# EXECUTIVE SUMMARY

# FOR

## PROPOSED MINING OF SOAPSTONE

## AT

**Village-Khatigaon & Rangdev, Tehsil & District- Bageshwar Uttarakhand**
**AREA: 8.529 HA, PROPOSED CAPACITY: 40682 TPA (MAXIMUM)**

## PROJECT PROPONENT

**Shri Deewan Singh Papola**
**Village Papoli, Post Kafli,**
**Tehsil & District Bageshwar,**
**Uttarakhand**

## PREPARED BY

**Cognizance Research India Private Ltd.**
**(Accredited by NABET (Quality Council of India)**
**For EIA studies as A & B Category Consultant**
**Address – Suite-B 02, Block-H-61, Sector–63, Noida, U.P**
**Mobile No. 8588896648**

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# EXECUTIVE SUMMARY

## 1.0 INTRODUCTION

### 1.1 Purpose of the Report

The proposed soapstone mine extends over an area of 8.529 ha [40,682 TPA (maximum) of Soapstone] in Village-Khatigaon & Rangdev, Tehsil & District- Bageshwar Uttarakhand. The proposal for TOR was considered in its meeting dated 17th January 2023 and since the project is greater than 5 ha and it comes under category B1 therefore comprehensive EIA report shall be prepared. The draft Environmental Impact Assessment report has been prepared to comply with the standard Terms of Reference (ToR), under EIA notification of the MoEF&CC dated 14th September, 2006 and amended thereof, for seeking environmental clearance for mining of soapstone in the applied mining lease area.

### 1.2 Identification of Project & Project Proponent

#### 1.2.1 Identification of Project

The proposed lease of Khatigaon & Rangdev Soapstone Mine having 8.529 ha area and is situated near Village-Khatigaon & Rangdev, Tehsil & District- Bageshwar in the Uttarakhand State.
The Lease has been granted in favor of Shri Diwan Singh Papola.
The proponent has applied for environmental clearance for mining lease in the name of Soapstone Mining Project over an area of 8.529 ha at Village-Khatigaon & Rangdev, Tehsil & District- Bageshwar in the Uttarakhand State.

#### 1.2.2 Project Proponent

Proposed mine will be executed by a private company. The proposed Soapstone Mine extends over an area of 8.529 ha in Village-Khatigaon & Rangdev, Tehsil & District- Bageshwar Uttarakhand. The LOI of proposed Soapstone Mine was granted in favor of Shri Deewan Singh Papola for period of 20 years by the Govt. of Uttarakhand. The proposed rate of production is 40682 TPA (maximum) of soapstone. The estimated project cost is Rs 30.0 lakhs. The expected life of mine is 20 years.

**Address of the applicant**
Shri Deewan Singh Papola
(Village Papoli, Post Kafli, Tehsil & District Bageshwar, Uttarakhand)

## 2.0 BRIEF DESCRIPTION OF PROJECT

### 2.1 Nature of the Project

The proposed Soapstone Mine, project will adopt opencast manual cum semi mechanized method. The mine is executed over a lease area of about 8.529 ha, for the production of 40682 TPA of soapstone.

Therefore as per the EIA Notification dated 15th January, 2016 and 1st July, 2016, the project comes under "B1" Category since the area is greater than 5 ha.

### 2.2 Size of the Project

The proposed Soapstone mining project extends over an area of 8.529 ha with the target maximum production capacity of mine is about 40682 TPA (maximum) of Soapstone.

### 2.3 Anticipated Life of Project and Cost of the Project

The projected life of the mine is 20 years. The cost of the project is about Rs. 30.0 lakhs.

### 2.4 Location of the Project

The proposed Soapstone Mine lease comes under Village-Khatigaon & Rangdev, Tehsil & District- Bageshwar Uttarakhand. Geo-graphically the ML area extends from latitude 29°53'11.58''N to 29°''53'39.77''N and longitude 79°56'47.70''E to 79°56'32.05''E. The area falls in Survey of India topo sheet No. 53 O/13.

### 2.5 PROJECT DESCRIPTION

#### 2.5.1 Salient Features of Mine Lease

The salient features of mine lease are given in **Table 1** below:

**Table 1: Salient Features of mine lease area**

| Sr. No | Particular | Details |
|---|---|---|
| **A.** | Nature of the Project | Proposed Khatigaon & Rangdev Soapstone Mine |
| **B.** | Size of the Project | |
| **1.** | ML Area | 8.529ha (private agricultural Land). |
| **2.** | Proposed Production Capacity | Total Recoverable Quantity of Soapstone: |
| | | 40682 Tonnes/ Annum (Maximum) |
| | | (As per approved Mining Scheme) |
| **3.** | Lease Period of Mine | Lease was granted for a period of 20 Years. |
| **C.** | Method of Mining | |
| **1.** | Method | Semi Mechanized Open-Cast Mining |
| **2.** | Blasting / Drilling | Not proposed |
| **D.** | Project Location | **Location Map is given in Figure.1& 2** |
| **1.** | Village | Khatigaon & Rangdev |
| **2.** | Tehsil | Bageshwar |
| **3.** | District | Bageshwar |
| **4.** | State | Uttarakhand |
| **5.** | Topo Sheet No. | 53O/13 |

| | | |
|---|---|---|
| **6.** | Lease Area Coordinates | Latitude 29°53'11.58''N to 29°'53'39.77''N Longitude 79°56'47.70''E to 79°56'32.05''E |
| **E.** | Cost Details | |
| **1.** | Project Cost | Rs.30.0 Lac |
| **F.** | Water Demand | |
| **1.** | Requirement | 5 KLD |
| **2.** | Source of water | Water requirement for drinking, plantation and suppression shall be met from near by villages, d the operational phase of the mine. Total v requirement shall be 5 KLD. |
| **G.** | Man Power Requirement | 98 |
| **H.** | Environmental Setting | |
| **1.** | Nearest Village | Khatigaon & Rangdev |
| **2.** | Nearest Town | Bageshwar, 40.0 Km. (by road) |
| **3.** | Nearest National / State Highway | Dopahar Banlekh Road,0.38km(Aerial) |
| **4.** | Nearest Railway Station | Kathgodam, 78.27 Km(Aerial) |
| **5.** | Nearest Airport | Pantnagar, 111.28 Km(Aerial)) |
| **6.** | Ecological Sensitive Areas (Natio Park, Wild Life Sanctuaries, Biosphere Reserve etc.) within 1( radius | None |
| **7.** | Reserved / Protected Forest with 10 km radius | Khatigaon RF, 1 Km (Aerial) |
| **8.** | Water bodies within 10 km radius the mine site. | Seasonal Gadhera0.5 km (Aerial) |
| **9.** | Archaeological Important Place | None |
| **10.** | Seismic Zone | V |

### 2.5.2 Mine Development and Production

The mining shall be carried out in two pits and will be done open semi cast semi mechanized way. The mining benches will be formed along the contours, the height of the benches will be kept of 3m and width more than 4m initially to facilitate separation of soapstone and remove the mineral and interburden and soil by mules. The mule track of 3-4m width with a gradient of 1 in 3 to 1 in 4 will be made. The mineral will be transported by mules to the road point. So that the mineral can be loaded on to the trucks for further transportation to Haldwani. All the benches will be connected by mule track, so that mule can reach to the working faces the slope of the benches will be kept 70° but for exploitation of mineral benches will be steepened and width will be reduced and average slope of the faces will be kept 65 - 70°.

Year wise Production details are given in **Table 2** below:

**Table 2: Year wise Production of Soapstone Mine**

| Years | Soapstone (Pit I) (Tonnes) | Soapstone (Pit II) (Tonnes) |
|---|---|---|
| **1st** | 15124 | 22768 |
| **2nd** | 17150 | 26487 |
| **3rd** | 20049 | 32225 |
| **4th** | 22222 | 36363 |
| **5th** | 25389 | 40682 |
| **Total** | **99934** | **158525** |

The quantity of top soil, waste rock from pit to be generated during next five years is given in **Table 3** below:

**Table 3: Quantity of Top Soil and waste rock to be generated**

| Year | Pit-I | | Pit-II | |
|---|---|---|---|---|
| | Top Soil (cum | Interburden (cum) | Top Soil (cum) | Interburden (cum) |
| I | 249 | 2995 | 180 | 1260 |
| II | 282 | 2827 | 200 | 1539 |
| III | 330 | 3305 | 218 | 2007 |
| IV | 366 | 3663 | 233 | 14141 |
| V | 419 | 4185 | 312 | 15293 |
| **Total** | **1646** | **16975** | **1143** | **34240** |

### 2.5.3 Method of Mining

The mining shall be carried out in two pits and will be done open semi cast semi mechanized way. The mining benches will be formed along the contours, the height of the benches will be kept of 3m and width more than 4m initially to facilitate separation of soapstone and remove the mineral and interburden and soil by mules. The mule track of 3-4m width with a gradient of 1 in 3 to 1 in 4 will be made. The mineral will be transported by mules to the road point. So that the mineral can be loaded on to the trucks for further transportation to Haldwani. All the benches will be connected by mule track, so that mule can reach to the working faces the slope of the benches will be kept 70° but for exploitation of mineral benches will be steepened and width will be reduced and average slope of the faces will be kept 65 - 70°.

### 2.5.4 Impact on Land Use, Reclamation of Mined Out Areas and Afforestation Programme

**Impact on land use & reclamation of mined out areas**

Opencast mining activities may alter the landscape of the lease area and also cause some disturbance to the surface features of the surrounding areas. Mining will be done after leaving 7.5 m safety barrier.

Plantation will be developed in consultation with district administration/ local authority, wherever feasible.

The Existing land use pattern is agricultural land. The impact on land form or physiography will be land use on the hilly terrain will undergo radical changes due to the open cast mining. During the next five years mining, 2.02 land will be degraded due to mining & allied activities.

**Proposal for reclamation of land affected by mining activities:**

The mining will commence from the higher levels and will advance towards lower levels. Intermittent backfilling will commence from the higher levels and subsequently advance towards the lower elevation so that terraced agriculture fields would undertake in such a manner that original land use will be restored i.e. before the onset of monsoon will be handed over to cultivators for cultivation. The final backfilling will be started once the ultimate benches are formed and pit reaches the optimum economic depth. All recovery of the mineral will be of the saleable grade.

Plantation will be raised in 7.5m barrier zone along the boundaries of the mining lease area by planting the native species around ML area, backfilled and reclaimed area, around water body, roads, van panchayat land etc. in consultation with the local DFO/Agriculture department. The details of the year wise plantation have been shown in **Table 4**.

**Table 4: Year wise Afforestation scheduled**

| Year | No. of Plants as per mine plan |
|---|---|
| First year | 40 |
| Second year | 40 |
| Third year | 40 |
| Fourth year | 40 |
| Fifth year | 40 |
| **Total** | **200*** |

*Besides these 8500 nos. of more samplings will be done all along the periphery of the mine lease area/in the nearby van panchayat land. Total no. of trees shall be planted in the first two years and in the next three years its maintenance will take place. Local native species like Peach (Khubani), Pears (Nashpati), Apricot (Aaru), Plumk, Mehal, Kaphal, Chilmora etc. shall be planted.

## 2.6 LAND USE PATTERN

Presently (pre-mining), the land covered under the mine lease area is non-forest agricultural land.

## 2.7 BASELINE ENVIRONMENTAL STATUS

### 2.7.1 Soil Quality

Five soil samples were collected in and around the mine lease area to assess the present soil quality of the region. In the study area, variations in the pH of the soil were found to be slightly basic 7.58 to 7.91. Electrical conductivity (EC) is a measure of the soluble salts and ionic activity in the soil. In the collected soil samples the conductivity ranged from 221.5 – 341.52 µmhos/cm.

### 2.7.2 Meteorology

Meteorological data at the site was monitored during October 2022 to December 2022 representing winter season.

### 2.7.3 Ambient Air Quality

Ambient Air Quality Monitoring (AAQM) has been carried out at five locations during winter season from October 2022 to December 2022.

The minimum and maximum level of PM10 recorded within the study area was in the range of 34.2 µg/m3 to 54.7 µg/m3. The minimum and maximum level of PM2.5 recorded within the study area was in the range of 12.2 µg/m3 to 28.5 µg/m3. The minimum and maximum concentration of SO2 recorded within the study area was 4.9 to 6.0 µg/m3. The minimum and maximum level of NO2 recorded within the study area was in the range of was 5.5 µg/m3 to 19.2 µg/m3. The results thus obtained indicate that the concentrations of $PM_{10}$, $PM_{2.5}$, $SO_2$ and $NO_2$ in the Ambient Air are well within the National Ambient Air Quality (NAAQ) standards for Industrial, Residential, Rural and other areas.

### 2.7.4 Water Quality

To assess the physical and chemical properties of water in the region, ground water samples from 5 locations and surface water samples from 2 locations were collected from various water sources around the mine lease area.

- During the study period, the pH was varying for ground water from 7.28 to 7.81 and the surface water are 7.2 to 7.45. The pH values for all the samples collected in the study area during study period were found to be within the limits.
- In ground water samples collected from the study area, the total dissolved solids in ground water are varying from 198.5 mg/l to 413.32 mg/l whereas in surface water varying from 196.5 mg/l to 202.1 mg/l. The TDS of the samples were within the desirable limit of 500 mg/l.
- The chloride level in the ground water samples collected in the study area were ranging from 12.3 mg/l to a maximum of 47.6 mg/l, in surface water samples 12.3 mg/l to 47.6 mg/l. The chloride samples are within the desirable limits.
- In the ground water samples collected from the study area, the hardness is varying from 182.4 mg/l to 288.4 mg/l, in surface water samples 178.51 mg/l to 184.2 mg/l.

The results indicate groundwater is generally in conformity with the drinking water standards (IS: 10500) and surface water is in conformity with IS-2296 standards.

### 2.7.5 Noise Levels

noise levels were measured at Five locations around the proposed mine site. Assessment of average logarithm night time Leq (Ln) varies from 37.6 to 41.2 dB (A) and the average logarithm daytime Leq (Ld) varies from 46.5 to 52.8 dB (A) within the study area.

### 2.7.6 Ecological Environment

Based on the field studies and review of published literature, it is observed that there are two Schedule-I species present in the study area of the mine lease area i.e. Indian Leopard and Asiatic Black Bear. There are no wildlife sanctuaries and National Parks within the study area of 10-km radius.

### 2.7.7 Social Environment

According to the 2011 census of India, Bageshwar has a population of 2,59,898. The total SC population in Bageshwar district is 72,061 which is 27.72% of the total population, while ST population is 1982, which is 0.76% of the total population. The literate population in Bageshwar district is 1,79,483, out of which male & female are 97,546 and 81,937 respectively. The male literates represent 54.35% while female represent 45.65% of the total population.

## 3.0 ANTICIPATED ENVIRONMENTAL IMPACTS

### 3.1 Impact on Air Quality

Soapstone mine where $PM_{10}$ and $PM_{2.5}$ will be the main pollutants generated in mining activities. The emissions of Sulphur dioxide ($SO_2$), Nitrogen Oxide ($NO_2$) contributed by diesel operated equipment and vehicles movement were considered marginal as branded make and vehicles with PUC certificate will be operated only. Fugitive dust and particulates are major pollutants occurred in the mining activities. Fugitive emissions will be settled by 70- 80% by use of multiple water sprinklers. Prediction of impacts on air environment will be made with proposed production and net increase in $PM_{10}$ and $PM_{2.5}$ emissions at the proposed site and at the 10 km radius of study area due to mining activities.

Air pollution sources in the operating mine was classified into two categories

i. Loading and unloading of mineral and OB, IB

ii. Transportation on the haul road

### 3.2 Impact on Water Resources

**Surface Water Resources**

The topography of the area will not be largely changed in view of the proposed concurrent reclamation. During the mining activity period, there is a possibility of mixing of freshly disturbed material with the rain water. To take care of such happenings, retaining walls have been provided along the backfilled pits and along the soil and interburden dumps.

**Groundwater Resources**

The water table in hills is usually very deep and does not have any relevance with mining activities. However, concurrent restoration to original topography will not be disturbing the percolating water.

### 3.3 Impact on Water Quality

The impact on water quality will be confined to increased suspended solids during rain. The dumps will be secured with toe walls and rainy water will not carry significant suspended material.

### 3.4 Impact on Noise Levels and Ground Vibrations

With the mining operations, due to the deployment of machinery, operation for mine development, excavation and transportation of soapstone and men, it is imperative that noise levels would increase. Assessment of average logarithm night time Leq (Ln) varies from 37.6 to 41.2 dB (A) and the average logarithm daytime Leq (Ld) varies from 46.5 to 52.8 dB (A) within the study area. It is also observed that these incremental noise levels will not significantly affect the existing ambient noise levels.

### 3.5 Impact on Soil

The environmental impacts of the mining activities on topsoil are based on the quantity of removal of topsoil and its dumping. In the present project as it is proposed to temporarily store the topsoil and use it for plantation schemes, no impact of dozing of topsoil is envisaged.
The soil erosion from overburden and interburden dumps is not envisaged in the present project, as sufficient measures as detailed in the EMP would be undertaken.

### 3.6 Impact on Flora and Fauna

There is no forest area in the core zone area of the lease. As the mining activity is restricted to core zone, no significant impact on the flora of the buffer zone due to the proposed mining of Soapstone is anticipated.

It is proposed to include *Alternanthera paronychioides, Cassia tora* and *Holoptelea integrifolia* in the plantation program as they serve as sinks for gaseous emissions. Extensive plantation comprising of pollutant resistant trees will be undertaken, which will serve not only as pollution sink but also as a noise barrier.

The incremental dust generations due to the mining operations, at the boundary of the mine lease are insignificant and it is also expected that with the adoption of mitigatory measures as suggested in EMP, the impact due to operation of the mine will be minimal on the terrestrial ecosystem and also on the adjacent forest area.

The impact on the fauna of the buffer zone due to the mining activity will be marginal. The proposed progressive plantation over a period of time will reduce the impact, if any, on the fauna.

### 3.7 Impact on Land Use Pattern

The proposed opencast mine will result in change the land use pattern of the ML area. The land degradation is expected during mining activities like excavation, overburden dumping, soil extraction etc. Land requirement for the project has been assessed considering functional needs.

### 3.8 Impact on Socio - Economic Aspects

The mine 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. The mining operation will not disturb/ relocate any village or need resettlement. Thus no adverse impact is anticipated.

The impact of mining activity in the area is positive on the socio-economic environment of the region. The proposed Soapstone Mine will be providing employment to local population and it will be give preference to the local people whenever there is requirement of man power.

## 4.0 ENVIRONMENTAL MANAGEMENT PLAN

The summary of environmental mitigation measures are given in **Table 5**.

**Table 5: Proposed Environmental Mitigation Measures**

| Impact Predicted | Suggestive measure |
|---|---|
| Disturbance of free movement / li of wild fauna | • Awareness camps will be conducted for labours to make them aware about sensitivity/importance of forest life.<br>• No tract or new road for movement of labours or vehicles be laid in reserve forest area, this will prevent forest fragmentation, encroachment and human – animal encounter.<br>• Care will be taken that noise produced during vehicles movement for carrying ore materials are within the permissible noise level. Higher noise level in the forest area will lead to restless and failure in detection of calls of mates and young ones.<br>• Care will be taken that no hunting of animals carried out by labours.<br>• If wild animals are noticed crossing the core zone, it will not be disturbed at all.<br>• Labours will not be allowed to discards food, plastic etc., which can attract animals near the core site.<br>• Only low polluting vehicle will be allowed for carrying ore materials. All vehicles allowed in the project site area will have to provide pollution under control certificate at the end of three months.<br>• No honk will be allowed in the forest area, noise level will be within permissible limit (silent zone-50dB during day time) as per noise pollution (regulation and control), rules, 2000, CPCB norms. |
| Harvesting of forest flora | • No tree cutting, chopping, lumbering, uprooting of shrubs and herbs should be allowed.<br>• No pilling of ore material should in the reserve forest area.<br>• Collections of economically important plants will be |

| | |
|---|---|
| | fully restricted. |

## 5.0 ANALYSIS OF ALTERNATIVES

The Soapstone has been identified based on the result of geological investigations and exploration carried out by the Geological Survey of India (GSI). The mining projects are site specific as such alternate sites were not considered.

The mine will be operated by opencast cum semi-mechanized method of mining. No other alternative technologies will be used because of the hard nature of the ore. Proposed mine is using eco-friendly measures to minimize the impact of mining on the surrounding environment.

## 6.0 COST ESTIMATES

The details of the cost for the Environmental Management plan for 5 years, the budget for Corporate Environmental Responsibility (CER) (per year) and year wise allocation of funds for the various activities proposed to be taken up under CSR programme has been given in **Table-6, Table 7 and Table 8** respectively**.**

**Table 6: Budget for Environmental Management Plan**

| S. No. | Measures | Cost (In Rs.) |
|---|---|---|
| 1. | Water Sprinkling for dust suppression | 50,000 |
| 2. | Environmental Monitoring :<br>(i) Ambient Air Quality Monitoring<br>(ii) Ambient Noise Monitoring<br>(iii) Water Quality Sampling & Analysis<br>(iv) Soil Quality Sampling & Analysis | 1,00,000 |
| 3. | Plantation of 8700 trees along with their maintena for green belt | 8,70,000 |
| 4. | Cost for Retaining wall/Toe wall | 74,700 |
| **Total** | | **10,94,700** |

**Table 7: Budget for Corporate Environmental Responsibility (CER) (per year)**

| S. No. | Measures | Cost (In Rs.) (per year) |
|---|---|---|
| 1. | Sanitation facilities | 25,000 |
| 2. | Skill Development for villagers | 20,000 |
| 3. | Awareness to local farmers to increase yield of crop ar fodder | 15,000 |
| 4. | Plantation in the community areas/schools and on panchayat land of nearby villages | 40,000 |
| **Total** | | **1,00,000** |

**Table 8: Year wise allocation of funds for the various activities proposed to be taken up under CSR programme**

| S. N | Activities | Allocation of Fund (Rs.) |
|---|---|---|
| 1 | Health Camps | 1,00,000 |
| 2 | Drinking Water Facilities | 50,000 |
| 3 | Maintenance of foot track | 1,00,000 |
| 4 | Donation for Temple Construction | 50,000 |
| 5 | Donation for cultural activities in surrounding areas | 1,00,000 |
| **Total** | | **4,00,000** |

## 7.0 ADDITIONAL STUDIES

### 7.1 Risk Assessment and Disaster Management Plan

The complete mining operation will be carried out under the management control and direction of a qualified mine manager holding Mines Manager's Certificate of Competency. Moreover, mining staff will be sent to refresher courses from time to time to keep them updated.

### 7.2 Disaster Management Plan

Emergency preparedness is an important aspect in the planning of Disaster Management. Personnel would be trained suitably and prepared mentally and physically in emergency response through carefully planned, simulated procedures. Similarly, the key personnel and essential personnel shall be trained in the operations.

## 8.0 PUBLIC CONSULTATION

### 8.1 Public Hearing

In consonance with the EIA notification dated 14$^{th}$ September 2006, vide section 1 (a) related to Public Hearing, the draft EIA/EMP report shall be submitted to the Uttarakhand Environment Protection & Pollution Control Board (UEPPCB) for public hearing

## 9.0 PROJECT BENEFITS

The impact on the civic amenities will be substantial after the commencement of mining activities. Medical facilities will be provided in the form of first-aid facility at the mine. These medical facilities will also be available to local people in the surrounding in case of emergencies.

- Generation of employment and improved standard of living;
- Increased revenue to the State by way of royalty, taxes and duties; and
- Superior communication and transport facilities etc.
  The employment of local people in primary and secondary sectors of project will upgrade the prosperity of the region.

## 10.0 CONCLUSIONS

- The mining operations will meet the compliance requirements of MoEF&CC;
- Community impacts will be beneficial, as the project will generate significant economic benefits for the region;
- Adoption of Best Available Technology and Best Management Practices with more environmental friendly process; and
- With the effective implementation of the Environment Management Plan (EMP) during the mining activities, the proposed project can proceed without any significant negative impact on environment.