

EXECUTIVE SUMMARY

OF

Sylva Limestone Mine

For Public Hearing

At

**Nongkulang Area, Khonjoy,
District- South West Khasi Hills,
State – Meghalaya
Lease Area: 1.70 Ha**

**Applicant:- Smt. Sylva R. Sangma
Address – Samgonggre,
District – East Khasi Hills, State-Meghalaya.**

Environmental Consultant

**ENVIRONMENTAL RESEARCH &
ANALYSIS**

**YASH SILVER HEIGHT, FAIZABAD RD,
MAHANAGR LUCKNOW, UTTAR PRADESH, PIN-226006
Email- pritam.geosia@gmail.com / pritam.kr.sahageol@gmail.com
Contact No. - +91- 9800458789 / 7001416506
Accredited by NABET (Quality Council of India)
For EIA Studies as 'B' Category Consultant**

EXECUTIVE SUMMERY

Introduction

Sylva Limestone mining lease over 1.70 ha. located at Nongkulang area, Khonjoy, District: South West Khasi Hills of Meghalaya was granted by the Divisional Forest Officer, SF & Territorial Division West & South West Khasi Hills, Meghalaya in favor of Smt. Sylva R. Sangma vide letter no. T/W&SW/20-21/LS/138/ML/59, on dated 14th January, 2021(ANNEXURE I). As per letter (Vide letter no.: T/W&SW/20/NOC(L)/41) issued by the Divisional Forest Officer, SF & Territorial Division West & South West Khasi Hills, Meghalaya on 12th January, 2021, proposed project is falls under non-forest land (Annexure II). Mine plan was approved by Mining Engineer, Directorate of Mineral Resource, Meghalaya, Shillong, on dated 21th April, 2021 (Vide letter No.: DMR/MM/110/2021/05) (Annexure-III). Beside the approval of mine plan, the cluster certificate vide letter no.: DMR/MM/110/2021/09 was also issued by Mining Engineer, Directorate of Mineral Resource, Meghalaya, Shillong on dated 16th July, 2021 (Annexure-IV).

This particular project is considered to be of 'B' category due to the size of the mining lease (1.70Ha). As per notification **S.O. 3977(E)** published on dated 14th August, 2018, our project is falls under categories "B2" and as per office memorandum **F.No.L-11011/175/2018-IA-II(M)** issued by MoEF&CC, Impact assessment Division, on dated 12th Dec, 2018, need to submit Environmental Impact assessment Study report. Further, 11 another projects or mines are coming within 500m. But total area is less than 100Ha, so application is made by proponent to the concern authority, i.e., **SEIAA (State Environmental Impact Assessment Authority)** for the statutory clearance of the proposed boulder-stone mining project.

Feature of the project

Project Name	Sylva Limestone Mine		
Location of mine	Nongkulang area, Khonjoy, South West Khasi Hills, District, Meghalaya.		
Latitude & Longitude	Boundary	Location (co-ordinates)	
	Pillar no.	Latitude	Longitude
	1	25°12'23.10"N	91°04'29.40"E
	2	25°12'21.70"N	91°04'34.06"E
	3	25°12'20.10"N	91°04'35.00"E
4	25°12'16.80"N	91°04'30.06"E	
Topo-sheet number	NIL – (Key plan prepared from the image,		

PREPARED BY

ENVIRONMENTAL RESEARCH & ANALYSIS

YASH SILVER HEIGHT, FAIZABAD RD, MAHANAGAR, ES-1|PAGE
LUCKNOW, UTTAR PRADESH 226006

DRAFT EIA REPORT FOR OPENCAST SEMI-MECHANISED LIMESTONE MINE (60,000TPA IN 1.70 HA) OF SMT. SYLVA R. SANGMA LOCATED AT NONGKULANG AREA, KHONJOY, DISTRICT-SOUTH WEST KHASI HILLS, MEGHALAYA.

	generated from Google Earth)
Land use	Private Land - 1.70Ha
Minerals of mine	Limestone
Total Mineable reserves	7,49,889Tonnes
Life of mine	13 years
Proposed production of mine	60,000 TPA (Average targeted annual production)
Method of mining	Opencast Semi –mechanized mining
No of working days	300days
Water demand	Total water requirement is about 3.5 KLPD (Drinking + Dust Suppression + Greenbelt)
Sources of water	Nearby water sources
Man power	14
Nearest railway station	Guwahati Railway Station. 128 Km (Aerial Distance)
Nearest airport	Umroi Airport, 105 Km (Aerial Distance)

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

PREPARED BY

ENVIRONMENTAL RESEARCH & ANALYSIS

YASH SILVER HEIGHT, FAIZABAD RD, MAHANAGAR,
LUCKNOW, UTTAR PRADESH 226006

ES-2|PAGE

DRAFT EIA REPORT FOR OPENCAST SEMI-MECHANISED LIMESTONE MINE (60,000TPA IN 1.70 HA) OF SMT. SYLVA R. SANGMA LOCATED AT NONGKULANG AREA, KHONJOY, DISTRICT-SOUTH WEST KHASI HILLS, MEGHALAYA.

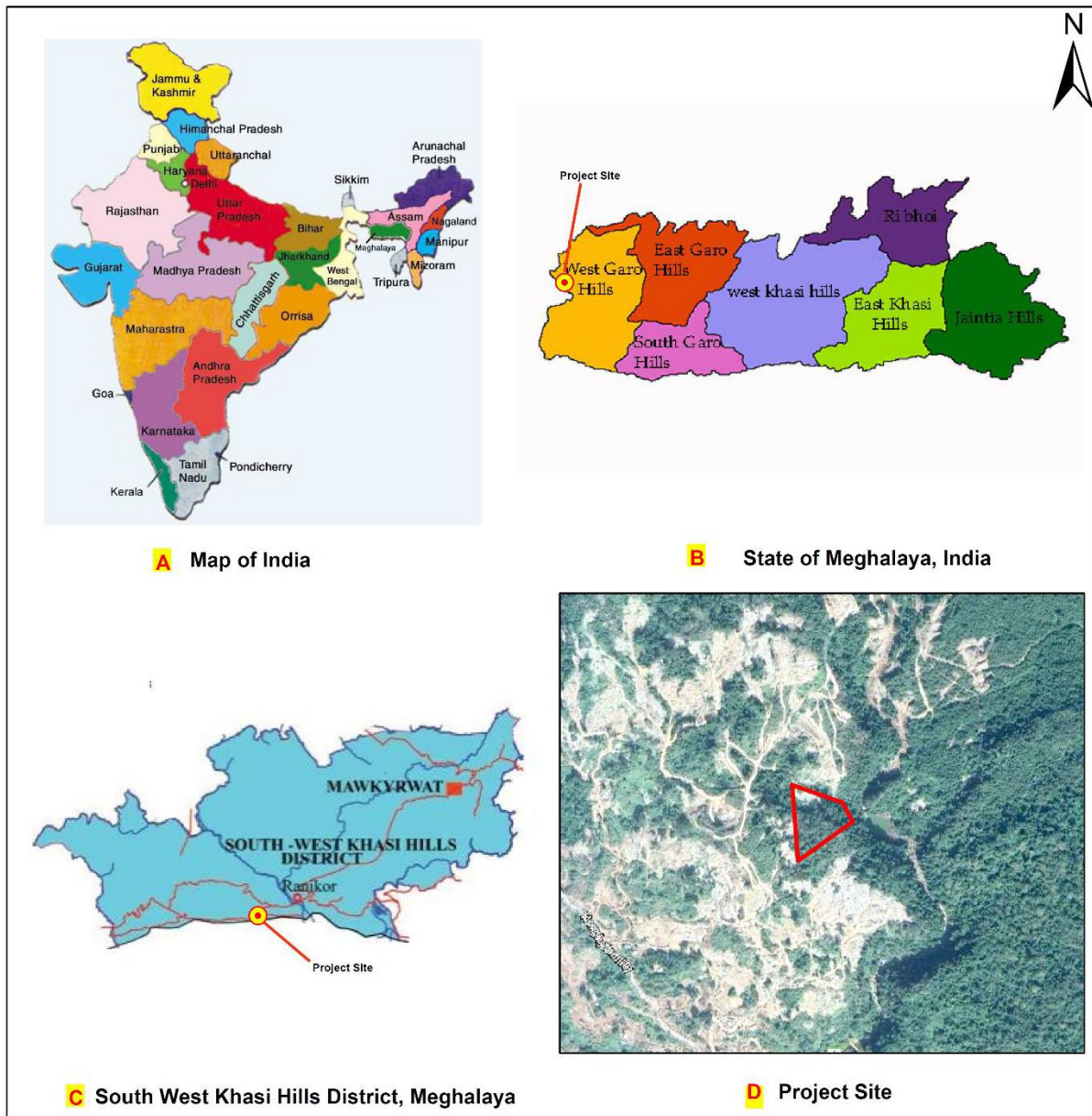


Figure No.1: Location Map

DRAFT EIA REPORT FOR OPENCAST SEMI-MECHANISED LIMESTONE MINE (60,000TPA IN 1.70 HA) OF SMT. SYLVA R. SANGMA LOCATED AT NONGKULANG AREA, KHONJOY, DISTRICT-SOUTH WEST KHASI HILLS, MEGHALAYA.

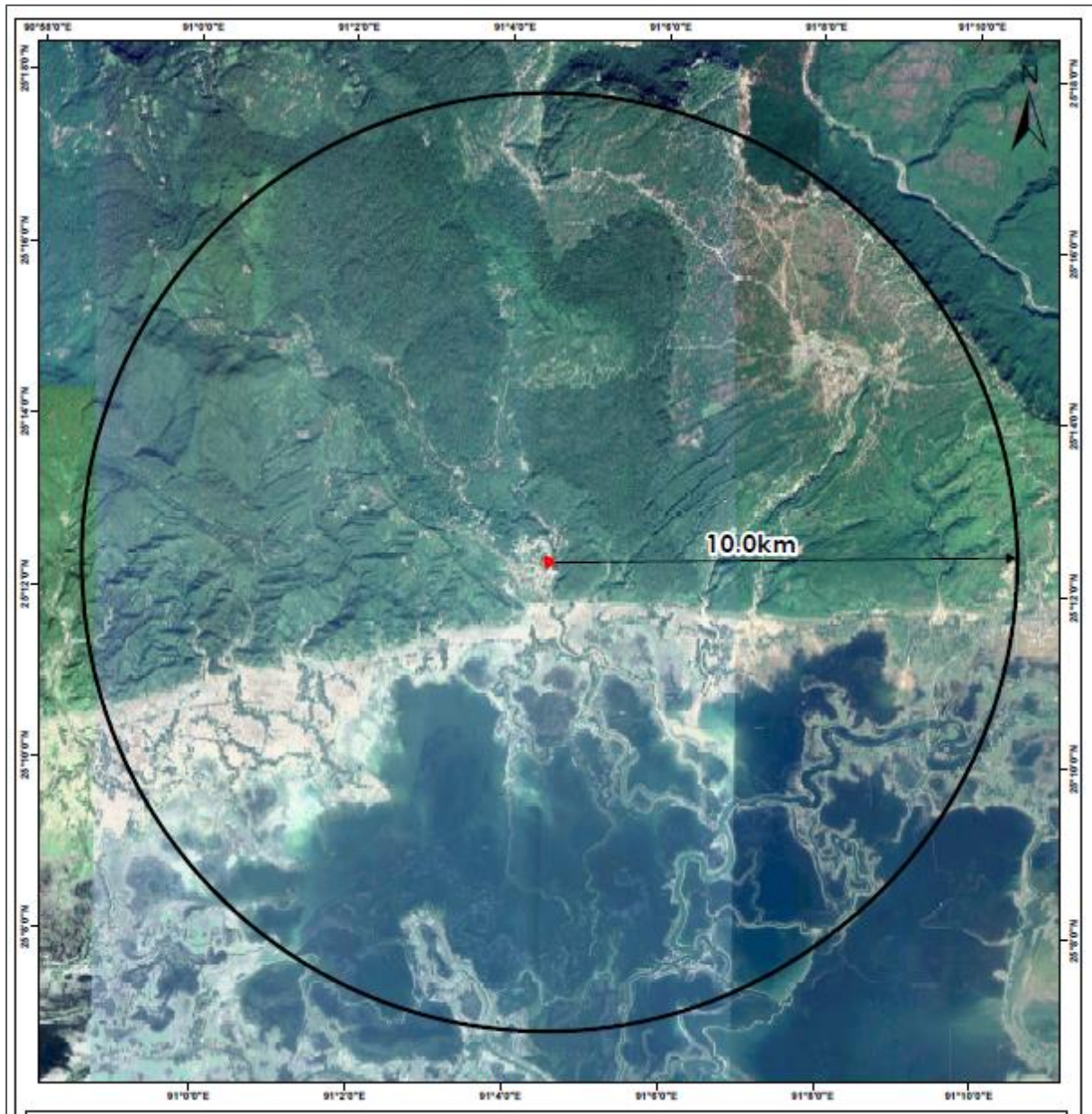


Figure No. 2: 10 km Radius Map around the Project Site

Basic Requirement for Proposed Project:

Details are presented below:

Basic Requirement for Proposed Project:

Details are presented below :

Sl. No	Requirement	Approx quantity
1.	HSD (Diesel)	100 liters/ day
2.	Explosives	104 Kg per week

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 5 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.
- ✓ The deposit in this area is massive and compact in nature. It is proposed to carry out Opencast Semi-Mechanized mining in this area during the plan period i.e., five years. Jack hammer drill machine will be deployed for drilling of 34mm diameter shot holes and upto 1600mm in bench and just 800mm in big boulders. For blasting of holes with burden and spacing of 0.8m x 1.2m in a staggered grid pattern would be adopted. 5mX5m bench will be developed to excavated the limestone.

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, NOx are well within the prescribed standards.

Village Name	Station	PM10	PM2.5	SO2	NOX	CO
Project Site	AQ1	57.5	28.1	12.3	14.3	0.59
Bagli	AQ2	68.1	27.0	12.0	15.8	0.58
Near Koliakona	AQ3	66.4	27.3	12.3	14.4	0.69
Khonjoy	AQ4	58.8	27.4	11.5	13.5	0.43
Nongjri	AQ5	70.7	30.5	12.2	14.5	0.52
Near Rongdigre	AQ6	59.9	29.3	12.2	14.5	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)	55.4	47.5	52.5	54.9	52.5	47.9	45.8	40.2	42.4	44.5	41.2	40.3
(N2)	56.9	46.5	53.2	55.5	52.8	47.7	48.6	42.4	46.1	47.9	45.6	42.4
(N3)	54.7	46.1	52.6	54.6	52.5	47.5	48.6	41.6	45.6	47.6	44.8	41.7
(N4)	53.9	46.1	51.5	53.5	51.8	47.9	47.4	42.3	44.9	46.9	44.1	42.4
(N5)	56.2	49.5	54.2	55.7	54.4	49.9	46.2	41.4	44.2	46.0	44.0	41.8
(N6)	54.2	46.3	51.8	53.8	52.0	48.2	45.9	41.3	44.0	45.6	44.0	41.4

PREPARED BY

ENVIRONMENTAL RESEARCH & ANALYSIS

YASH SILVER HEIGHT, FAIZABAD RD, MAHANAGAR,
LUCKNOW, UTTAR PRADESH 226006

ES-6 | PAGE

Water Environment

The detailed analysis result of surface water quality in the study area is given in Table No. C3-15. 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:

SL. NO.	Category	Existing (ha)	End of mine life
1.	Agricultural	--	--
2.	Mined out road	0.16	--
3.	Barren land	1.54	--
4.	Barrier under green-belt	--	0.39
5.	Afforestation	--	0.88
6.	Pond	--	0.43
Total Lease Area		1.70	1.70

Soil:

Parameters	Unit	S1	S2	S3	S4	S5
Soil colour	----	Brownish	Brownish	Brownish	Brownish	Brownish
pH	----	7.1	7.3	7.3	7.2	7.1
Electrical Conductivity	µmhos /cm	287	182	255	330	320
Moisture	%	6.5	5.3	4.3	4.81	3.35
Clay	%	31	43	38	29	33
Silt	%	28	26	28	37	39
Sand	%	41	31	34	34	28
Infiltration Rate	cm/hr	1.26	1.02	1.14	1.24	1.34
Bulk density	gm/cm ³	1.49	1.32	1.4	1.31	1.45
Porosity	%	44.0	48.2	46.1	45	49
Nitrogen as N	kg/ha as N	161	192.5	107	284	263
Phosphorus	kg/ha as P	18	41.7	22.5	37.1	35.7
Potassium as K	kg/ha as K	218	237.5	174.5	228.2	221
Organic Carbon	%	0.81	1.02	0.94	0.92	0.76
Organic matter	%	1.39	1.75	1.62	1.59	1.31

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 are 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: Out of the total West Khasi Hills population for 2011 census, 11.24 percent lives in urban regions of district. In total 43,105 people lives in urban areas of which males are 21,335 and females are 21,770. Sex Ratio in urban region of West Khasi Hills district is 1020 as per 2011 census data. Similarly child sex ratio in West Khasi Hills district was 981 in 2011 census. Child population (0-6) in urban region was 8,904 of which males and females were 4,494 and 4,410. This child population figure of West Khasi Hills district is 21.06 % of total urban population. Average literacy rate in West Khasi Hills district as per census 2011 is 88.02 % of which males and females are 87.96 % and 88.08 % literates respectively. In actual number 30,105 people are literate in urban region of which males and females are 14,814 and 15,291 respectively.

As per 2011 census, 88.76 % population of West Khasi Hills districts lives in rural areas of villages. The total West Khasi Hills district population living in rural areas is 340,356 of which males and females are 172,380 and 167,976 respectively. In rural areas of West Khasi Hills district, sex ratio is 974 females per 1000 males. If child sex ratio data of West Khasi Hills district is considered, figure is 965 girls per 1000 boys. Child population in the age 0-6 is 78,310 in rural areas of which males were 39,848 and females were 38,462. The child population comprises 23.12 % of total rural population of West Khasi Hills district. Literacy rate in rural areas of West Khasi Hills district is 76.54 % as per census data 2011. Gender wise, male and female literacy stood at 77.33 and 75.73 percent respectively. In total, 200,573 people were literate of which males and females were 102,493 and 98,080 respectively.

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.
- ✓ The expected quantity of gritty soil that will be generated from the lease area excluding the safety barrier is around 3,617 m³. It will be removed in stages and stored in a specific stack-yard on the Western side of the safety barrier till the time it is needed for reclamation of the mined out area.
- ✓ 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 3.5 KLD. Drinking water will be obtained from nearby sources. by from nearby villages by water tanker. Mining will be restricted up to a depth of 37 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 check-ups 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 unworked 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. Diesel operated excavator ,jackhammer Drill machine ,Air Compressor 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 1.70 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 southern 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 through trucks. Transportation shall be done by 5 no. of 10 tonner 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

DRAFT EIA REPORT FOR OPENCAST SEMI-MECHANISED LIMESTONE MINE (60,000TPA IN 1.70 HA) OF SMT. SYLVA R. SANGMA LOCATED AT NONGKULANG AREA, KHONJOY, DISTRICT-SOUTH WEST KHASI HILLS, MEGHALAYA.

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: There will be no rehabilitation and resettlement on account of mining. There is no human habitation at the project site and the land is deemed forest land.

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 30 people and indirect employment to many more people in the area.

PP will organize Camps for vocational training to generate employment.

Environmental Management Plan: The costs regarding implementation of EMP are presented under various headings in the Tables below. The updated capital cost and recurring cost (per annum) for the environmental management facilities of the mining project works out to Rs. 2 lakhs (Rupees Two Lakh only) and Rs. 4.1 lakhs (Rupees Four Lakh Ten Thousand only) respectively.

Budgetary Provision for Environmental Measures:

Particulars	Details of Capital Investment		Details of Recurring Cost	
	Existing	Proposed	Existing	Proposed
Air Pollution (dust suppression along road, water sprinklers)	--	0.5 lakhs		1.20 lakhs
Plantation & Maintenance	--	0.2 lakh		0.40 lakh

PREPARED BY

ENVIRONMENTAL RESEARCH & ANALYSIS

YASH SILVER HEIGHT, FAIZABAD RD, MAHANAGAR,
LUCKNOW, UTTAR PRADESH 226006

ES-12|PAGE

DRAFT EIA REPORT FOR OPENCAST SEMI-MECHANISED LIMESTONE MINE (60,000TPA IN 1.70 HA) OF SMT. SYLVA R. SANGMA LOCATED AT NONGKULANG AREA, KHONJOY, DISTRICT-SOUTH WEST KHASI HILLS, MEGHALAYA.

Environmental Monitoring & Reclamation	--	--		1.40 lakh
Maintenance of Settling Tank, Garland Drains etc.	--	1.0 lakh		0.50 lakh
Personal Protective Equipment	--	0.3 lakh		0.60 lakh
Total	--	2.0 lakh		4.1 lakh

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 Sylva Limestone Mine over an area of 1.7 ha. at Nongkulang area, Khonjoy, South West Khasi Hills District, Meghalaya in favour of Smt. Sylva R. Sangma. is Rs 27.5 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 0.55 lakhs say 0.60 Lakh.

As per the guidelines no. (iii) of the above notification, proponent will be trying to spend more, i.e., Rs 1.375 lakhs in fulfilling of the local demand.

S. No	Activities	Cost
1	Quarterly medical checkup camp will be organized for the villagers of the nearby villages of the applied area by a qualified Doctor (M.B.B.S.) for minimum 60 nos of villagers @ Rs 10,000/- per quarter. Total 4 x 10,000/- = Rs 40,000/-	40,000/-
2	To promote education by providing Books, Copies, School Dresses to the nearby village school's needy students.	35,000/-
3	Water supply arrangement & Sanitation for local villagers	30,000/-
4	Maintenance & Construction of Village roads.	72,500/-
CER plan		1,37,500/-

PREPARED BY

ENVIRONMENTAL RESEARCH & ANALYSIS

YASH SILVER HEIGHT, FAIZABAD RD, MAHANAGAR,
LUCKNOW, UTTAR PRADESH 226006

ES-13|PAGE

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 0.18 ha will be planted during plan period. However as per conceptual plan 0.37 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.