SUMMARY

INTRODUCTION OF PROJECT&PROPONENT

Environmental Impact Assessment report is prepared to comply with the Terms of Reference (TOR) received from SEAC vide Letter no. 216/SEIAA dated 22 Feb, 2023 under EIA notification of the MoEF dated 14-9-2006, as amended on 1st Dec 2009 & 4th April 2011 of MoEF, Govt. of India, for seeking environmental clearance for applied mining lease area measuring above 5.0 ha (individual or in cluster form) falling under category "B1".The lease M/s Shri Shakti Mines & Minerals, a partnership firm has applied application for hining lease for soapstone mineral measuring over an area of 8.883ha in Village Kularang Chaura (Tok Rang Chaura), Tehsil & Distt-Bageshwar (U.K). State Govt. has considered granting mining lease vide letter no. 1161/VII-A-1/2021/01(16)/21 on dated 25.03.2022. At the time of demarcation 8.883ha considered for grant of mining lease.

1- M/s Shri Shakti Mines and Minerals near taxi stand Pindari Road Bageshwar partner

2- Mr. Kishan Singh Danu son of Mr. Harish Chandra Singh, resident of Kunwari Aithan

3- Shri Vikram Singh C. Parihar S/o Shri Chandra Singh Parihar, Resident Village Amtauda, Tehsil and District Bageshwar,

4- Shri Vishwavijay Singh S/o Shri Kishan Singh Resident Kunwari, Tehsil Kapkot Hall Taxi Stand Pindari Road Bageshwar, Tehsil and District Bagoshwar,

5- Shri Ravindra Singh Bankoti S/o Shri Kirpal Singh Bankoti, Resident Village Bankot, Tehsil Ganai Gangoli District Pithoragarh,

6- Shri Ravindra Singh S/o Shri Chanchal Singh, Resident Village Bankot, Tehsil Ganai Gangoli District Pithoragarh

The proposed mining project is categorized as category 'B1' project. The EIA-EMP report is prepared as per the TOR granted under the EIA Notification. Further to assess the impact on environment due to proposed mine, it is necessary to ascertain present status of environment prevailing at the project site and proposed operation including identification and Assessment of impact on the environment.

Location

The mining area is located in Village Kularang Chaura (Tok Rang Chaura), Tehsil & Distt-Bageshwar (U.K). Location of the project is shown in Fig. 1.1. The area is situated in Village KularangChaura (Tok Rang Chaura). The area is about 34 Km from Bageshwar on Bageshwar-Dafot-Malta PWD road. The location plan is shown in Plate No.1& Google image showing mining lease.

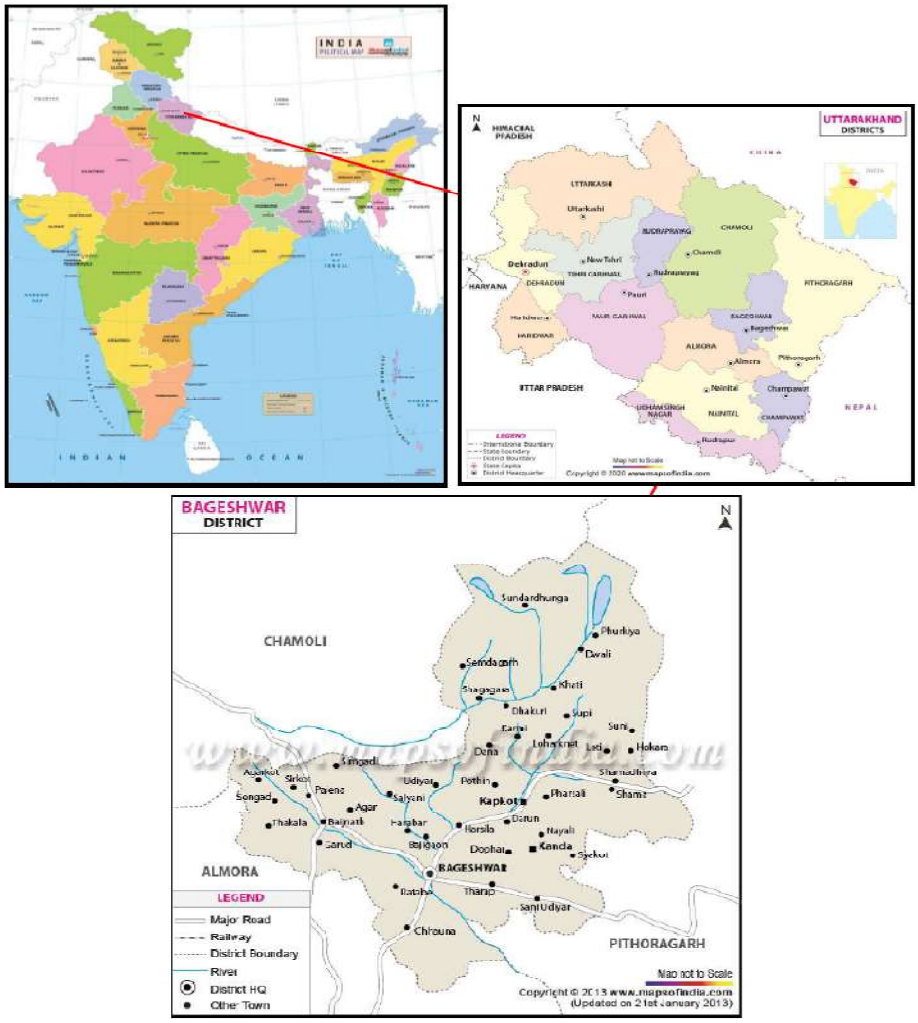

FIGURE 1.1: THE PROPOSED PROJECT LOCATION

Pillar No	N	E
1	29°46'19.73"N	79°51'54.43"E
2	29°46'19.73"N	79°51'52.40"E
3	29°46'17.10"N	79°51'52.70"E
4	29°46'17.30"N	**79°51'47.11"E**
5	29°46'21.30"N	79°51'51.90"E
6	29°46'21.08"N	79°51'58.14"E
7	29°46'23.98"N	79°51'57.89"E

8	29°46'24.03"N	79°52'4.12"E
9	29°46'26.18"N	79°52'4.22"E
10	**29°46'26.70"N**	79°52'5.12"E
11	29°46'19.20"N	**79°52'8.19"E**
12	**29°46'14.94"N**	79°52'7.71"E
13	29°46'17.23"N	79°52'0.24"E
14.	29°46'17.05"N	79°51'53.97"E

RESERVES

Description of Geological reserve has been given in the table below:

Estimation All quantities of soapstone occurring within restricted zone&4m depth below the surface has been considered as inferred mineral resource (333).

The details calculation of reserve & resources in given in **Table No. 2.**

All quantities of soapstone occurring 8m depth from surface has been considered under proved mineral reserves (G1) & excluding thickness of overburden 2.0m, the net thickness of soapstone bearing strata has been considered as 8.0m. Further 4m depth from proved limit has been considered under probable mineral reserves (G2).

Reserves & Resources along three axis as per UNFC is as below:

Category	Reserves (Tonnes)	Category	Resources (Tonnes)	Category	Resources (Tonnes)
111	283795	211	13822	333	184746
122	141305	222	7540	334	Nil

MINING - OPEN CAST MINING:

1. Existing Method of Mining: It is fresh application for mining lease & mining operations yet to be commenced.

2. Proposed Method of Mining: The mine is proposed to be worked by opencast semi-mechanized method using JCB excavator on contract. The overburden & interburden shall be removed by means of excavator. The soapstone shall be extracted with the help of excavator as well as manually with the help of hand tools like crow bar, chisels, pickaxe, hammers, and spade.

Mineral will be packed in bags and will be transported on mule/*khachar to* aerial ropeway point (Inlet point) and from where it will be further transported by aerial ropeway to the road head then from road head the mineral is transported by trucks to main market Haldwani. Drilling & blasting shall not be required/ proposed during the mining operations. The soapstone shall be dressed manually & stacked separately. No further beneficiation shall be undertaken during first five years.

The salient points of proposed method of mining are given below:-

- Mining shall be carried out in two pits.
- It will be opencast semi-mechanized method mine.
- Average thickness of soil has been considered as 0.50 m. & it shall be stacked separately.
- Top soil, overburden & interburden shall be removed by means of excavators.
- Height & width of benches shall be kept 3m and 3m.
- Face slope of benches shall be 70^0 with 45^0 overall pit slope.
- Backfilling will be undertaken after winning the soapstone up to full economical depth. The interburden and top soil will be temporarily dump separately towards the slope of working pit and shall be used for backfilling from third year onwards. Interburden shall be filled into mined out pit and later on thin soil shall be carped over it to restore maximum original topography of the area.
- Generally small quantities of magnesite interlocked with soapstone that is inseparable in nature so 5% of total recoverable soapstone has been considered as mining losses.

WATER DEMAND

The water required is mainly for dust suppression, green belt development and drinking during mining operations. The total requirement is assessed around **4 KLD**. Only fresh water will be used for drinking purpose. The requirement of Water will be fulfill from nearby available sources& Water conservation practices (dust suppression & Green belt development) within the proposed lease area. The break up for water requirement is given below:

Table No.11.3: Water Requirement

S. No.	Purpose	Water Requirement (KLD)
1.	Drinking	2.0
2.	Dust Suppression	1.0
3.	Miscellaneous	1.0
TOTAL		**4.0**

10.5 BASE LINE DATA

This study contains the description of baseline studies of the 10 km radius of the area Pagana Soapstone mine. The data collected has been used to understand the existing environment

scenario around the proposed mining project against which the potential impacts of the project can be assessed. Environmental data has been collected in relation to proposed mining for: -

(a) Air

(b) Noise

(c) Water

(d) Soil

(e) Ecology and Biodiversity

(f) Socio-economy

Table 11.4: BASELINE ENVIRONMENTAL STATUS

Attribute	Baseline status
Ambient Air Quality **Ambient air quality was monitored at 5 locations withina 5 km radius of**	Ambient Air Quality Monitoring reveals that the maximum & minimum concentrations of PM10 for all the 12 AQ monitoring stations were found to be 89.30µg/m^3 at AAQ-2 and 60.57µg/m^3 at AAQ-5, respectively, Whereas the maximum & minimum concentrations of PM2.5 for all the 12 AQ monitoring stations were found to be 41.65µg/m^3 at AAQ-2 and 24.33µg/m^3 at AAQ-1, respectively. As far as the gaseous pollutants SO_2 and NO_2 are concerned, the prescribed NAAQS limit of 80µg/m^3 for residential and rural areas has never surpassed at any station. The maximum & minimum concentrations of SO_2 were found to be 9.9µg/m^3 at AAQ-1 &5.1µg/m^3 at AAQ-3 respectively. The maximum & minimum concentrations of NO_x were found to be 31.5µg/m^3 at AAQ-5 &12.6µg/m^3 at AAQ-5 respectively.

Noise Levels	Noise monitoring reveals that the maximum & minimum noise levels at day time were recorded as 44.46 dB(A) at NQ-1 & 39.42 dB(A) at NQ-5 respectively. The maximum & minimum noise levels at night time were found to be 42.63 dB (A) at NQ-1 & 35.66 dB(A) at NQ-4 respectively. There are several other sources in the 10 km radius of study area, which contributes to the local noise level of the area. Traffic activities as well as activities in nearby villages and agricultural fields add to the ambient noise level of the area.
Water Quality	5 Groundwater samples and 3 surface water samples were analysed and concluded that: The ground water from all sources remains suitable for drinking purposes as all the constituents are within the limits prescribed by drinking water standards promulgated by Indian Standards IS: 10500.
	From the surface water analysis it is evident that most of the parameters of the samples comply with 'Category C' standards of CPCB Drinking water source with Non-conventional treatment followed by disinfection.
Soil Quality	Samples collected from identified locations indicate the soil is sandy type and the pH value ranging from 7.16 at SQ1 to 7.56 at SQ4 which shows that the soil is alkaline in nature. Potassium is found to be from 116.2mg/kg (SQ2) to 131.5 mg/kg (SQ4). The water holding capacity is found in between 34.8% (SQ1) to 38.7 % (SQ3).
Ecology and Biodiversity	There are no Ecologically Sensitive Areas present in the study area, but many reserved forests surround the project area.

Socio-economy	The implementation of the Mine will throw opportunities to local people for both direct and indirect employment. The study area is still lacking in, health, housing, water, electricity etc. It is expected that same will improve to a great extent due to proposed mining project and associated industrial and business activities.

11.6 BIOLOGICAL ENVIRONMENT

Area supports moderately healthy vegetation, the main forest species are scattered all over the hills, riparian vegetation found along the Saryu River and upper reaches of hills covered with pine forest. Species of Quercus, Siris, Sisam, Subabul, Neem, etc. found in mixed deciduous forest. Ground vegetation mainly consists of grasses and small shrubs. Useful fodder grasses, Cynodondactylon, Eleusineindica, Trifoliumalexandrinum, etc. can be seen growing in the area. The large weeds which infest uncultivated tracts are Calotropisprocera, Canabissativa, Lantana camara and Ziziphusjujuba. Other noxious weeds and those which appear in crops are Carthamusoxyacantha, Argemonemexicana, Solanumxanthocarpum, Partheniumhysterophorus and Cannabis sativa.

Flora of the Core zone

The core zone comprises of private agriculture land, where mining operation is proposed. There is no tree species found in core zone. Few shrub species like lantana, ank, cannabis etc are grown as weed inarea. No ecologically sensitive plant species has been reported from this area.

Flora of the Buffer zone: Buffer zone of the proposed project falls in Lesser and Greater Himalaya region. Many tree species are planted in the area because of their usefulness, economic and aesthetic values. The tree species observed in the area are, Aam (Mangiferaindica), Jamun (Syzygium cumini), Bail (Aegle marmelos), Dakain (Melia azedarach), Neem (Azadirachtaindica), Peepal (Ficusreligiosa),Bhimal (Grewiaoptiva) etc.

In agricultural waste land and along the road side, growth of weeds like Argemonemexicana, Cannabis sativa, Cenchruscilitaris, Lantana camara, Partheniumhysterosporus, etc. are very common. These weeds are affecting the agricultural productivity of the region due to fast growth, short life cycle and enormous production of seeds.

Vegetation in and around human settlement:

Vegetation pattern in villages and surrounding areas are slightly different from the rest of the areas. The common species grown near villages are mostly edible or useful plants such as Mangiferaindica, Azadirachtaindica, Albizialebbeck, Delonixregia, Ficusreligiosa, etc.

Table 11.5Anticipated impact and mitigation measures for biological environment

Impact Predicted	Suggestive measure
Disturbance to free movement / living of wild fauna viz. Birds, Reptiles etc.	• If birds are noticed crossing the core zone, they will not be disturbed at all; • Labors will not be allowed to discards food, plastic etc., which can attract animals/birds near the core site; • Only low polluting vehicles having PUC will be allowed for carrying mining materials. • Noise level will be maintained within permissible limit (silent zone-50dB (A) during day time or residential zone 55dB (A)) as per noise pollution (regulation and control), rules, 2000, CPCB norms.
Disturbance of riparian ecosystem/ wetlands	• The riparian ecosystem or the wetlands will not be destroyed by the mine owners.
Monitoring of upstream and downstream water quality	• Water quality will be monitored from upstream and downstream area to assess the impact on water quality and plankton and mining activity will be controlled to maintain the clean water conditions.

11.7 LAND ENVIRONMENT

Various components of land environment have been identified for study of impact of the mine operations. Details of the same are given below:

Solid waste generation and management

There is little top soil generation from the mine. The waste to be generated will be over burden\ side burden which will be utilized in the concurrent back filling. The soil will be temporarily stored and used for Green belt development. As the mineral is non-replenishable, the excavated area at the end of mine life will be converted into an open benched. The measures to be taken are likely to bring forth positive impact on the core zone landscape. The aesthetic environment of the core zone will have a positive impact by the time mining ceases in the area with proposed green belt development.

AIR ENVIRONMENT

Anticipated impacts and evaluation

Information on air quality was studied and various modelling techniques predicted that the mining activity will not affect the air quality in a significant manner. In mining operations, loading, transportation and unloading operations may cause deterioration in air quality due to handling dry materials. In the present case, from the Air monitoring results it is anticipated that the incremental pollution will remain within the limit and becomes insignificant outside the mine lease area. Also, the blasting is not prescribed and will be only done in the utmost requirement and that too for a very short duration of mere significance.

Mitigation measures

The only air pollution sources are the road transport network of the trucks. The dust suppression measures like water spraying will be done on the roads. Utmost care will be taken to prevent spillage from the trucks. Overloading will be prevented. Plantation activities along the roads will also reduce the impact of dust in the nearby villages.

WATER ENVIRONMENT

To find out the effect on ground water an extensive hydro-geological study has been conducted and from the study it can be safely concluded that there is no noticeable effect on surrounding ground water resource due to mining. The mining activity does not require water.

Mining of soapstone does not have any significant impact on the water quality and parameters as the

mining does not intercept with the ground water level.

In this project, it is not proposed to divert or truncate any stream. No proposal is envisaged for pumping of water from the river. There will not be any adverse impact on surface hydrology and ground water regime due to this project. The contractor will adhere to all guidelines and rules for proper and scientific method of mining during the period of extracting the Soapstone. Thus, the project activities shall not have any adverse effect on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality.

NOISE ENVIRONMENT

Anticipated impacts and evaluation

Noise generated at the mine is due to semi-mechanized mining operations and truck transportation activities. The noise generated by the mining activity dissipates within the mine. There is no major impact of the mining activity on the nearby villages. However, pronounced effect of above noise levelsis felt only near the active working area.

Noise at lower levels (sound pressure) is quite acceptable and does not have any bad effect on human beings, but when it is abnormally high- it incurs some maleficent effects.

In this case the impact of noise on the nearby settlements is negligible as they are far located from the mine workings.

Mitigation measuresOn-site

a) Blasting No blasting is proposed.

b) Maintenance of Machinery: Regular maintenance of machinery will keep the generated noise level below the minimum prescribed limit i.e. not exceeding 90 dB (A) at a distance of 2 m from the machine. All machines will be as per stipulated standards and will be used at their optimum capacity.

c) Trained Operators: Only trained operators will be allowed to operate machines during mining to reduce any chance of safety failures.

d) Vegetation: Plantation of trees along the bank will be done to dampen the noise, if possible.

e) Hearing Protection: All the miners will be provided with Personal Protective equipments such as ear-muffs.

f)Phasing out the old and worn out trucks.

Off-site

The off-site receptors are not significantly affected as they are located far away from the mine site.

But some disturbances due to vehicle movement cannot be avoided. Plantation will be done along the roadsides, civic amenities, etc. which will more or less dampen the off-site noise level.

TRAFFIC ANALYSIS

Results

From the traffic analysis it can be seen that the V/C ratio is likely to change to 0.20 and 0.31 with LOS being "B" 'very good' as per classification. So the additional load on the carrying capacity of the

SOCIO-ECONOMIC ENVIRONMENT

The implementation of the soapstone mining project will throw opportunities to local people for both direct and indirect employment. The project will also provide impetus to industrialization of the area. With the implementation of the proposed mining project the occupational pattern of the people in the area will change making more people engaged in industrial and business activities rather in agriculture. Thus there will be a gradual shifting of population from agriculture to mining and industry. Further, the mining and industrial activities in the area may lead to rapid increase in population and thereby urbanization. Due to urbanization of the area, employment opportunities will further increase.

ENVIRONMENTAL MANAGEMENT PLAN (EMP)

Proper environmental management plan is proposed for Simkhet Soapstone mining project to mitigatethe impact during the mining operation.

- No overburden or loose sediments will be kept in the working benches particularly during monsoon months.
- Garland drain is proposed to arrest the inflow of run-off water to the quarry area.
- The possibility of the project activity contributing to the pollution of watercourses of the region or to the ground water regime is so less that this does not significantly constitute an area of concern.
- Construction of well-compacted roads.
- Regular water spraying on haul roads and waste dumps by tankers.
- Provision of dust collectors for the drilling & crusher machines.
- Supply of personal protective equipments like dust masks, earplugs, helmets, safety boots etc.

forthe miners.

- Plantation of wide leaf trees, creepers, tall grasses around quarry sites, waste dumps, road andother surrounding barren zones.
- Proper and regular maintenance of vehicles, compressors and jack hammers.
- Provision of supplying earplugs for jack hammer drillers and crusher operators.
- Care should be taken that noise produced during vehicles movement for carrying soapstone is within the permissible noise level.
- Carrying of blasting (if any) only during daytime (not during cloudy weather and when strong wind is blowing towards residential areas). Blasting will be carried out with limited explosives at atime so that the noise generation can be well maintained with the prescribed limits.
- Provision of Green Belt (thick foliage) along the lease boundary and road.
- Strict observance of the provisions of Acts, Rules and Regulations in respect of safety both bymanagement and the workers.
- Proper planning and designing of work in order to reduce the risk of hazards.
- Specific instructions and supervisions of working where danger due to fall of side (overhanging, undercutting of bench, fall of objects from higher benches/places is apprehended).
- Training of work persons and the officials.
- Since the haul road will be of considerable length, due importance will be given in the construction of road. The width of road will be maintained more than thrice the width of the vehicle. A code of traffic rules will be implemented.
- A code of practices for tipping in stock piles/dumping of overburden at dump yard and loading point will be implemented.
- In respect of contract work, safety code for contractors and workers will be implemented.
- They will be allowed to work under strict supervision of statutory person/officials only after they will impart training at vocational training centers. All personal protective equipments will be supplied to them.
- A code of practice for fighting fire will be implemented.
- Competent persons like fitters, mechanics will have imparted with special attention to project impact.

- The safe handling of materials while attending to repairs, maintenance of HEMM.
- Provision of pit safety committee meeting every month (20th day) to discuss the safety of themines and the persons employed.
- Celebration of annual mines safety week and environmental week in order to develop safetyawareness amongst employees.
- Pre joining medical check-up shall be done and regular health check-up in 6 monthly intervals isplanned for the employees.
- Care will be taken that no cooking, or burning of woods will be allowed in the adjoining area.
- If some causality or injury to animal occurs, it should be informed to forest department and propertreatment should be given.
- Corridor movement of wild mammals (If exists) should be avoided.

11.14 ENVIRONMENTAL MANAGEMENT PLAN IMPLEMENTATION

Environmental Management Plan serves no purpose if it is not implemented with true spirit. Some loopholes in the EMP can also be detected afterwards when it is implanted and monitored. Thus, an implementation and monitoring programme has to be prepared.

The major attributes of environment are not confined to the mining site alone. Implementation of proposed control measures and monitoring programme has an implication on the surrounding area as well as for the region. Therefore, mine management should strengthen the existing control measures as elaborated earlier in this report and monitor the efficacy of the control measures implemented within the mining area relating to the following specific areas:

a) Collection of air and water samples at strategic locations with frequency suggested and by analyzing thereof. If the parameters exceed the permissible tolerance limits, corrective regulation measure will be taken.
b) Collection of soil samples at strategic locations once in every year and analysis thereof with regardto deleterious constituents, if any.
c) The effectiveness of drainage system depends upon proper cleaning of all drains provided in the surrounding of mine area. Any blockage due to siltation or loose material will be checked at least once in a month.
d) Measurement of water level fluctuations in the nearby ponds, dug wells and bore wells.

e) Measurement of noise levels at mine site, stationary and mobile sources, and adjacent villages willbe done in every quarter of the year.

f) Plantation/afforestation as should be done as per program. Regular watering of plant and fencing to protect them from cattle/goats has to be provided. Post plantation, the area will be regularly monitored in every season for evaluation of success rate. For selection of plant species local people should also be involved.

g) Mine management will be in regular touch with local surrounding villages to update the various developmental schemes made by them. They will also consider any immediate requirement, whichcould be taken care of in near future.

h) Mine management will be in regular touch with State Pollution Control Board, DGM, IBM etc., bind to send them annual progress report. Any new regulations considered/imposed by State/Central Pollution Control Board for the industry will be followed.

BUDGET ALLOCATION FOR EMP IMPLEMENTATION

Table 11.7: COST OF EMP

S. No.	Measures	Capital Cost (In Rs.)	Recurring Cost (In Rs.) (for Subsequent Years)
1	Pollution Control Dust Suppression	1,00,000	1,00,000
2	Pollution Monitoring Air pollution Water pollution Soil Pollution Noise Pollution	 1,00,000 60,000 40,000 20,000	 1,00,000 60,000 40,000 20,000
3	Plantation/ Green belt	3,67,875	6,67,875
4	Reclamation of mined out area	--	10,09,380
5	Occupational Health	1,00,000	50,000
Total		7,87,875	20,47,255

MONITORING SCHEDULE AND PARAMETERS

Table 11.8: Monitoring Schedule and Parameters

S.No.	Description of Parameters	Schedule and Duration of Monitoring
1	**Air Quality** a) In the vicinity of the mine b) In the vicinity of the transportationnetwork	24 hourly samples twice a week for one month in each season except monsoon season
2	**Water Quality** a) Water quality of surface and groundwater around the site b) Drinking water must conform to drinking water standards	Once in a season for 4 season in a year
3	Ambient Noise Level	Twice in a year for couple of years & then once in a year
4	Soil Quality	Once in two years on project monitoring area
5	Inventory of Flora (tree plantation, survival etc.)	Once in two years on project monitoring area
6	Socio-economic condition of local, population, physical survey	Once in 3 or 4 years

BENEFIT OF MINING

The opening of the proposed project will enhance the socio-economic activities in the adjoining areas.

This will result in following benefits: -

- Improvements in physical infrastructure.
- Improvements in Social Infrastructure.
- Increase in Employment Potential
- Contribution to the Exchequer.
- Prevention of illegal mining.
- During and Post-mining enhancement of green cover.

CER Project Details

Soapstone mine has proposed to provide financial assistance of Rs. 3.5 lakhs every year for the

development of social infrastructure of the area.

Following measure will be taken to improve the Social infrastructure of the study area:

- Health Camps. (Rs. 50,000).
- Up gradation of toilets of government school in nearby villages. (Rs. 1,50,000).
- Distribution of Books and Notebooks among meritorious girl, Child belonging to Scheduled Casteand Scheduled Tribe population (Rs. 50,000).
- Repair and Painting of School Building in the project village (Rs. 1,00,000).