

EXECUTIVE SUMMARY

OF

Muong Limestone Mine

For Public Hearing

At

Muong, Shella,

District- East Khasi Hills,

State – Meghalaya

Lease Area: 1.00 Ha

Applicant:- Shri. Remiwell Soman Natep

Address – Shella Village,

District – East Khasi Hills, State-Meghalaya.

Environmental Consultant

ENVIRONMENTAL RESEARCH &

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Accredited by NABET (Quality Council of India)

For EIA Studies as ‘B’ Category Consultant

EXECUTIVE SUMMERY

Introduction

Muong Limestone mining lease over 1.00 ha. located at Muiong, Shella, District-East Khasi Hills, State- Meghalaya, was granted by the Divisional Forest Officer, East Khasi Hills & Ri Bhoi (T) Division, Shillong, Meghalaya in favour of Shri Remiwell Soman Natep, vide letter no. **KH/8/ML/Limestone/68/3070**, on dated 5th October, 2020 (**ANNEXURE- I**). As per letter (**Vide letter no.: KH/8/NOC/Limestone/41/Pt.IV/3052**) issued by the Divisional Forest Officer, East Khasi Hills & Ri Bhoi (T) Division, Shillong, Meghalaya on 5th October, 2020, proposed project is falls under non-forest land (**ANNEXER- II**). Mine plan was approved by Mining Engineer, Directorate of Mineral Resources, Meghalaya, Shillong, on dated 7th December, 2020 (**Vide letter No.: DMR/MM/90/2020/02**) (**ANNEXER -III**). Beside the approval of mine plan, the cluster certificate vide letter no.: **DMR/MM/90/2020/05** was also issued by Mining Engineer, Directorate of Mineral Resources, Meghalaya, Shillong on dated 29th September, 2021 (**ANNEXER -IV**).

This particular project is considered to be of 'B' category due to the size of the mining lease (1.00 HA. As per notification S.O. 3977(E) published on dated 14th August, 2018, our project is falls under categories "B2" and need not to submit Environmental Impact assessment Study report. Further, another 5 mines with individual lease ≤ 100 ha, are coming within 500m from the proposed project area. So, as per office memorandum issued by MoEF&CC, need to submit Environmental Impact assessment Study report.

DRAFT EIA REPORT FOR OPENCAST SEMI-MECHANISED LIMESTONE MINE (31,459 TPA IN 1.00 HA) OF SHRI. REMIWELL SOMAN NATEP, LOCATED AT MUIONG, SHELLA, EAST KHASI HILLS DISTRICT, MEGHALAYA.

Feature of the project

Project Name	Muiong Limestone Mine		
Location of mine	Muiong, Shella, District-East Khasi Hills, State- Meghalaya.		
Latitude & Longitude	Boundary Pillar no.	Location (co-ordinates)	
		Latitude	Longitude
	1	25°11'15.90"N	91°37'38.70"E
	2	25°11'13.93"N	91°37'36.83"E
	3	25°11'15.00"N	91°37'36.40"E
	4	25°11'16.20"N	91°37'36.50"E
	5	25°11'17.77"N	91°37'38.80"E
	6	25°11'18.94"N	91°37'40.48"E
	7	25°11'19.62"N	25°11'19.62"N
	8	25°11'19.75"N	91°37'42.75"E
	9	25°11'17.91"N	91°37'41.90"E
Topo-sheet number	78O/12 – (Key plan prepared from the image, generated from Google Earth)		
Land use	Private Land - 1.00 Ha		
Minerals of mine	Limestone		
Total Mineable reserves	31,4585 Tonnes		
Life of mine	10years		
Proposed production of mine	31,459 TPA		
Method of mining	Opencast Semi –mechanized mining		
No of working days	300days		
Water demand	Total water requirement is about 10.5 KLPD (Drinking+ Dust Suppression +Greenbelt)		
Sources of water	Nearby water sources		
Man power	39		
Nearest railway station	Guwahati Railway Station nearly 110Km from the applied area.		
Nearest airport	Shillong Airport is about 66.45Km NNE from applied area.		

Vicinity map and study area map of the 10 km radius around the project site is presented in Figure 1 and 2.

PREPARED BY

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DRAFT EIA REPORT FOR OPENCAST SEMI-MECHANISED LIMESTONE MINE (31,459 TPA IN 1.00 HA) OF SHRI. REMIWELL SOMAN NATEP, LOCATED AT MUIONG, SHELLA, EAST KHASI HILLS DISTRICT, MEGHALAYA.

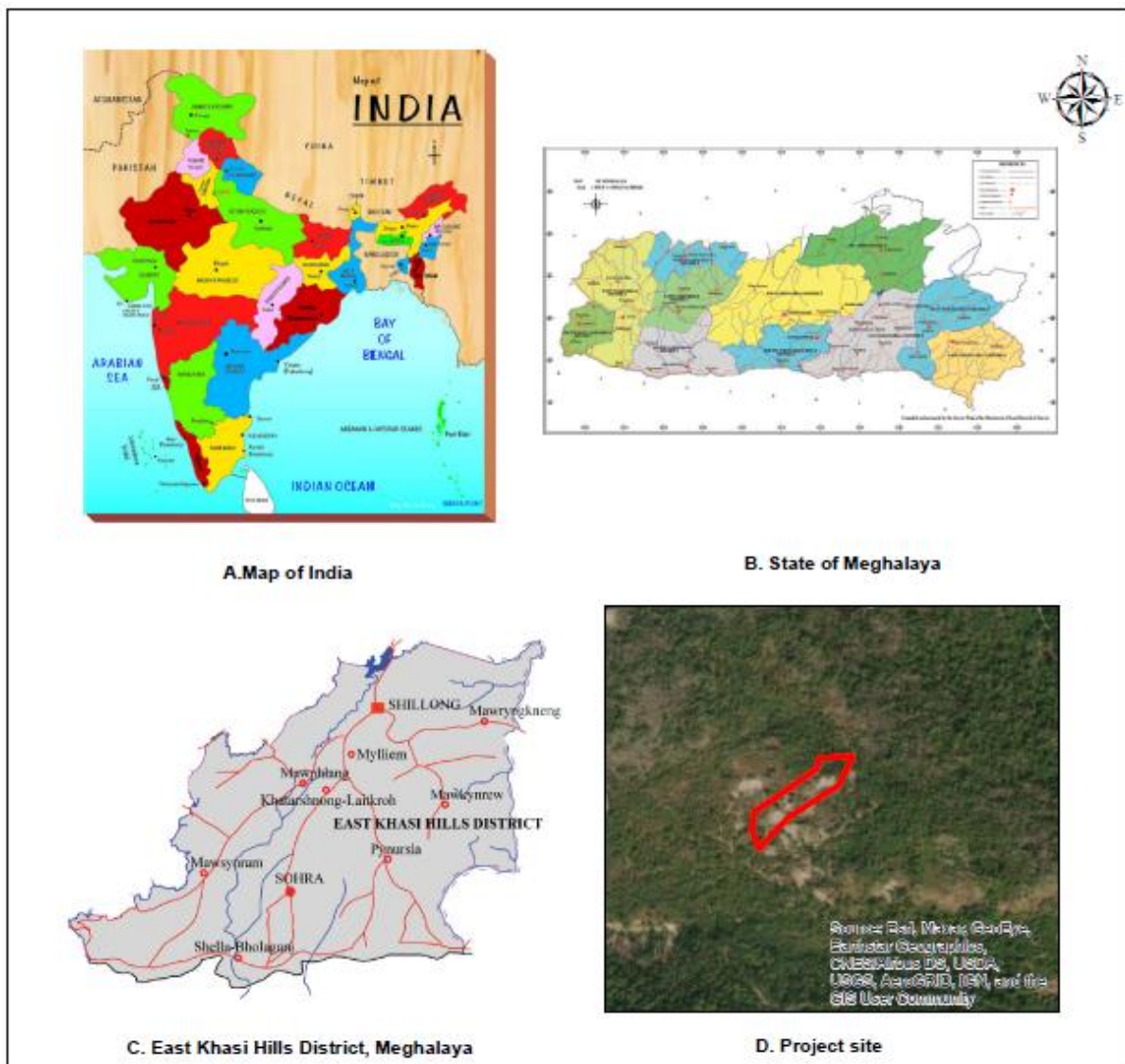


Figure No.1: Location Map

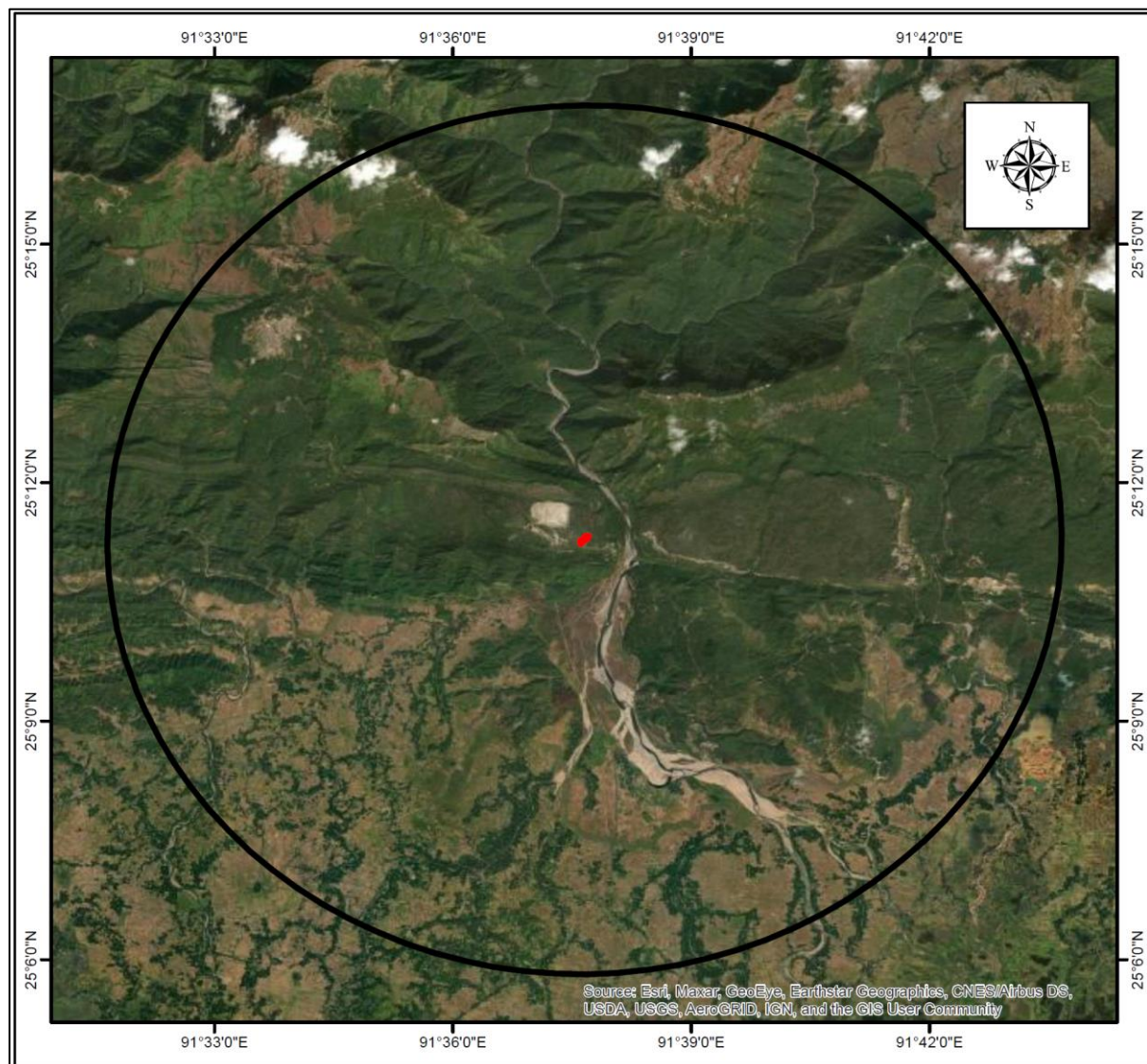


Figure No. 2: 10 km Radius Map around the Project Site

Basic Requirement for Proposed Project:

Details are presented below:

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Sl. No	Requirement	Approx quantity
1.	HSD (Diesel)	90 liters/ day
2.	Explosives	11.25 Kg per day

Mining Method:

- ✓ Semi mechanized open cast mining will be undertaken with drilling and blasting.
- ✓ The width of each bench shall always be maintained to be not less than the height which is 6 m.
- ✓ Since the deposit in this area is massive and compact in nature, it is proposed to carry out only opencast semi-mechanized mining during this plan period, i.e., five years.
- ✓ Jack hammer drill machine will be deployed for drilling of shot holes ranging from 39 to 34 mm diameter and breaking of limestone at the required size will also be done manually.

Description of the Environment:

The baseline environmental quality data for various components of environment, viz. Air, Noise, Water, Land and Socio-economic were generated during March, 2021 to May, 2021 in the study area covering 10 km around the proposed Limestone. Other environmental data on flora and fauna, land-use pattern, forest etc were also generated through field surveys and also collected from different State Govt. Departments.

Air Environment:

Ambient air quality was monitored at 6 locations. Results indicate that concentrations of PM2.5, PM10, SO2, CO, NOx are well within the prescribed standards.

Village Name	Station	PM10	PM2.5	SO2	NOX	CO
Project Site	AAQ1	57.5	28.1	12.3	14.3	0.59
Near to Lafarge Umaim Maining Cuyatar	AAQ2	68.1	27.0	12.0	16.2	0.58
Near Pyrkan	AAQ3	64.7	25.9	11.2	13.2	0.67
Duba	AAQ4	61.0	30.9	12.7	14.7	0.45
Umtyllun	AAQ5	73.6	32.9	14.5	16.6	0.56
Near Kyrdoh	AAQ6	66.0	31.2	11.7	13.3	0.52
Standards (Concentration in µg/m³) 24 hours** and CO mg/m³ in 8 hrs		PM10	PM2.5	SO2	NOx	CO
Residential, Rural & Other Areas		100	60	80	80	2

An automatic weather monitoring station was installed at the project site to record micro-meteorological data. Pre-dominant wind directions were observed in the winter season is from NW & NE.

Noise Environment

An analysis of the different Leq data obtained during the study period has been made. Variation was noted during the day-time as well as night-time. The results are presented in Table below.

Ambient Noise Quality Result

Noise Location	Day						Night					
	L Max	L Min	L equ	L10	L50	L90	L Max	L Min	L equ	L10	L50	L90
(N1)	53.7	49.8	51.7	52.7	51.7	50.1	44.2	41.1	42.4	43.7	42.1	41.3
(N2)	53.8	46.7	52.2	53.8	52.4	48.9	44.5	41.4	42.9	44.2	42.3	41.7
(N3)	54.4	48.1	52.1	54.0	52.4	48.9	44.8	40.5	42.6	44.7	41.9	40.5
(N4)	52.3	48.2	50.5	51.7	50.4	48.4	44.3	40.2	41.5	42.3	41.0	40.3
(N5)	55.9	50.2	53.9	55.6	54.0	50.6	45.5	41.3	43.2	44.9	42.0	41.4
(N6)	53.9	48.8	51.6	53.1	51.7	49.2	43.5	41.4	42.5	43.3	42.6	41.7

Water Environment

The detailed analysis result of surface water quality in the study area is given in Table No. C3-14. The surface water standard “IS 2296: Class C” is mentioned alongside the surface water analysis result for comparison. The analytical results of surface water samples at different location for various parameters reveal that all the parameters comply with “IS 2296 : Class C” standards indicating their suitability for drinking and other purposes after conventional treatment followed by disinfection.

The drinking water quality standard “ISO: 10500, 2012” is mentioned alongside the ground water analysis results for comparison. The analytical results of groundwater samples showed all the parameters are within the prescribed limits as per IS: 10500, 2012 standards for drinking water.

Land Environment:

The break-up of the land use for the project is given below:

Category	Area at present (ha)	As at the end of plan period (ha)	As at the end of lease period of the mine (ha)
Mined out land	0.00	-	-
Mined out land including road	-	0.60	-
Road	0.01	-	-
Greenbelt within safety barrier	-	0.19	0.37
Dump with parapet wall and garland drain	-	0.02	-
Mined out land including reclamation	-	-	0.63
Total area in use	0.01	0.81	1.00
Unused	0.99	0.19	0.00
Total Lease area	1.00	1.00	1.00

Soil:

Parameters	Unit	S1	S2	S3	S4
Soil colour	----	Brown	Brown	Brown	Brown
pH	----	7.4	7.1	7.3	7.1
Electrical Conductivity	µmhos /cm	175	196	170	184
Moisture	%	4.5	4.1	5.4	4.5
Clay	%	35	26	36	29
Silt	%	28	30	25	41
Sand	%	37	44	39	30
Infiltration Rate	cm/hr	1.24	1.26	1.19	1.22
Bulk density	gm/cm ³	1.4	1.32	1.28	1.45
Porosity	%	44.7	40.5	39.5	35.7
Nitrogen as N	kg/ha as P	140.1	166.7	146.4	152.8
Phosphorus	kg/ha as P	24.6	28.4	21.7	29.5
Potassium as K	kg/ha as K	52	68	48	60
Organic Carbon	%	0.49	0.70	0.53	0.63
Organic matter	%	0.85	1.21	0.92	1.08
Soil colour	----	Brown	Brown	Brown	Brown

Flora & Fauna:

The density of the plant in core zone in general is very low due to rocky terrain and low soil content. The floral found in the whole of the study area are representative of the Tropical Lower Montane Forest, Tropical Semi- Evergreen, Moist-Broadleaf Forest, Tropical Deciduous/Semi-Deciduous, Broadleaf Forest and Tropical Sparse trees. There is no schedule I Species of Fauna found in both core as well as buffer zone. The main crops grown in nearby areas are Wheat, rice, potatoes and pulses.

Socio-economic Status:

The study has been conducted by primary survey and secondary data source from Census of India 2011.

The primary socio economic study has been conducted in villages. The results are discussed below:

Core Zone: There is no habitation in the core zone

Buffer Zone: The total number of Households of the study area in rural village area is 5069 as per Census 2011.

In 2011, East Khasi Hills had population of 825,922 of which male and female were 410,749 and 415,173 respectively. In 2001 census, East Khasi Hills had a population of 660,923 of which males were 333,553 and remaining 327,370 were females. East Khasi Hills District population constituted 27.84 percent of total Maharashtra population. In 2001 census, this figure for East Khasi Hills District was at 28.50 percent of Maharashtra population.

There was change of 24.96 percent in the population compared to population as per 2001. In the previous census of India 2001, East Khasi Hills District recorded increase of 23.41 percent to its population compared to 1991.

Anticipated Environmental Impact & Mitigation Measures:

1. Land Environment: The proposed project of Limestone mining will definitely change the land use. However the area will be reclaimed by the following measures:

- ✓ To minimize the effect of mining plantation will be in done along the 7.5m boundary of the mine area and after the exhaustion of the pit whole area will be reclaimed into green cover. After the conceptual mining there will be a mine void which will be extensively planted.
- ✓ Mining operations will be confined strictly within the demarcated area.
- ✓ During plan period, gritty soil will have removed in 1st, 2nd & 3rd year and will be dumped at south-western side of the applied area with suitable precautions. Few quantity of the generated gritty soil would also be used for road maintenance and plantation program. After exhaustion of mineable reserve quarry will be reclaimed to the extent possible.
- ✓ The dust generation due to the mining will be minimized by sprinkling of water through water sprinkler.
- ✓ No effect on public buildings or monuments is envisaged as there are no public buildings/ monuments in the close vicinity of the mining lease area.

2. Water Environment: Total water requirement in the proposed mining project is 10.5 KLD. Drinking water will be sourced by from nearby villages by water tanker.

Mining will be restricted up to a depth of 20 m. There is no possibility of mining encountering any surface/subsurface water body. To avoid contamination of ground water from the open defecation by workers, toilets will be provided for the workers at site with septic tank followed by soak pit.

3. Air Environment: The air borne particulate matter is the main air pollutant contributed by opencast mining with drilling and blasting. Various emission sources are identified from the proposed mining operations. However, the area will be reclaimed by the following measures:

- ✓ Drilling machines will be equipped with dust collector arrangement and wherever required wet drilling arrangement will be used to prevent generation and spreading of dust.
- ✓ Personnel working on the drills and other mining activities will be provided with dust mask and other necessary Personal Protective Equipments (PPE). Health checkups will be done biannually to monitor the health of the workers.
- ✓ Regular maintenance of vehicles and machinery will be done.
- ✓ Water tankers with suitable sprinkling system will be deployed along haul roads and other un worked areas to control fugitive emission.

4. Noise Environment: The proposed mining operations will be carried by using latest equipments by open cast semi mechanized mining method. Hydraulic excavator will be used in excavation. Hence workers will be given protective gears such as goggles, dust masks, gloves, helmets and earmuffs. Plantation will be done to create cover from high noise. Task rotation of workers will be done exposed to noise.

5. Biological Environment: There is no Forest area diversion is required in the proposed mining. The fauna in the vicinity of the mine is restricted to few common species. There will hardly be any negative impacts on terrestrial eco-system comprising birds and animals as the ML area is only 1.00 Ha. On the contrary, with progressive growth of greenery, terrestrial eco-system will improve in course of time. There will be no Schedule-I species found in study area.

6. Socio- Economic environment: The project will enhance direct and indirect employment in the area. Therefore, overall economic development is much likely after the commencement of the project. The project will provide skill based training to the locals and will generate chance of indirect employment in the area.

7. Mine Waste: During plan period, gritty soil will have removed and will be dumped at south-western side of the applied area with suitable precautions. Few quantity of the generated gritty soil would also be used for road maintenance and plantation program. After exhaustion of mineable reserve quarry will be reclaimed to the extent possible. To prevent dump failure/soil erosion, toe-wall with weep-holes and garland drains will be provided towards lower side of the dumps to check the wash off during the rainy season.

8. Impacts due to transportation: The entire mineral will be transported by 10 to 20 MT capacity dumpers. During transportation overfilling of dumpers and consequent spillage of materials on the roads will be avoided by covering tarpaulin in the loaded trucks. As per study done there will not be any congestion due to proposed project on the road.

Environmental Monitoring Programme:

The environmental monitoring is important to assess performance of pollution control equipment installed at the project site. The sampling and analysis of environmental attributes including monitoring locations will be as per guidelines of the Central Pollution Control Board/State Pollution Control Board.

- ✓ Environmental monitoring will be conducted on regular basis by proponent to assess the pollution level in and around the project area
- ✓ Adequate budgetary provision shall be made towards implementation of Environmental Management Plan.

Risk Assessment & Disaster Management Plan: Mining will be carried out by semi mechanized opencast mining, with mining equipments as hydraulic excavator, dumpers etc involving drilling and blasting. Mining will be done under strict supervision hence the rate of operational risks is minimal.

Rehabilitation and Resettlement: The lease area does not cover any habitation. Hence the mining activity does not involve any displacement of human settlement. No public buildings, places, monuments etc. exist within the lease area or in the vicinity of the mine lease area. The mining operation will not disturb/ relocate any village or need resettlement. Thus, no adverse impact is anticipated.

Project benefits: The proposed mining project has a significant positive impact on the socio-economic environment and it will help sustain the overall development of the area.

The proposed project significantly contributes the economic development by providing direct employment to 39 people and indirect employment to many more people in the area.

PP will organize Camps for vocational training to generate employment.

Environmental Management Plan: Preparation of Environmental Management Plan (EMP) is required for formulation, implementation and monitoring of environmental protection measures during and after commissioning of the proposed mining project. The project cost is Rs. 18 Lakh and the EMP capital cost Rs. 2.0 Lakh and 3.5 Annual recurring cost).

Budgetary Provision for Environmental Measures:

Particulars	Details of Capital Investment		Details of Recurring Cost	
	Existing	Proposed	Existing	Proposed
Air Pollution Control	--	--	--	Rs 0.5 lakhs
Water Pollution Control	--	--	--	Rs 0.5 lakhs
Noise Pollution Control	--	--	--	Rs 0.3 lakh
Environment Monitoring and Management	--	Rs 1 lakhs	--	Rs 1.2 lakhs
Occupational Health	--	Rs 0.5 lakhs	--	Rs 0.5 lakhs
Green Belt Development and Maintenance	--	Rs 0.5 lakhs	--	Rs 0.5 lakhs
Total	--	Rs 2 lakhs	--	Rs 3.5 lakhs

Corporate Environmental Responsibility:

Corporate Environmental Responsibility (CER) refers to responsibility of a company to ensure positive impact on environment, consumers, employees, communities, stakeholders and all other members of public sphere. The CER activities are increasingly being taken up by the project proponents not only as fulfilling of mandatory provisions but also for the

formation and or enhancement of brand image. Besides the above, CER is seen more as a responsibility towards society rather than a business promotion activity.

The project cost of Muiong Limestone Mine over an area of 1.00 ha. is Rs 18 Lakhs. This project being a green field project, the Corporate Environment Responsibility (CER) Programme as the MoEF& CC office memorandum no. F.No. 22-65/2017-IA.III, dated 1st May, 2018 attracts 2% of the project cost, which amount to Rs 0.36 lakhs.

As per the guidelines no. (iii) of the above notification, proponent is committed to spend this Rs 0.36 lakhs or more in fulfilling of the local demand.

Occupational Health and Safety:

Effective implementation of measures suggested for pollution control will ensure safety and health of the workers.

Green belt development: It has been initiated by the proponent 1.00 ha will be planted during plan period. However as per conceptual plan 0.19 Ha lease area will be planted. Locally thriving species will be planted in consultation with forest department.

Among other environmental protection following measures are listed below:

- ✓ Sprinkling of water for dust suppression on mine haul roads.
- ✓ Regular Compaction & grading of haul roads and service roads to clear accumulation of loose material.
- ✓ Avoid overloading of dumpers and consequent spillage on the roads.
- ✓ Good maintenance of vehicles & machinery.

Water sprinklers of fixed type will be provided at the mine approach roads from mine face / benches to crush hopper to prevent the generation of dust.