
	(3) Carlos B. Ponting, Jr.	Barangay Captain	Duangan, Pinamungajan, Cebu	0922-2142465
	(4) Rolando L. Alia	Barangay Captain	Guimbawian, Pinamungajan, Cebu	c/o 0906-1974959 – Brgy. Sec.
Municipal Agencies				
Municipal Government	(5) Glenn F. Baricuatro	Municipal Mayor	Mun. Bldg., Pinamungajan, Cebu	(032) 4689319
	(6) Richard M. Canillo	Municipal Vice Mayor	Mun. Bldg., Pinamungajan, Cebu	(032) 4689802
	(7) Engr. Oscar M. Canino	MPDO	Mun. Bldg., Pinamungajan, Cebu	omcanino@gmail.com; 0916-2536701
	(8) Marigen L. Alpas	Municipal SWD Officer	Mun. Bldg., Pinamungajan, Cebu	mswdopinamungajan@gmail.com; 09985589059
	(9) Leonida U. Yongo	Municipal Agriculturist	Mun. Bldg., Pinamungajan, Cebu	mao.pinamungajan@gmail.com; (032) 4689577
	(10) Engr. Adelina S. Fuentes	Municipal Engineer	Mun. Bldg., Pinamungajan, Cebu	(032) 4689498
	(11) Dr. Marlon B. Kyamco	Municipal Health Officer	Mun. Bldg., Pinamungajan, Cebu	(032) 4689458
	(12) Marlon B. Aniñon	MENRO	Mun. Bldg., Pinamungajan, Cebu	(032) 4689577
Interest Groups				
Senior Citizen	(13) Fructuosa P. Maquiling	Head, OSCA	Mun. Bldg., Pinamungajan, Cebu	(032) 4689153
Youth group	(14) Charisse M. Managaytay	SK Federation President	Mun. Bldg., Pinamungajan, Cebu	(032) 4689082

Agency/Institution	Name of Representative	Designation	Address	Contact Information
Farmer's group	(15) Jaime T. Ponting	Pres., Duangan Farmer's Assn.	Duangan, Pinamungajan, Cebu	c/o 0932-5465667
Women's group	(16) Marciana Y. Cepedoza	President, Duangan Women's Assn.	Duangan, Pinamungajan, Cebu	0932-5465667
Education	(17) Cornelio C. Villarin	Principal, Lut-od Elem. School	Lut-od, Pinamungajan, Cebu	0961-3576089
	(18) Cirselda G. Gerolaga	Head Teacher, Duangan Elem. School	Duangan, Pinamungajan, Cebu	0942-2964873
	(19) Absalon N. Piala	TIC, Punod Elem. School	Punod, Pinamungajan, Cebu	0912-5350247
	(20) Diadema V. Ondaymoso	TIC, Guimbawian Elem. School	Guimbawian, Pinamungajan, Cebu	0956-8940151
	(21) Concepcion O. Dagala	School Head, Lut-od National HS	Lut-od, Pinamungajan, Cebu	0917-8686524
Religious group	(22) Isidro C. Dacalan	Religious Association Pres. (Chapel)	Guimbawian, Pinamungajan, Cebu	c/o 0906-1974959 – Brgy. Sec.
Business Sector	(23) Alicia B. Gellegan	Owner – Alicia's Store	Guimbawian, Pinamungajan, Cebu	09752040098

6 PROJECT SCHEDULE

The table below provides the schedule of the proposed expansion:

Table 6. Project Schedule of the proposed Silica Sand Quarry Expansion

SOLID EARTH DEVELOPMENT CORPORATION

MPSA 314-2010-VII, MPSA 323-2010-VII

SCHEDULE OF PROJECT (Silica Sand Quarry Project)

Year		2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
A. DEVELOPMENT											
A.1 MPSA 314-2010-VII											
1. Access Road	1,000 m										
2. Silt Pond	4 units										
3. Waste Stripping	20,000 MT										
A.2 MPSA 323-2010-VII											
1. Access Road	1,500 m										
2. Silt Pond	4 units										
3. Waste Stripping	30,000 MT										
A.3 MPSA 330-2010-VII											
1. Access Road	1,500 m										
2. Silt Pond	4 units										
3. Waste Stripping	30,000 MT										
B. PRODUCTION (MT)											
1. MPSA 314-2010-VII											
Tonnage, MT	1,080,000		120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000
2. MPSA 323-2010-VII											
Tonnage, MT	2,700,000		300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000
3. MPSA 330-2010-VII											
Tonnage, MT	2,160,000		240,000	240,000	240,000	240,000	240,000	240,000	240,000	240,000	240,000
C. TOTAL PROD. (MT)	5,940,000		660,000	660,000	660,000	660,000	660,000	660,000	660,000	660,000	660,000

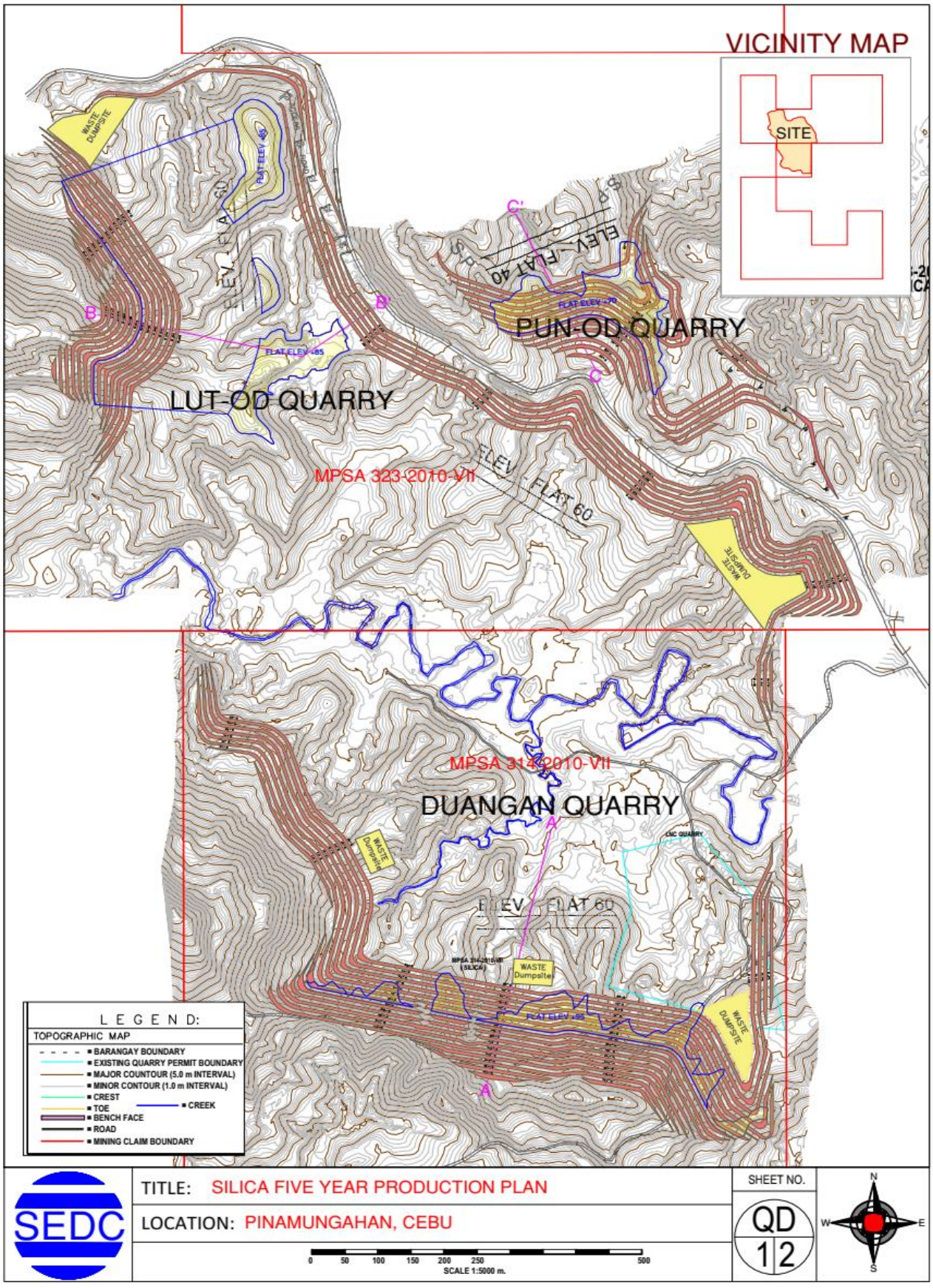

Figure 2. Silica Sand Quarry 5-Year Production Plan (Sheet 1)

SILICA FIVE YEAR PRODUCTION SCHEDULE

ACTIVITY	MT	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
A. MPSA 314 - Duangan Quarry						
Elevation B+145 to Bench+125	100,000					
Bench+120 to Bench+115	150,000					
Bench+110 to Bench+105	220,000					
Bench+100 to Bench+95	290,000					
SUBTOTAL		75,000	150,000	150,000	150,000	150,000
B. MPSA 323 - Lut-od Quarry						
Bench+120 to Bench+115	80,000					
Bench+110	70,000					
Bench+105	100,000					
Bench+100	140,000					
Bench+95	260,000					
Bench+90	470,000					
Bench+85	810,000					
SUBTOTAL		75,000	360,000	360,000	360,000	360,000
C. MPSA 323 Pun-od Quarry						
Bench+95 to Bench+85	150,000					
Bench+80 to Bench+75	300,000					
Bench+70	150,000					
SUBTOTAL			150,000	150,000	150,000	150,000
TOTAL CLAY PRODUCTION , MT		150,000	660,000	660,000	660,000	660,000
TOPSOIL/WASTE PRODUCED, MT		1,500	6,600	6,600	6,600	6,600

SECTIONS

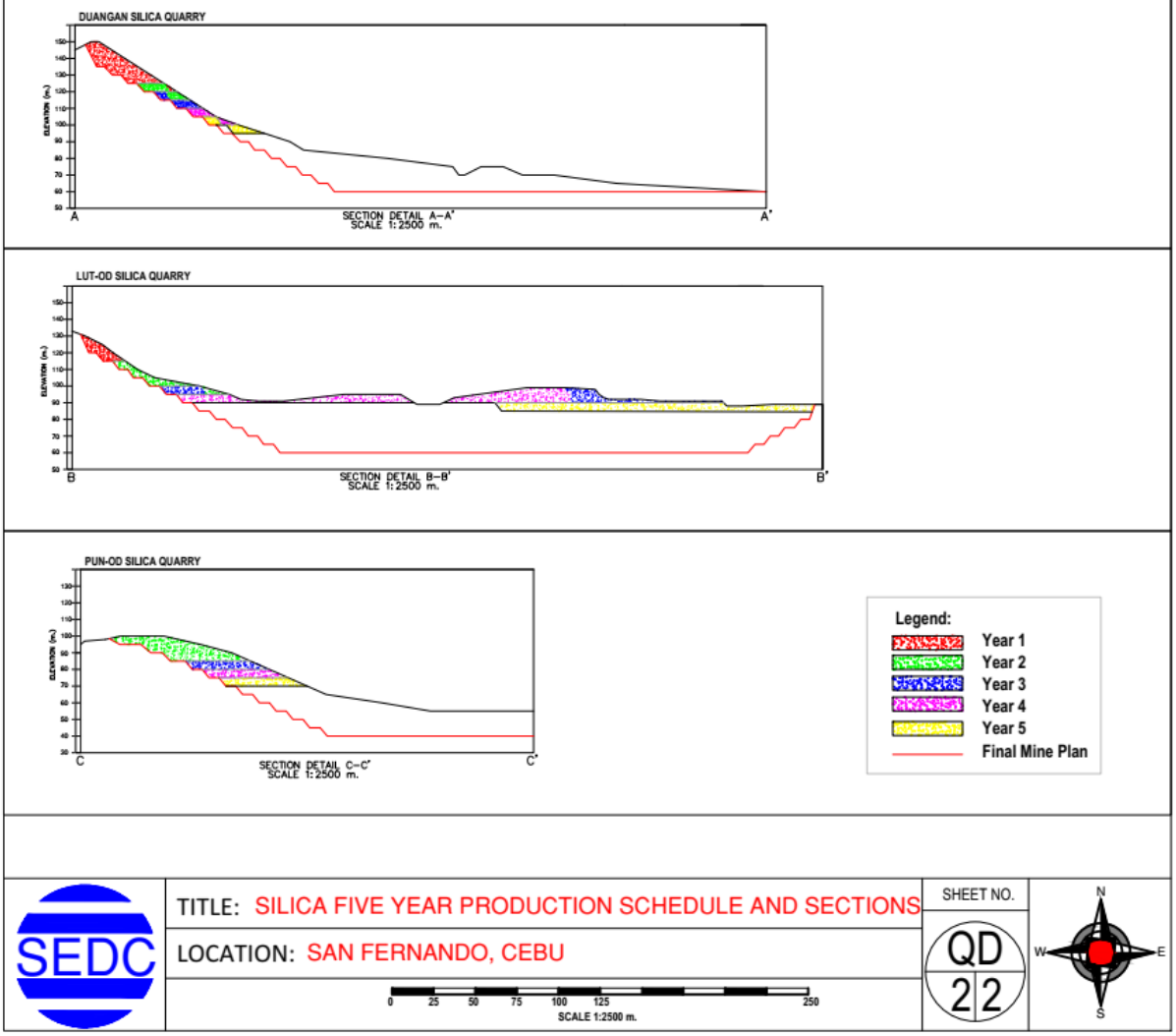

Figure 3. Silica Sand Quarry 5-Year Production Schedule and Sections (Sheet 2)

7 SUMMARY OF MAJOR IMPACTS OF THE PROJECT

PROJECT PHASE/ ENVIRONMENTAL ASPECT	ENVIRONMENTAL COMPONENT LIKELY TO BE AFFECTED	POTENTIAL IMPACT	OPTIONS FOR PREVENTION, MITIGATION OR ENHANCEMENT	RESPONSIBLE ENTITY	COST	GUARANTEE / FINANCIAL AGREEMENT
Operation Phase						
Quarry operations (bulldozing and materials handling, grading, hauling)	Air – Air quality	Degradation of air quality Dust generation	Planting of trees at the quarry/s periphery; Enhance buffer strip or tree buffer around and along the boundaries of the project site	SEDC	Part of EPEP cost	EPEP commitment
			Continue monitoring of wind speed and wind directions as part of the environmental management plan to lessen or minimize release of fugitive dusts	SEDC	Part of EPEP cost	EPEP commitment
			Regular watering of haul roads during dry condition; visual inspection of fugitive dust	SEDC	Part of EPEP cost	EPEP commitment
			Maintenance of quarry roads	SEDC	Part of EPEP cost	EPEP commitment
			Speed limits of vehicles (light and heavy) will be controlled to a maximum of 30 km/hr at the quarry site	SEDC / SEDC Contractor	None	SEDC Safety Protocol
			Regular maintenance of trucks to reduce or maintain tailpipe emissions	SEDC / SEDC Contractor	Incorporated in cost of contractor service	SEDC Safety Protocol

PROJECT PHASE/ ENVIRONMENTAL ASPECT	ENVIRONMENTAL COMPONENT LIKELY TO BE AFFECTED	POTENTIAL IMPACT	OPTIONS FOR PREVENTION, MITIGATION OR ENHANCEMENT	RESPONSIBLE ENTITY	COST	GUARANTEE / FINANCIAL AGREEMENT
			Provide wheel washing facilities for vehicles leaving the quarry and project site. The wheel washing facility should be used to remove muds at the tires of trucks and heavy equipment	SEDC	Part of EPEP cost	EPEP commitment
			In case of very dry weather condition where wetting of dry surfaces would be effective for short duration, consider re-routing of vehicles away from area sensitive receptors (households or residences)	SEDC	Part of operating expenses	SEDC Work Program
			Dampen lose soil or cover loose soil pile	SEDC	Part of EPEP cost	EPEP commitment
	Air / People	Increase in ambient noise level	Install effective mufflers on all heavy equipment and other equipment using internal combustion engines	SEDC / SEDC Contractor	Incorporated in cost of contractor service	SEDC Work Program
			Impose speed limits at quarry and along access roads (30 kph)	SEDC	None	SEDC Safety Protocol
			Daytime quarry operation; Restrict use of equipment at nighttime especially equipment that emits high noise levels	SEDC	None	SEDC Work Program
			Construct temporary noise barriers between households and quarry, when necessary	SEDC	Part of EPEP cost	EPEP commitment

PROJECT PHASE/ ENVIRONMENTAL ASPECT	ENVIRONMENTAL COMPONENT LIKELY TO BE AFFECTED	POTENTIAL IMPACT	OPTIONS FOR PREVENTION, MITIGATION OR ENHANCEMENT	RESPONSIBLE ENTITY	COST	GUARANTEE / FINANCIAL AGREEMENT
			Progressive planting in mined-out areas and planting of trees at the buffer zone; Enhance buffer strips or tree buffers around and along project boundaries	SEDC	Part of EPEP cost	EPEP commitment
Generation and stockpiling of loose materials	Water – Water Quality	Siltation / degradation of surface water quality	Construction of settling ponds and silt traps	SEDC	Part of EPEP cost	EPEP commitment
			Desilting of settling ponds or as needed. Sediments will be used for road surfacing within quarry areas or to Barangays in need.	SEDC	Part of EPEP cost	EPEP commitment
			Mobile heavy equipment and vehicles shall have a designated holding area for removal of excess silt and mud from the tires and underbellies. The holding area shall have adequate drainage and traps to contain the washed sediments.	SEDC	Part of EPEP cost	EPEP commitment
Excavation, digging and stockpiling of raw materials	Land – Geology / Soil	Soil erosion	Provision of storm drainage canals to prevent rain water from eroding the quarry area.	SEDC	Part of EPEP cost	EPEP commitment
			Maintenance of quarry waste dump site	SEDC	Part of EPEP cost	EPEP commitment

PROJECT PHASE/ ENVIRONMENTAL ASPECT	ENVIRONMENTAL COMPONENT LIKELY TO BE AFFECTED	POTENTIAL IMPACT	OPTIONS FOR PREVENTION, MITIGATION OR ENHANCEMENT	RESPONSIBLE ENTITY	COST	GUARANTEE / FINANCIAL AGREEMENT
			Topsoil stockpile slope shall not exceed its angle of repose.			
			Progressive resoiling or revegetation will be implemented to maintain a limited stock of loose waste material.	SEDC	Part of EPEP cost	EPEP commitment
Use of heavy equipment	Land – Geology / Soil	Soil compaction	Compacted mined out portions will be ripped before resoiling to allow infiltration.	SEDC	Part of EPEP cost	EPEP commitment
Quarrying	Land – Geology / Soil	Alteration of topography / natural drainage	Resoiling / rehabilitation through implementation of reforestation program.	SEDC	Part of EPEP cost	EPEP commitment
			Establishment of SEDC nursery.			
			The company shall also practice community-based reforestation on areas outside the mined-out areas.			
			Maintenance of the existing drainage system consisting of drainage canals Regular desilting of settling ponds	SEDC	Part of EPEP cost	EPEP commitment
			Lowest level of the quarry operation shall be maintained at +35 masl	SEDC	None	SEDC Work Program
		Change in land use	Quarrying operations can be considered as temporary land use. Progressive rehabilitation of the	SEDC	Part of EPEP cost	EPEP/FMRDP commitment

PROJECT PHASE/ ENVIRONMENTAL ASPECT	ENVIRONMENTAL COMPONENT LIKELY TO BE AFFECTED	POTENTIAL IMPACT	OPTIONS FOR PREVENTION, MITIGATION OR ENHANCEMENT	RESPONSIBLE ENTITY	COST	GUARANTEE / FINANCIAL AGREEMENT
			mined-out areas, through reforestation, shall be implemented			
Removal of vegetation cover	Land – Flora & Fauna	Vegetation removal and loss of habitat	Limit the quarrying activities within direct impact area only to avoid vegetation removal of adjacent areas	SEDC	Part of EPEP cost	EPEP commitment
			Continuous seedling production, regular tree planting, replanting, donations of seedlings and partnership with private, NGO and government organizations is recommended			
		Threat to existence and/or loss of important local species	Continuous seedling production, regular tree planting, replanting, donations of seedlings and partnership with private, NGO and government organizations is recommended			
			Monitor replacement planting to ensure growth and survival			
		Threat to abundance, frequency and distribution of important species	Continuous seedling production, regular tree planting, replanting, donations of seedlings and partnership with private, NGO and government organizations are recommended			
			Monitor replacement planting to ensure growth and survival			

PROJECT PHASE/ ENVIRONMENTAL ASPECT	ENVIRONMENTAL COMPONENT LIKELY TO BE AFFECTED	POTENTIAL IMPACT	OPTIONS FOR PREVENTION, MITIGATION OR ENHANCEMENT	RESPONSIBLE ENTITY	COST	GUARANTEE / FINANCIAL AGREEMENT
			Continuous allocation of annual budget for these activities is likewise recommended to allow sustainability of the mitigation activity			
		Proliferation of invasive species	Immediate revegetation with preference to indigenous plant species within the cleared and opened areas should be conducted			
			Generate list of invasive species and avoid its reintroduction on site			
Abandonment Phase						
Mine closure / abandonment	People – Livelihood	Loss of livelihood of local workforce Reduction/loss of company support for some services Decrease in economic activity in the	Provide psycho-social services to project-affected families	SEDC	Part of SDMP cost	SDMP commitment
			Re-training and enhancement of alternative livelihood programs for workers in the affected areas	SEDC	Part of SDMP cost	SDMP commitment

PROJECT PHASE/ ENVIRONMENTAL ASPECT	ENVIRONMENTAL COMPONENT LIKELY TO BE AFFECTED	POTENTIAL IMPACT	OPTIONS FOR PREVENTION, MITIGATION OR ENHANCEMENT	RESPONSIBLE ENTITY	COST	GUARANTEE / FINANCIAL AGREEMENT
		area (i.e. reduced business profits due to project closure therefore reduced market consumers)				
Disposal of scrap materials	People – Safety	Threat to public safety	IEC implementation to the community	SEDC	Part of SDMP cost	SDMP commitment
		Injury or fatality of local community due to unauthorized access to site	Proper implementation of the abandonment/ decommissioning plan	SEDC	Part of FMRDP cost	FMRDP commitment
Clearing / removal of support facilities	Land / Water / People	Removal of structures may result to accidental spillage of toxic and	Proper implementation of the approved rehabilitation and abandonment plan Use of DENR-accredited haulers/TSD companies for hazardous wastes	SEDC	Part of FMRDP cost	FMRDP commitment

PROJECT PHASE/ ENVIRONMENTAL ASPECT	ENVIRONMENTAL COMPONENT LIKELY TO BE AFFECTED	POTENTIAL IMPACT	OPTIONS FOR PREVENTION, MITIGATION OR ENHANCEMENT	RESPONSIBLE ENTITY	COST	GUARANTEE / FINANCIAL AGREEMENT
		hazardous wastes				
Abandonment	Land	Proliferation of invasive species on opened areas	Rehabilitation of disturbed areas through revegetation (i.e., indigenous tree planting, cover crops planting) Avoid use and deliberate introduction of invasive species	SEDC	Part of FMRDP cost	FMRDP commitment

8 PROPONENT'S STATEMENT OF COMMITMENT

This is to certify that the proponent, **SOLID EARTH DEVELOPMENT CORPORATION (SEDC)**, is capable and committed to implement the necessary mitigating measures to minimize adverse effects and enhance the beneficial impact caused by the proposed **SILICA SAND QUARRY EXPANSION PROJECT** located at **BARANGAYS OF DUANGAN, LUT-OD, PUNOD, SIBAGO AND GUIMBAWIAN, MUNICIPALITY OF PINAMUNGAJAN, PROVINCE OF CEBU, REGION VII, PHILIPPINES.**

In witness hereof, we hereby set my hand this _____ day of _____ 2020 at _____, Philippines.

Atty. Dennis B. Tenefrancia
President, Solid Earth Development Corporation

SUBSCRIBED AND SWORN TO before this _____, affiant exhibiting their Community Tax Certificate No. _____ issued at _____ on _____.

9 AVAILABILITY OF THE EIS REPORT

The EIS Report can be accessed through the following:

a) DENR-Environmental Management Bureau
DENR Compound, Visayas Avenue, Diliman, Quezon City 1116
Telephone Numbers: 927-1517, 928-3742

b) EMB Website
www.emb.gov.ph

c) City Planning and Development Office
Municipality of Pinamungajan, Cebu