

EXECUTIVE SUMMARY

(In English & Hindi)

Of

Draft EIA/EMP Report

For

Soap-Stone Mine

Village-Pokhari & Bintoli Tehsil & District: Bageshwar, Uttarakhand

(Submitted for Public Consultation as per EIA Notification 2006 & its subsequent amendments till dated)

Mining Lease Area: 6.683 Ha., Production Capacity: 21428 TPA,

Project Cost: Rs. 20 LAKH

Category-B1

In Favor of	Prepared By
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1 EXECUTIVE SUMMARY

1.1 Introduction and Background

The soapstone mine of Smt Nirmala Dafoti W/o Late Kanwar Singh Dafoti is located near village Pokhri & Bintoli, Tehsil & District: Bageshwar (Uttarakhand) over an area of 6.683 ha in No-forest land.

The Proposed Soapstone Mine of Smt. Nirmala Dafoti is situated near village: Pokahri & Bntali, Tehsil & District: Bageshwar, Utterakhand for an area of 6.683ha. The Lease for granted in favor of Smt. Nirmala Dafoti vide letter no 936/VII-1/08/Soapstone/2016 dated 26/07/2016 for 50 years

As per EIA Notification dated 14th September 2006 and subsequent amendments/Order dated 04.09.2018 & 13.09.2018 passed by Hon'ble NGT in O.A No. 17382016 & 186/2016 in the matter titled "Shri Sudarsan Das V/s State of West Bengal & Ors" and "Shri Satendra Pandey V/s MOEF & CC and respectively MOEF&CC Vide letter No. 11011/175/2018-IA-II(M) of dated 12.12.2018 directed that all mine lease area from 5 to 25ha falling under Category B2 will be considered as B1 by SEIAA/SEAC as well as for cluster situation therefore, EIA, EMP and Public Considered for areas 5 to 25 Ha is required.

It is proposed to excavate approximately 21428 TPA of Soapstone by Open-cast Mechanized method. The lease area is 6.683 Ha and total mineable reserves are MT. The expected life of the mine will be 11 years.

The studies were undertaken by The Consultant namely, Overseas Min-Tech Consultants ('OMTC'). OMTC is a National Accreditation Board for Education and Training (NABET) Accredited Consultant Organization (ACO) and is qualified to prepare EIA reports for Project / Activity 1(a) (Mining of Minerals), a mandatory requirement for agencies submitting such studies to regulators for the purpose of seeking EC.

The EIA study report has been based upon the following :-

- Field data collection on different aspects of environment including air, soil, water, land, meteorology, noise, flora, fauna, agriculture and socio-economy in the study area of 10 km radius with mine as its center.
- Study of opencast mining methodology, water requirement, source of pollutants and pollution control strategy.
- Ecological Prospective and Green Belt Development.

The EIA study evaluates the impact on the present environmental scenario and check out the environmental management plan incorporating further step to mitigate the adverse impacts of air, noise, water, land pollution on environment.

1.2 Location and Communication

Table 1-1: Location and Communication from ML area

S. No.	Particulars	Details
A.	Nature of the Project	Soapstone Mining project

B.		Size of the Project		
1.	Mine area	6.683 ha		
2.	Proposed Production Capacity	37758 TPA (Soapstone 21428 TPA, waste 14285 TPA, Soil 2045 Tonne)		
C		Location Details		
1.	Village	Pokhri & Bintoli		
2.	Tehsil	Bageshwar		
3.	District	Bageshwar		
4.	State	Uttarakhand		
5.	Toposheet Numbers	530/13		
6.	Latitude & Longitude	Pillar	Latitude	Longitude
		1	N29° 48' 53.4"	E79° 50' 49.9"
		2	N29° 48' 53.6"	E79° 50' 51.0"
		3	N29° 48' 56.1"	E79° 00' 52.4"
		4	N29° 48' 56.5"	E79° 50' 51.9"
		5	N29° 48' 56.4"	E79° 50' 50.9"
		6	N29° 48' 57.0"	E79° 50' 51.1"
		7	N29° 48' 57.8"	E79° 50' 50.1"
		8	N29° 48' 57.9"	E79°50' 48.2"
		9	N29° 48' 57.1"	E79° 50' 48.5"
		10	N29° 48' 58.2"	E79° 50' 46.3"
		11	N29° 48' 59.4"	E79° 50' 45.9"
		12	N29° 49' 00.2"	E79° 50' 46.4"
		13	N29° 49' 01.5"	E79° 50' 46.3"
		14	N29° 49' 00.9"	E79° 50' 46.9"
		15	N29° 49' 01.0"	E79° 50' 47.9"
		16	N29° 49' 03.6"	E79° 50' 46.7"
		17	N29° 49' 04.3"	E79° 50' 45.8"
		18	N29° 49' 07.3"	E79° 50' 47.3"
		19	N29° 49' 07.8"	E79°50' 46.4"
		20	N29° 49' 07.3"	E79°50' 45.6"
		21	N29° 49' 04.6"	E79° 50' 44.3"

		22	N29° 49' 03.4"	E79° 50' 44.1"
		23	N29° 49' 04.3"	E79° 50' 42.9"
		24	N29° 49' 02.5"	E79° 50' 43.4"
		25	N29° 49' 02.4"	E79° 50' 43.0"
		26	N29° 49' 03.5"	E79° 50' 41.0"
		27	N29° 49' 03.3"	E79° 50' 38.3"
		28	N29° 49' 00.4"	E79° 50' 39.3"
		29	N29° 49' 00.3"	E79° 50' 40.2"
		30	N29° 48' 59.8"	E79° 50' 40.8"
		31	N29° 48' 59.3"	E79° 50' 40.8"
		32	N29° 48' 58.3"	E79° 50' 40.3"
		33	N29° 48' 58.6"	E79° 50' 39.6"
		34	N29° 48' 59.9"	E79° 50' 38.7"
		35	N29° 48' 58.9"	E79° 50' 37.6"
		36	N29° 48' 58.3"	E79° 50' 38.7"
		37	N29° 48' 57.6"	E79° 50' 38.3"
		38	N29° 48' 56.5"	E79° 50' 39.4"
		39	N29° 48' 57.3"	E79° 50' 41.6"
		40	N29° 48' 56.2"	E79° 50' 43.2"
		41	N29° 48' 56.1"	E79° 50' 43.6"
		42	N29° 48' 55.2"	E79° 50' 44.5"

1.3 Project Chronology till Date

1. Smt. Nirmala Dafoti submitted relevant documents, namely Form-1 (as per the EIA Notification 2006, as amended till date) along with a Pre-feasibility Report and proposed Terms of References (ToR) for carrying out environmental studies to the SEIAA/SEAC, on 26st September 2019.
2. A presentation to the State Environment approval committee, to finalize the ToR for the EIA study before SEAC (M) was held on 21st -22nd January 2019.

3. The SEAC, prescribed ToR vide Letter No. 20/SEAC Dated 12th Fairbury 2019
4. OMTC carried out monitoring studies during the Pre monsoon Fairbury-March-April-2019, and presented the findings in draft EIA report.

1.4 Project Description

1.4.1 Study Area at a Glance

The study area is taken in accordance with the provisions of sector specific EIA guidance manual for Mining of Minerals manual, published by Ministry of Environment and Forests, during 2010. The study area for the Limestone Mining Project was as follows:

- The proposed project area (M. L. area) is considered as ‘Core Zone’.
- 10 km radius from the boundary limits of the M.L. area is considered as ‘Buffer Zone’.
- Study area (10 Km. radius) : 33492.0508 Ha

1.4.2 Utilities

Table 1-2: Requirement for the mining

S.No.	Requirements			Quantity and Nos.	
1.	Water Requirement	Domestic	Drinking	0.35 KLD	1.67 KLD
		Propose	Sanitation	1.32 KLD	
		Dust Suppression		300 m ² area per 2.0 L	0.60 KLD
		Greenbelt Development		613 plants per 5.0 LPD	3.65 KLD
Total					5.92 KLD
2.	Man-Power Requirement			67	

1.4.3 Topography and Drainage

- The highest altitude recorded with in the area is 1591mRL toward SE of the area near pillar 3 and lowest altitude recorded is 1459 mRL toward NE near pillar 19. On the north & NE side of the area mines of Nirmala Dafoti & temple on top of the hill.
- The seasonal nalla passes from SE to north. A small Gul is also bifurcated & flowing on NW side. The area is drained by first and second order streams which control flow of Saryu River flowing in southern side of the lease area

1.4.4 Regional Geology

The soapstone pockets/lenses occur within carbonates of Gangolihat Dolomite sequence. The local stratigraphic shows that the mineralized zone lies between upper and lower carbonates, as discussed below:-

1	Upper Carbonates	Magnesite, Sporadic dolomite.
2	Middle Talcose Phyllites	Soapstone in Pockets, Lenses & veins.
3	Lower carbonates	Dolomite / Dolomitic intercalation

1.4.5 Local Geology

Soil Cover	Soil
Calcareous sequence	Talcose Phyllite Talc (Soapstone) Mixed with Dolomite & Magnesite

i) Showing disposition of all lithological units with clear nomenclature and their descriptions is discussed below and shown on the geological plan:-

ii) Contacts of lithounits/ rock types as outcrops or inferred.

Alluvium cover:

Entire area is cultivated land and therefore layer of brownish cover of soil exists in the whole area. The thickness of the soil varies from 0.2 to 0.3m.

1.4.6 Mineable Reserve & Life of Mine

Table 1-3: Mineable Reserves

Life of mine	Total Reserve / Production
	1153152 / 21,428 TPA ~ 50 Years

1.4.7 Mining Method

- The mine is proposed to be worked by opencast mechanized method using JCB excavator on contract. The mineral soapstone occurs intermix with Dolomite rocks the analysis report shows that the OB is calcite and high silica with low MgO and therefore is not marketable.
- The over lying soil of 0.2-0.3 m thickness will be removed separately by excavator and will be kept separately by making a toe wall at the bottom of soil dump.
- The mining will be done from higher level to lower level depending on the availability of space. The soapstone after sorting and sizing will be filled in to 40-50 kg plastic bags, which will be transported to road points.

Bench parameters

Height of bench-3m

Width of bench-3m

Slope of bench-70°

Over all pit slope 45°

Table 1-4: List of Machineries & Equipment

S. No.	Machine Type	No. of Items
1.	JCB	1
2.	Truck/Dumper	10

1.5 Meteorology Long Term Meteorology (Secondary Data)

Information presented in subsequent paragraphs is from the Indian Meteorological Department (IMD), Long Term Climatological Tables, 1971-2000, Joshimath. These tables give useful information about a region's weather, since it was collected over a period of 30 years.

1.5.1 Temperature

The month from March to May are considered as hottest with increase in temperatures. June is generally the hot month with a mean daily maximum temperature of about 24.8°C and mean daily minimum of about 16.3°C. The highest temperature recorded at Joshimath is 34.2°C on 14th June 1974. From October, both day and night temperatures start decreasing rapidly. January is generally the coldest month with the mean daily maximum temperature at about 11.0°C and mean daily minimum at about 2.0°C. Minimum temperature sometimes drops down to subzero temperatures and the lowest temperature recorded -15.1°C on 15th January 1974.

1.5.2 Wind

Long- term wind direction indicates that the predominant wind during the study period (February, March and April)-2019 is East to West and second dominate direction is NE to SW.

1.5.3 Rainfall

As per IMD station at Joshimath the rainfall in region was observed to be 1104.1 mm in a year, bulk of rainfall was received in monsoon months from July and August. Maximum cloud cover was observed in the months of July and August.

1.5.4 Relative Humidity

Most humid conditions was found in the monsoons, followed by post-monsoons, winter and summer in that order. Mornings were more humid than evenings and humidity ranged from a high of 89-85% in monsoon mornings to a low of 57-61% in winter evenings.

1.5.5 Site Specific Meteorology

Environmental monitoring was carried out for Pre Monsoon season covering the months of (February, March and April) 2019. Meteorological data is collected for wind speed, wind direction, temperature, rainfall and cloud cover.

Mean average temperature recorded during study period was 26.5°C with mean maximum temperature of 33°C and mean minimum of -18°C.

Average wind speed recorded was 2.56 m/sec

Rainfall is not recorded during the study period.

1.6 Existing Environment Scenario

1.6.1 Land Use

Land Use of Mine Lease Area

The total lease area of Pranmati Soap-Stone mining is 6.683ha. out of which 0.479 ha is govt. land and 5.681 ha area is pvt. Land. 0.523 ha. area public use.

Land Use of the Study Area

The land use land cover map of the study area has been prepared using recent the recent satellite ID: LC08_L1TP_145039_20190131_20190206_01_T1. The total study area within 10 km from the core zone is 32839.94 ha, out of which 0.25% is Open land, 25.25% is crop land, 1.26 % is river, 1.46% is Buildup land, 0.22% is road and 71.56% is Hill land.

1.6.2 Soil Quality

The soil sample were collected from 6 locations, the soils of study area are predominantly Sandy loam. The soil being of friable consistency, the bulk density of the soil is in the range of 1.67 to 1.72 gm/ml whereas the porosity and water holding capacity are in the range of 28.56 to 32.56 %. It was observed that the Values of bulk density, porosity and water holding capacity varied according to the soil texture

1.6.3 Ambient Air Quality

The major contribution to the air pollution is dust and other pollutant present in the air are SO₂ and NO₂. To assess the pre mining condition ambient air monitoring was carried out.

The 98 percentile value of PM₁₀ level at the proposed mining site ranges from 52.63 to 47.22ug/m³, PM_{2.5} ranges from 21.66 to 17.10 ug/m³, SO₂ ranges from 12.98 to 9.54 ug/m³ and NO_x ranges from 19.44 to 13.56 ug/m³. The baseline ambient air quality was found to be within the permissible limits of NAAQS.

1.6.4 Noise

Ambient noise samples were collected from 6 locations in the study area; samples were collected from residential as well as industrial area (Mine site).

- **Residential area:** The day time (Leq day) noise levels observed in the range of 45.6 to 39.4 dB (A) in residential area.
- **Industrial Area:** The noise levels at the mine site were found to be 54.2 dB (A) during day time and 51.6 dB (A) during night time.

1.6.5 Water Environment

Groundwater Resources

The other source of ground water in the district is in the form of springs. Large-scale ground water development is not possible in the Bageshwar district since it is a hard rock area with steep slopes and low ground water potential.

Groundwater Quality

The analysis results shows that the pH for the ground water samples GW1, GW2, GW3, GW4, GW5, ranged from 7.44 to 7.72 indicating slightly alkaline in nature. The TDS (Total Dissolved Solids) were found to be in the range 184 mg/l to 246 mg/l which is within the permissible limit of 2000 mg/l. Total Hardness of Ground water samples in the study area was found to be 192.0 to 198 mg/l which is within permissible limit. Alkalinity indicates better buffering capacity of water and ranges between 88.0-112.0 mg/l.

Fluoride content varies from 0.16 mg/l – 0.38 mg/l which is within permissible limit. The overall ground water quality in the study area was found to be mineralized with respect to, chloride (52.6 mg/l to 62.0 mg/l), sulphate (28.4 mg/l to 44.6mg/l) .

Surface Water Quality

Surface water samples were collected, analyzed and compared with Indian standard for drinking water 10500:2012, pH value was found to be 7.76 to 7.78 which indicate that surface water is alkaline in nature, TDS was found to be 206.0 mg/l to 262.0 mg/l. Dissolve oxygen were found about 6.2 to 6.8 mg/l. It is seen that the physicochemical analysis of other parameters like chloride, calcium, magnesium, nitrate and fluoride were found within the desirable limit. The overall surface water quality of the available sources within the study area was found to be good physico-chemically with respect to all the parameters. There is no organic load-observed in the sources monitored indicating no pollution load in the source.

Biological Environment

Ecological study is essential to understand the impact of industrialization and urbanization on existing flora and fauna of the study area.

There is no wildlife sanctuary, National park, Biosphere reserve, Wildlife corridors, Tiger/ Elephant reserve within 10 km radius of the mining lease.

Flora of the Study Area

Floral study was carried out during Post Monsoon season; some species of plant observed during the survey are. *Pinus roxburghii* (Cheer), *Toona ciliata* (Tooun) and *Aegle marmelos* (Bel).

Shrubs and Herbs: The dominant shrub community in this area was represented by Kaphal (*Myrica esculenta*) and Aak (*Calotropis gigantea*) etc.

Fauna of the Study Area

A general faunal survey was also conducted during the Pre Monsoon Season 2019 (February, March and April), Common langur (*Presbytis entellus*) were found.

1.6.6 Cropping Pattern

The climatic conditions of a region affect the agriculture cropping pattern of that area Main crops in the study area are wheat, Maize, Mustered, Chana , Rice, Dale (Urad, Peas, Masur, Soyabeen, Teel, Mungfaly, Guar are major crops grown in the study area.

1.6.7 Socio Economic Status

The study area includes 102 villages within the 10 km. radius with a total population 17344 forming 3895 household as per census 2011. In the study area about 11973 of the total population is literates. As per census 2011, about 596 of the total are main workers, 2444 are marginal workers and 7769 are non-workers.

1.6.8 Anticipated Environmental Impact and Mitigation Measure

1.6.9 Topography

Mining will be done from 1571 to 1558 mRL in only four block from the surface according to availability of Mineral in the entire mineable area since simultaneous back filling will be done, terraces will be formed and land will be handed over to the cultivators after developing the land suitable for the cultivation.

1.6.10 Drainage

The seasonal nalla passes from SE to North. A small Gul is also bifurcated & flowing on NW side. The area is drained by first and second order streams which control flow of Saryu River flowing in southern side of the lease area.

. Impact on Air Environment

Opencast mining activity causes some adverse impacts on the surrounding environment unless proper environment management plan is adopted. Selecting suitable sites for mining and also adopting all the guidelines prescribed by the Ministry of Environment Forest and Climate Change (MoEF&CC) and Department mine & Geology, Uttarakhand can minimize the major possible impact. Impact of Traffic Density:

Traffic analysis is carried out by understanding the existing carrying capacity of the roads near to the project site and the connecting main roads in the area. Existing traffic on these roads was compared with the carrying capacity of these roads as per IRC guidelines and it was found that the roads are capable of handling the additional traffic/load.

Mitigation Measures

- Plantation of trees along haul roads, to help reduce the impact of dust on the nearby villages;
- Planning transportation routes of mined material so as to reach the nearest paved roads by shortest route. (minimize transportation over unpaved road);
- Dust mask shall be provided to the workers engaged at dust generation points like excavations and loading points;

1.6.11 Impact on Noise Environment

Adverse impact on noise level is due to vehicular movements during mining phase, during operation of Excavator, etc. and vehicle movement during reclamation phase.

Mitigation Measures

- Proper and timely maintenance of machine, transport vehicle will help to reduce sound nuisance as much as possible.
- Trees will be planted on both the sides of the roads and near the office etc. to attenuate noise generated during mining.
- Noise level measurement in the mine area will be carried out quarterly. Use of personal protective equipment i.e. ear plugs/ear muffs etc. to the operator of excavator and transport vehicle will be provided.

1.6.12 Impact on Water Environment

Impact on Surface Water Quantity

The area is drained by second and third order streams which control flow of Sarayu River flowing in north side of the lease area from east to west. The seasonal water flows from upper reaches down the slope and has curbed courses through erosion process over long geological period.

Impact on Surface Water Quality

The proposed opencast mining operation may cause water pollution. The sources of pollution generally are:

- Wash off from dumps
- Soil Erosion

Mitigation Measures

- Surface water will not likely to be affected. All water drains from the pits/dumps will be constructed in such a way that the water will be drained to nallas through check dams.
- The vertical drains and horizontal drains will be provided on the dumps, mining pits and benches to properly channelize the mine water flow and surface water flow and will be connected to final drainage with check measures.

Impact on Groundwater Quantity

Groundwater will be used for mining activities, only 5.92 KLD water will be used during mining operation; and only fresh water will require for drinking propose which will be sourced from nearby village.

Impact on Groundwater Quality

Since water table is very deep & mining will be carried out much above the water table & therefore there will be no impact on ground water. The mining activity will be restricted above the ground water table which is 20 m to 30m bgl. Therefore, the mining activity in the leasehold area will not make any impact on ground water quality.

Mitigation Measures of Groundwater

- No pumping of water from mine will be done except offer testing to local farmers for irrigation purposes.

- The mine water from sump will mostly be used for mining, afforestation and allied activities.
- A monitoring network of dug wells will be established to monitor the ground water level.
- No waste water will be generated.
- Monitoring of water quality of mine discharge water and domestic water will be conducted at regular interval to evaluate the performance of the mitigation measures.

1.6.13 Impact on Flora and Fauna

As the mining activities will be confined to core zone only, no adverse impact is foreseen on the flora & fauna in the core zone. To prevent the entry of wildlife animals from entering the lease area proper fencing will be done all around the lease area.

1.6.14 Impact on Top Soil

Soil quality may be affected by mining activity. The impacts would be degradation of soil or change in its structure due to compaction and erosion during excavation, stacking activities and plying of trucks during operational phase.

Mitigation Measures for Top Soil

However, the project design will take into account the preservation of the top soil and its subsequent use during the restoration of the site.

1.6.15 Impact on Socio Economic Status

Socio-economic survey was conducted in seven villages within the study area located in all directions with reference to the project site.

The respondents were asked for their awareness/opinion about the project and their opinion about the impacts of the project, which is an important aspect of socio-economic environment, viz. job opportunities, education, health care, transportation facility and economic status.

The Company will undertake activities for the upliftment of the social community through community development in various ways as under: Education, water, Health and Employment Avenues

1.7 Environment Monitoring Program

The monitoring of pollutant in mine will be carried out for air, water, soil and noise. It takes care of all monitoring needs of the mine. Additionally ambient air and work zone monitoring in mine will be conducted in every season near mining operation, loading and transportation (haul road) areas by Government approved private agency. The analysis results of air monitoring will be properly recorded and submitted to the statutory authorities from time to time. Noise measurement of mine equipment will be done once in a year, ambient air monitoring will be done once in one season at three locations (1 in upwind, 1 in downwind, 1 in lease area). Ambient noise monitoring will be carried out at 3 locations, 1 within the lease area, and 2 locations of nearest habitation to the lease. Water quality monitoring will be done once in season at two locations & soil quality monitoring will be done once in a year at 2 locations within the study area. A total of Rs. 2.81 lakhs/- every year will be spent on monitoring of environmental parameters.

1.8 Additional Studies

1.8.1 Risk Assessment and Disaster Management Plan

The following natural /industrial problems may be encountered during the mining operation are:

- Inundation-filling of the mine pit due to excessive rains.
- Slope failures at the mine faces or stacks.

Water table will not be encountered during proposed working. No high risk accidents like landslides, subsidence flood etc. have been apprehended. But possibility of accidental disaster is also not ruled out. Therefore, all the statutory precautions will be taken for quick evacuation as per the Mines Act 1952, the Mines Rules 1955, Rule of MMR- 1961 and the Rules of MCDR-1988.

1.9 Environment Management Plan

The environment management plan is prepared with a view to facilitate effective environmental management of the project. Apart from having an Environmental Management Plan, environment management cell consisting of mines manager, safety officer and environmental officer is constituted.

1.10 Project Benefits

The surrounding inhabitants around the mine lease area are mainly agricultural oriented. Opportunities for jobs activities will be created and mining will serve as a source of permanent livelihood. The mine will create employment directly or indirectly. Additional, certain works like transportation will be outsourced on contract. So, overall effect of mining is expected to be positive.

