# EXECUTIVE SUMMARY OF DRAFT EIA REPORT

FOR

***Environmental Clearance for Proposed Nandgaon Farshi Pathar Mine Project***

**(Minor mineral)**

**Total Mine area is 2.43 Hect.**

**At**

**Near Village:-Nandgaon, Tehsil-Mahasamund,**
**District-Mahasamund, State- Chhattisgarh**

**APPLICANTS**

| | Applicant | Number and date of Terms of reference | Land Khasra | Area of applied lease (Ha) | Annual Production Capacity | Address of Applied land | Cluster Area |
|---|---|---|---|---|---|---|---|
| 1 | Smt. Sushmita Chandrakar | Vide letter no. 734/S.E.A.C.C.G. /Mine/ 1924 Nawa Raipur Atal Nagar, Dated 17/08/2022 | *2778, 2779* | 0.53 | *2,540* | *Village – Nandgaon Tehsil- Mahasamund, Dist- Mahasamund, Chhattisgarh* | *8.73* |
| 2 | Smt. Sangita Chandrakar | Vide letter no. 850/S.E.A.C.C.G./ Mine/1977 Nawa Raipur Atal Nagar, Dated 26/08/2022 | *2752, 2753* | 1.37 | 3,750 | | |
| 3 | Shri Krishna Kumar Chandrakar | Vide letter no. 1514/S.E.A.C.C.G./ Mine/2025 Nawa Raipur Atal Nagar, Dated 08/12/2022 | *2725/1, 2725/2* | 0.53 | 2,500 | | |

## ENVIRONMENTAL CONSULTANT

ULTRA-TECH
Environmental Consultancy & Laboratory
(Lab. Gazetted by MoEF-Govt. of India)

**M/s. ULTRA-TECH**
**ENVIRONMENTAL LABORATORY AND CONSULTANCY**

**NABET Accredited EIA Consulting Organization**
**NABET Accreditation Number: NABET/EIA/2023/RA019-Rev 01**
**Valid Upto - Oct 18,2024**

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## 1.0 Introduction

The proposed project is a cluster project of Mining of Farshi Patthar Mine(Total lease area in cluster of 3 applied mines– 2.43 Ha of Mineral Farshi Patthar) at village – Nandgaon ,Tehsil –Mahasamund, District: Mahasamud ,State:Chattishgarh. Details of the entire lease are discussed in the further chapters. The lease holders of the cluster are Smt.Sushmita Chandrakar (0.53 Ha), Smt. Sangita Chandrakar (1.37 Ha), Shri. Krishna Kumar Chandrakar ( 0.53 Ha), respectively. TOR issued in fovour of project proponent whose details is as follow: -

***Smt. Sushmita Chandrakar*** – TOR vide letter no.- 734/S.E.A.C.C.G. /Mine/ 1924 Nawa Raipur Atal Nagar, Dated 17/08/2022

***Smt.Sangita Chandrakar*** – TOR vide letter no. – 850/S.E.A.C.C.G./ Mine/Raipur/1977 Nawa Raipur Atal Nagar , Dated 26/08/2022

***Shri. Krishna Kumar Chandrakar*** – TOR vide letter no. –1541/S.E.A.C.C.G. /Mine/ 2025 Nawa Raipur Atal Nagar, Dated 08/12/2022

This mining project comes under Category 'B1' (Cluster situation) Project or activity 1(a) as per EIA Notifications 2006, and its subsequent amendments and will be appraised at SEAC, Chattisgarh. The lease is falling in the cluster as per 15th January 2016 EIA Notification of MoEF&CC and NGT order dated13th September 2018.

## Project Location -

The proposed project of Nandgaon Farshi Pathar Mine of 2.43 Ha is situated at Village- nandgaon, Tehsil- Mahasamund, District:Mahasamund, State: Chattishgarh on Khasra No: 2778, 2779 of (Smt. Sushmita Chandrakar), 2752, 2753 of (Smt. Sangita Chandrakar), 2725/1, 2725/2 of (Shri Krishna Kumar Chandrakar), Tehsil- Mahasamund , village- Nandgaon , Farshi Pathar Mine featured in the Survey of Indian Toposheet No. 64K/4, 64G/16,

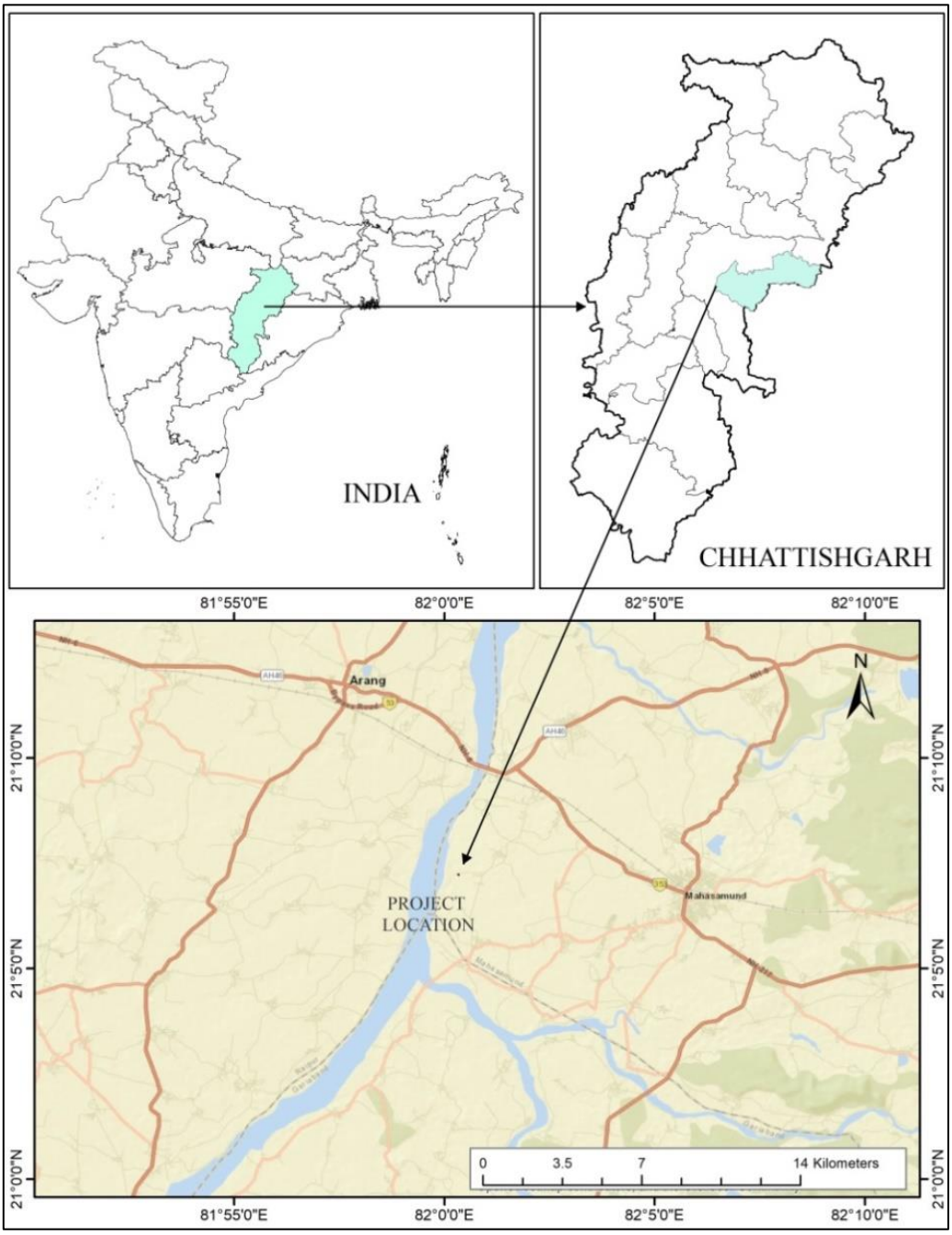


**Figure E-1: Location map of the Project Site**

**Table E.1: Environmental Setting around Project Site**

| | |
|---|---|
| Name of the Projects | Nandgaon Farshi Patthar Mine |
| Location of the Projects | Village – Nandgaon, Taluka- Mahasamund , District – Mahasamund |

<table>
<tr><td>Geographical Coordinates:</td><td>

***Smt. Sushmita Chandrakar***

| Boundary Points | Latitude | Longitude |
|---|---|---|
| BL1 | 21°7'12.79"N | 82°0'20.37"E |
| BL2 | 21°7'12.75"N | 82°0'20.89"E |
| BL3 | 21°7'12.62"N | 82°0'21.69"E |
| BL4 | 21°7'15.38"N | 82°0'21.81"E |
| BL5 | 21°7'15.20"N | 82°0'18.93"E |
| BL6 | 21°7'13.87"N | 82°0'18.40"E |
| BL7 | 21°7'14.06"N | 82°0'20.31"E |

***Smt. Sangita Chandrakar***

| Boundary Points | Latitude | Longitude |
|---|---|---|
| BL1 | 21°7'12.01"N | 82°0'39.72"E |
| BL2 | 21°7'11.93"N | 82°0'41.62"E |
| BL3 | 21°7'11.73"N | 82°0'41.98"E |
| BL4 | 21°7'11.33"N | 82°0’43'.56"E |
| BL5 | 21°7'7.36"N | 82°0'42.58"E |
| BL6 | 21°7'7.76"N | 82°0 '39.21"E |

***Shri Krishna Kumar Chandrakar***

| Boundary Points | Latitude | Longitude |
|---|---|---|
| BL1 | 21°7'4.00"N | 82°0'18.02"E |
| BL2 | 21°7'3.86"N | 82°0'20.52"E |
| BL3 | 21°7'1.33"N | 82°0'20.21"E |
| BL4 | 21°7'1.56"N | 82°0’18'.01"E |
| BL5 | 21°7'3.41"N | 82°0'17.94"E |

</td></tr>
<tr><td>Maximum Temperature</td><td>35.52</td></tr>
<tr><td>MinimumTemperature</td><td>4.8</td></tr>
<tr><td>Annual rainfall</td><td>1193.4 mm</td></tr>
<tr><td>Size of the Project</td><td>Smt. Sushmita Chandrakar – 0.53 Ha .<br>Smt. Sangita Chandrakar- 1.37 Ha.<br>Shri.Krishna Kumar Chandrakar – 0.53 Ha.</td></tr>
</table>

<table>
<tr><td>Nearest Highway</td><td><table>
<tr><th>Smt. Sushmita Chandrakar</th><th>Smt. Sangita Chandrakar</th><th>Shri Krishna Kumar Chandrakar</th></tr>
<tr><td>NH 6 at 5.25 km towards north ( Raipur-Pithora road)</td><td>NH 353 at 4.50 km towards north-east (Raipur-Mahasamund road)</td><td>NH 353 at 5.20 km towards north (Raipur-Mahasamund road)</td></tr>
</table></td></tr>
<tr><td>Nearest railway station</td><td><table>
<tr><th>Smt. Sushmita Chandrakar</th><th>Smt. Sangita Chandrakar</th><th>Shri Krishna Kumar Chandrakar</th></tr>
<tr><td>Belsonda 4.80 Km</td><td>Belsonda 4.60 Km</td><td>Belsonda 5.15 Km</td></tr>
</table></td></tr>
<tr><td>Nearest town/City</td><td>Mahasamund 5.00 km towards South - East</td></tr>
<tr><td>Nearest water body</td><td>Mahanadi River – 0.56 km</td></tr>
<tr><td>Major water bodies within 10 km radius</td><td>Sargi Nadi – 5.20 km<br>Sukha Nadi – 4.70 km<br>Mahanadi River- 0.50 km</td></tr>
<tr><td>Nearest Airport</td><td>Raipur, 28.00 km toward north- west</td></tr>
<tr><td>Densely populated or built-up area</td><td>Mahasamund 5.00 km towards South- East</td></tr>
<tr><td>Archaeologically important places</td><td>None within 10 km radius</td></tr>
<tr><td>Protected areas as per Wildlife Protection Act (Tiger reserve, Elephant reserve, Biospheres, National parks, Wildlife sanctuaries, community reserves and conservation reserves)</td><td>None within 10 km radius</td></tr>
<tr><td>Reserved / Protected Forests</td><td>Sirpur RF- 19.25 km<br>Tumgaon RF- 9.90<br>Boriyajhar PF- 13.15 km</td></tr>
<tr><td>Defense Installations</td><td>None within 10 km radius</td></tr>
<tr><td>Seismicity</td><td>Since project site comes under Seismic zone II, which is least active zone for earthquakes as per IS: 1893 (Part 1: 2002).</td></tr>
<tr><td>WildlifeSanctuary</td><td>None within 10 km radius</td></tr>
<tr><td>National Park</td><td>None within 10 km radius</td></tr>
<tr><td>Biosphere reserves</td><td>None within 10 km radius</td></tr>
</table>

| | |
|---|---|
| Important migration routes of birds | None within 10 km radius |
| Ramsar sites (Wetlands of International Importance | None within 10 km radius |
| Unique or threatened ecosystems | None within 10 km radius |
| Important topographical features, including ridges, river valleys, shorelines, and riparian areas | None within 10 km radius |
| Mangrooves | None within 10 km radius |
| Physical Sensitive Receptors | None within 10 km radius |
| Notified Ground Water Zone by CGWA | None within 10 km radius |
| Critically Environmental polluted Area | None within 10 km radius |
| Pollution Sources | None within 10 km radius |

## 2.0 Project Description

The proposed project of Nandgaon Farshi Pathar Mine of 2.43 Ha is situated at Village- Nandgaon, Tehsil- Mahasamund , District: Mahasamund , State: Chattishgarh. The life span of proposed mine block is 30 years. The proposed method of mining is open cast semi mechanized mining.

**Table E-2: Salient Features of the Proposed Mining Project**

<table>
<tr><th>INFORMATION</th><th colspan="2">DETAILS</th></tr>
<tr><td rowspan="4">Name of Lease holdersand Contact details of Lease Holders</td><td>Smt. Sushmita Chnandrkar</td><td>Smt. Sangita Chandrakar</td></tr>
<tr><td>W/o ShriAlokChandrakar<br>BTI Road , Mahasamund<br>Tehsil & District Mahasamund<br>State- Chhattisgarh</td><td rowspan="3">W/o Late Shri Naresh Chandrakar, Village - Nandgaon<br>Tehsil &District- Mahasamund (CG)</td></tr>
<tr><td>Shr. Krishna Kumar Chandrakar</td></tr>
<tr><td>S/o. Late Shri Kaliram Chandrakar<br>Near Rohinipuram Talab, Raipur<br>Tehsil & District- Raipur<br>Pin Code- 492001 ( CG)</td></tr>
</table>

<table>
<tr><td>Name of the project</td><td>Nandgaon Farshi Patthar Mine</td></tr>
<tr><td>Village</td><td>Nandgaon</td></tr>
<tr><td>Tahsil</td><td>Mahasamund</td></tr>
<tr><td>District</td><td>Mahasamund</td></tr>
<tr><td>State</td><td>Chhattisgarh</td></tr>
<tr><td>Toposheet No</td><td>64K/4, 64G/16</td></tr>
<tr><td>Name of the Mineral to be mined</td><td>Farshi Patthar</td></tr>
<tr><td>Type of land</td><td>Private Land. There is no Forest land. No human settlement.</td></tr>
<tr><td>Status of Operation (New Project or Existing Project operating since)</td><td>New Project & Existing Project</td></tr>
<tr><td>Mine Area</td><td>Smt. Sushmita Chandrakar – 0.53 Hect.<br>Smt. Sangita Chandrakar – 1.37 Hect.<br>Shri Krishna Kumar Chandrakar – 0.53 Hect.</td></tr>
<tr><td>Ultimate depth of mining</td><td>Smt. Sushmita Chandrakar- 9.00 m<br>Smt. Sangita Chandrakar- 12.00 m<br>Shri.Krishna Kumar Chandrakar – 6.00 m</td></tr>
<tr><td>Minable Reserve</td><td>• Smt.Sushmita Chandrakar- 25,351.20 MT<br>• Smt. Sangita chandrakar-1,75,950.00 MT<br>• Shri.Krishna Kumar Chandrakar- 26,296.25 MT</td></tr>
<tr><td>Production Capacity</td><td>• Smt. Sushmita Chandrakar- 2,540.00 TPY<br>• Shri.Krishna Kumar Chandrakar- 2,500.00 TPY<br>• Smt. Sangita Chandrakar – 3,750.00 TPY</td></tr>
<tr><td>Life of Mine</td><td>As per Lease period -30 years</td></tr>
<tr><td>Quantity of topsoil and Overburden estimated to be removed</td><td>
<table>
<tr><th>Name</th><th>Topsoil(Cum)</th><th>OB(Cum)</th></tr>
<tr><td>Smt. Sushmita Chandrakar</td><td>733.50</td><td>8,068.50</td></tr>
<tr><td>Smt. Sangita Chandrakar</td><td>7,065.00</td><td>17,595.00</td></tr>
<tr><td>Shri Krishna Kumar Chandrakar</td><td>6,684.00</td><td>-</td></tr>
</table>
</td></tr>
<tr><td>Depth of Ground Water Table</td><td>Approx. 35 meters of below from the normal surface level</td></tr>
<tr><td>Method of Mining</td><td>Opencast Semi-Mechanized</td></tr>
<tr><td>No. of working days</td><td>240 Days</td></tr>
<tr><td>SeismicZone</td><td>Seismic Zone II</td></tr>
</table>

## 2.1 Water Requirement-

The total water requirement shall be 16.00 KLD for Nandgaon Farshi Pathar Mine respectively for domestic, green belt and sprinkling purpose, which will be sourced from Water Tankers from nearby village. Detail of water requirement is given below:

**Table E-3.1: Water Requirement Details for Smt. Sushmita Chandrakar**

| Sr. No. | Usage | Water Requirement | |
|---|---|---|---|
| 1. | Greenbelt Development @ 2.5 L/tree | 468 Trees X 2.5Lit/day = 1170 or say 1500 Lit/day | 1.50 KLD |
| 2. | Dust Suppression @ 0.5 L/Sqm (twice a day) | Haul road Area = (500m Length x 4 m width = 2000 sqm.) x 0.5 li/sqm =1000 lit /day x 2 time = 2000 lit/day | 2.00 KLD |
| 3. | Stone Cutting | Same Water is used through recycling within mine pit | 2.00 KLD |
| 4. | Domestic Purpose @25 lpd/worker | 5 workers x 25 lit per day = 125Lit/Day | 0.50 KLD |
| | | **Total ::** | **6.00 KLD** |

**Table E-3.2: Water Requirement Details for Smt. Sangita Chandrakar**

| Sr. No. | Usage | Water Requirement | |
|---|---|---|---|
| 1. | Greenbelt Development @ 2.5 L/tree | 453 Trees X 2.5Lit/day = 1132 or say 1500 Lit/day | 1.50 KLD |
| 2. | Dust Suppression @ 0.5 L/Sqm (twice a day) | Haul road Area = (500m Length x 4 m width = 2000 sqm.) x 0.5 li/sqm =1000 lit /day x 2 time = 2000 lit/day | 2.00 KLD |
| 3. | Stone Cutting | Same Water is used through recycling within mine pit | 1.00 KLD |
| 4. | Domestic Purpose @25 lpd/worker | 19 workers x 25 lit per day = 475 Lit/Day | 0.50 KLD |
| | | **Total ::** | **5.00 KLD** |

**Table E-3.3: Water Requirement Details for Shri Krishna Kumar Chandrakar**

| Sr. No. | Usage | Water Requirement | |
|---|---|---|---|
| 1. | Greenbelt Development @ 2.5 L/tree | 474 Trees X 2.5Lit/day = 1185 or say 1500 Lit/day | 1.50 KLD |

| | | | |
|---|---|---|---|
| 2. | Dust Suppression @ 0.5 L/Sqm (twice a day) | Haul road Area = (500m Length x 4 m width = 2000 sqm.) x 0.5 li/sqm =1000 lit /day x 2 time = 2000 lit/day | 2.00 KLD |
| 3. | Stone Cutting | Same Water is used through recycling within mine pit | 1.00 KLD |
| 4. | Domestic Purpose @25 lpd/worker | 19 workers x 25 lit per day = 475 Lit/Day | 0.50 KLD |
| | | **Total ::** | **5.00 KLD** |

## *2.2 Power Requirement*

No power is required for mining purpose other than for labor, admin building and for Stone Cutting Machine. State electricity board will supply the electricity. Electric power is available in the lease area.

### *2.3 Manpower Requirement*

The mining project will generate direct & indirect employment. Local people will get direct employment, and some persons will also be affected indirectly and employed with allied and related industries, such as transportation, maintenance, etc. Following staff & workers are proposed to be employed: -

**Table E-4: Manpower Details of Nandgaon Farshi Pathar Mine**

| | | **Smt. Sushmita Chandrakar** | **Smt. Sangita Chandrakar** | **Krishna Kumar Chandrakar** |
|---|---|---|---|---|
| 1 | Manager | - | - | - |
| 2 | Supervisor | 1 | - | - |
| 3 | Mining Mate | 1 | - | - |
| 4 | Skilled | 3 | 1 | 1 |
| 5 | Unskilled | - | 18 | 18 |
| **Total** | | **5** | **19** | **19** |

## 3.0 Description of Environment

The area around the proposed mining site has been surveyed for physical features and existing environmental scenario. The field survey and baseline monitoring has been done from the period of **Dec 2022 to Feb 2023** (Winter Season).

The observations for Winter season-(Dec.2022 to Feb 2023) are summarized below:

## *3.1 Meteorology*

The secondary meteorological data of the study period collected from www. imdpune.gov.in/. The month wise meteorological data is given in Table E-5.

**Table E-5: Meteorological Data of the study area (IMD – Raipur)**

| Period | Wind Speed (m/s) | | | Temp (°C) | | | Relative Humidity (%) | | | Rainfall (mm) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Max | Min | Avg | Max | Min | Avg | Max | Min | Avg | Max | Min | Avg |
| Dec-22 | 4.18 | 2.23 | 2.06 | 27.23 | 8.52 | 18.63 | 100 | 39.94 | 76.51 | 0.86 | 0 | 0.4 |
| Jan-23 | 4.19 | 0.23 | 2.18 | 30.11 | 4.8 | 18.71 | 100 | 26.75 | 66.40 | 0.01 | 0 | 0.00 |
| Feb-23 | 6.18 | 0.1 | 2.31 | 35.52 | 8.8 | 22.32 | 82.94 | 11.06 | 37.92 | 0.72 | 0 | 0.01 |

*Source: Weather Summary for Dec 2022-Feb 2023(https://www.imdpune.gov.in/)*

## *3.2 Air Environment*

The ambient air quality is carried out at 8locations in and around the project site and studies are carried out as per CPCB standards. It is observed that, all the values are within the prescribed limits as per National Ambient Air Quality Standards (NAAQS), 2009.

The results are compared with the standards prescribed by Central Pollution Control Board (CPCB).The overall ambient air quality around the proposed mine lease is within the limits of ambient air quality standards prescribed by CPCB.

The observations for Winter season - (Dec 2022 – Feb2023) are given in table-

## *3.3 Noise Environment*

Noise levels were monitored in eight locations including project within the study area. The noise levels ranged between 53.2 to 60.2 dB (A) during day time and noise levels ranged between 43.3 to 53.6 dB (A) during night time. Over all the monitored noise levels are found to be within the stipulated standards set by CPCB.

## *3.4 Water Environment*

In order to establish the baseline water quality, 4 ground water and 4 surface water samples were collected and analysed in the study area. The quality of surface water samples was compared with surface water specification IS 2296:1982 and the surface water quality comes under Class D (Propagation of wildlife and fisheries). The ground water samples were compared with drinking water specification IS 10500:2012 standards.

## *3.5 Soil Quality*

A total of 8 samples in and around the project site are collected and analysed. It has been observed that the pH of the soil quality ranged from 7.1 (S7) to 7.7 (S2) indicating that the soil is slightly alkaline in nature.

***Table E- 6: ENVIRONMENTAL BASELINE STUDY***

| Particullar | Number of Locations | Description |
|---|---|---|
| **Background Ambient Air Quality Monitoring** | Sampling was done at 8 Locations | $PM_{10}$ :-43 to 77 μg/$m^3$<br>$PM_{2.5}$ :-11 to 38 μg/ $m^3$<br>$SO_2$ :- 5 ug/m3 to 16 μg/ $m^3$<br>NOx:- 9 to 20 μg/ $m^3$<br>CO:-0.2 to 0.9 mg/ $m^3$<br>$SiO_2$-0.1 to 0.3 μg/ $m^3$ |
| **Noise Level Monitoring** | Monitored at 8 Locations | Noise Level During Day Time :– 53.2 to 60.2 dB (A)<br>Noise Level During Night Time:– 43.3 to 53.6 dB (A) |
| **Water Sampling** | Ground water sampling was done at - 4 Locations | pH :- 6.2 to 7. 5 ;<br>TDS :- 508 -582 mg/l ;<br>Total Hardness :- 356 -392 mg/l<br>$SO_4$ :-62 mg/l to 76 mg/l;<br>Chloride :- 68 mg/l to 82 mg/l;<br>Zn & Fe: - Below detectable limit. |
| | Sampling:- 4 at Surface water | pH :- 7.2 to 7.5 ;<br>TDS :- 258 mg/l to 298 mg/l;<br>Dissolve oxygen: - 5.1 to 5.7 mg/l.<br>Chloride :- 31 mg/l to 36 mg/l;<br>Calcium :- 36 mg/l to 43 mg/l;<br>Magnesium :- 20 mg/l to 25 mg/l;<br>Total Hardness :- 172 to 210 mg/l ; |
| **Soil Sampling** | Sampling was done at 12 Locations | pH :- 7.1 to 7.7;<br>Nitrogen:- 118 to 131 kg/ha<br>Phosphorus:– 7 to 82 kg/ha<br>Potassium :– 222 to 291 kg/ha<br>Electric Conductivity:- 0.362 to 0.522 ms/cm |

## *Land Use/Land Cover of the Study Area*

Nandgaon Villages in the Mahasamund Tehsil of the Mahasamund District in Chattisgarh State, India. Figure2.2 depicts the village area as covered by Survey of India topo sheets 64K/4, 64G/16 (SOI).

Figure 3.12 shows a pie diagram of the 10-kilometer research region's land use and land cover maps. The LULC map, shows that the analysis is separated into nine areal classes: Water body, River, Crop Land, Settlement, Vegetation, Sand, fallow land, Forest, Mining area, Shrub land.

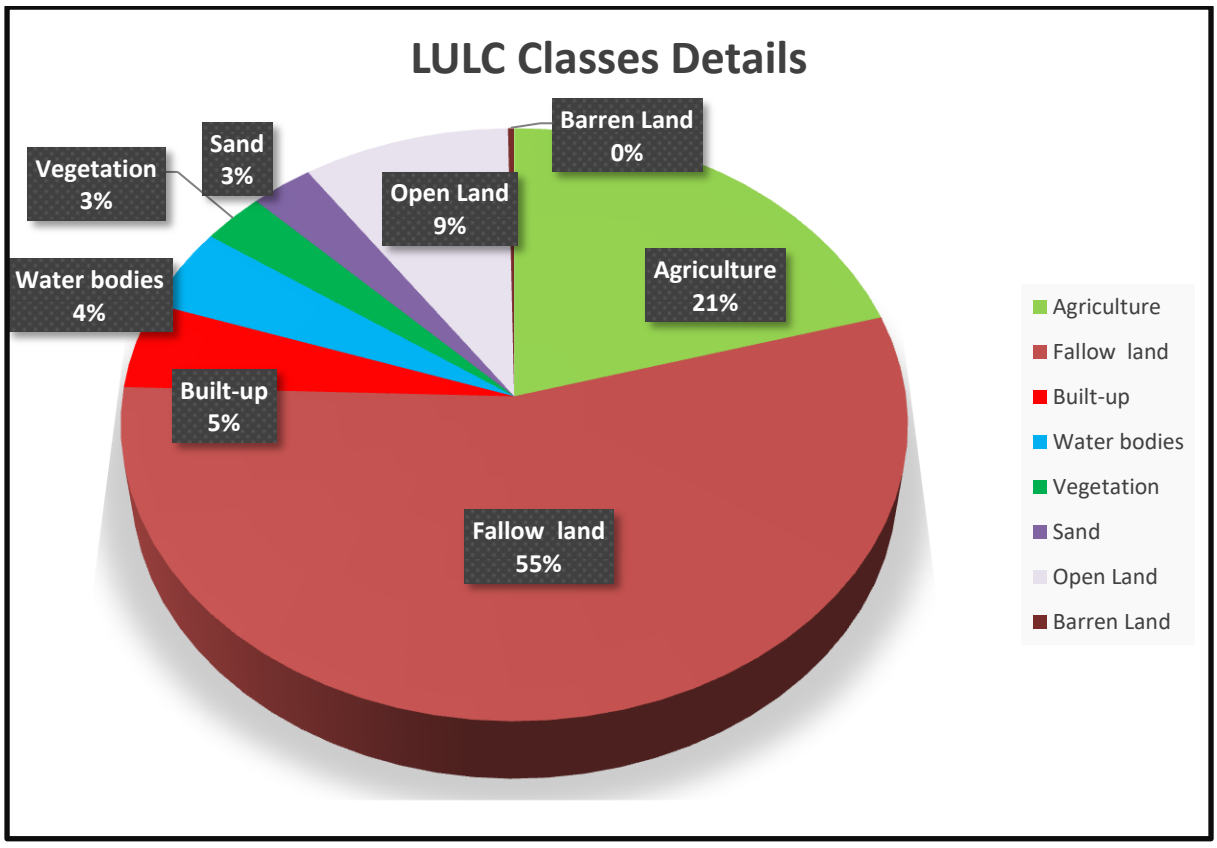


***Figure 2: LULC Classification (10 km radius Proposed Project Area) of the project site***

### *3.6 Ecological and Biodiversity*

Study of biological environment is one of the most important aspects for Environmental Impact Assessment. In view of the need for conservation of environmental quality and biodiversity study, biological environment is one of the most important aspects for Environmental Impact Assessment. Ecological systems show complex inter-relationships between biotic and abiotic components including dependence, competition and mutualism. Biotic components comprise of both plant and animal communities, which interact not only within and between them but also with the abiotic components viz. physical and chemical components of the environment. Generally, biological communities are the indicators of climatic and edaphic factors. The biological environment includes mainly terrestrial ecosystem and aquatic ecosystem.The mining

activities are one such external influence, which might affect the ecology of an area, if proper management measures are not taken.

## *3.7 Socio-economic Environment*

The proposed mining cluster Nandgaon Farshi Pathar Mine located at village Nandgaon Taluka- Mahasamund District – Mahasamund. Chhattisgarh. 21° 7'14.34"N Latitude and 82° 0'20.70"E Longitude. Farshi Pathar is mainly used as the domestic building material i.e. Flooring / Roofing/ Beams/ Paving/ Doorsill /Carving / Boundary construction. Nowadays it is widely used for the purpose of footpath along the road side. While discusses the baseline scenario of the socio-economic environment in the 10 km radius area total 92 villages are comes under study area. The detailed information on these villages is presented in the given various tables and graphs.

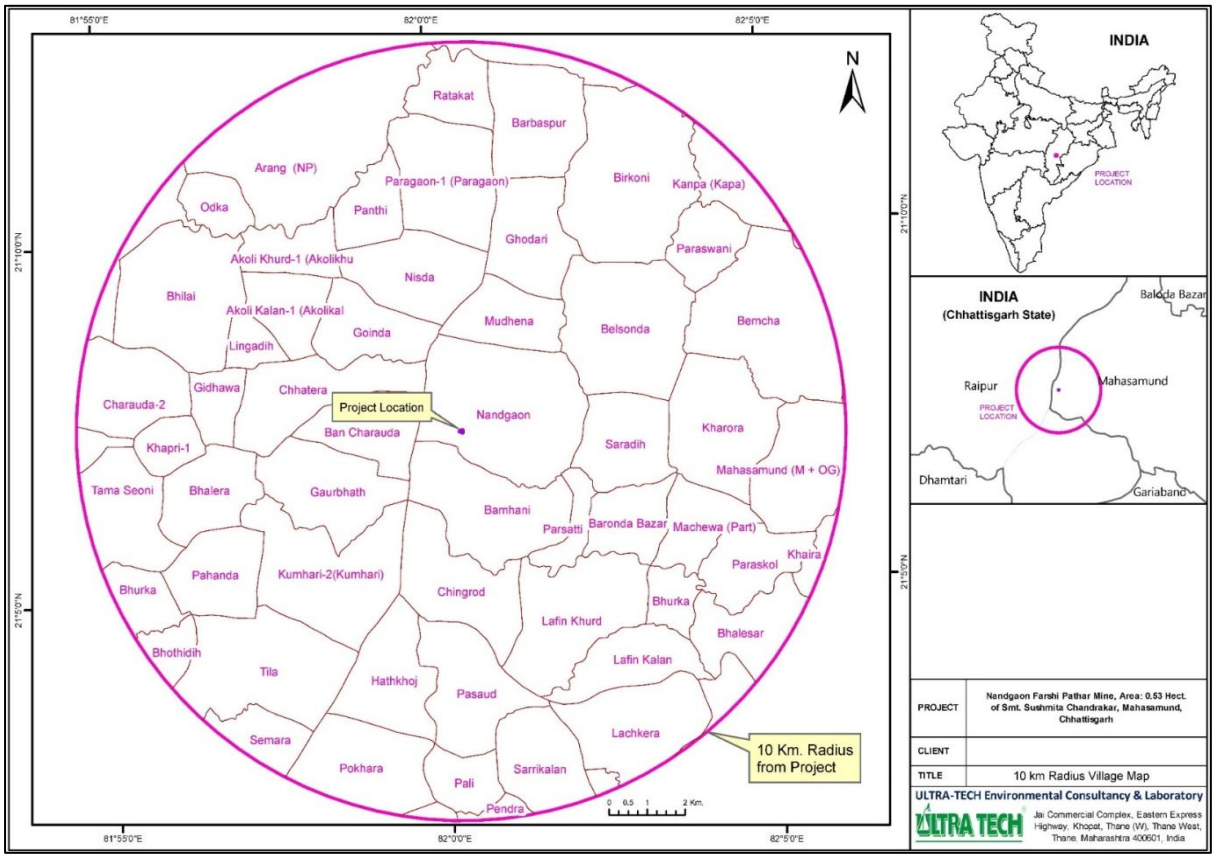


***Fig . 3: Villages within 10 Km. Radius Area from Project Site.***

## *4.0 Anticipated Environment Impacts and Environment Management Plan*

***Land/Soil Environment Impact Mitigation***

The mitigation measure of the land environment includes:

- Before the mining activity the top soil will be scrapped and stored in the lease area and will be utilized for plantation purpose. Balance top soil if any preserved separately will be used to spread over partially reclaimed land.
- The Farshi Pathar excavated from the lease area will be completely sellable resulting no dump within the lease area.
- At the end of conceptual period the excavated quarry will converted into water reservoir to supply water for local use like irrigation and pisciculture.
- Due to manual mining operation emission from the Farshi Pathar mines are very less, there will be no impact on the surrounding soil quality and cropping pattern of the area.
- The propose project falls under the seismic zone –II (Low Hazard Risk Zone). Since this project will not have physical infrastructure to be constructed, no impact of seismicity is envisaged in this project. Further, this project will not change/alter the seismic behavior of the area.

***Air Impact Mitigation***

The mitigation measures undertaken in the mine for control of air pollution are:

- Checking of vehicles and machinery to ensure compliance to Indian Emission Standards Transportation vehicles and machinery to be properly and timely maintained and serviced regularly to control the emission of air pollutants in order to maintain the emissions of $NO_x$ and $SO_x$ within the limits established by CPCB.
- 4 KLD water required towards dust suppression purpose for which 2 no. of water tanker with 2000 litter capacity will be hired and used for water sprinkling twice in a day in haul roads, dumping site, loading and unloading site of each lease within the cluster and this will be regularly monitored by the cluster management. Water sprinkling on transport road side, stock yard (if any) etc. will be done by tractor mounted water sprinkler.
- Regular compaction and grading of haul roads will be done to clear the accumulation of loose material
- All the mines workers will be provided with the dust masks.
- Trees can act as efficient biological filters. As this is a small lease, the area available for plantation is very less. However, a well-planned plantation programme has been proposed for the mining area to arrest the dust pollution within the lease boundary. There is the proposal for continuous plantation along the cluster boundary and both side of the road connecting the cluster.

- Vehicles with valid PUC shall be used for transporting the minerals to avoid the exhaust emission.
- A greenbelt development plan is prepared with local species. The greenbelt on the periphery will reduce the dust levels its
- Water mounted stone cutter will be used for stone cutting.
- Regular monitoring of the air quality as per the monitoring plan detailed in Chapter 6 of this EIA report shall be adopted during the operation phase, to ensure that, the air quality is within the desired limits prescribed by CPCB.

***Noise Impact Mitigation***

- No noise polluting work shall be carried out in the night hours
- Provision of PPE's for the workers
- Vehicles to be serviced regularly and maintained properly to avoid any unwanted generation of noise or vibration from them
- Green belt plantation and garden trees will help in reducing the noise, traffic related pollution and heat island effects.
- Proper lubrication, muffling and modernization of equipment shall be used to reduce the noise during operation phase.
- Regular monitoring of the noise levels as per the monitoring plan detailed in Chapter 6 of this EIA report shall be adopted during the operation phase, to ensure that, the noise levels are within the limits prescribed by CPCB.

***Water Impact Mitigation***

- Provision of temporary toilets for labourers.
- Domestic waste water will be treated into septic tank followed by soak pit outside of the proposed cluster project with a safe distance and no wastewater will be allowed to be get discharged into the water body
- All stacking and loading areas should be provided with proper garland drains.
- Check dams should be provided to prevent solids from wash off.
- Construction of garland drains around freshly excavated and dumped areas so that flow of water with loose material is prevented.

- The mine water should be passed through specially constructed catch pits to arrest any loose material being carried away with water.
- Any areas with loose debris within the leasehold should be planted.
- Garland drains should be constructed surrounding the waste dumps and should be connected to the surface water reservoir to avoid the run-off mixing directly to natural water channels before settling.
- Ground water table will not be intersected during the mining activity.

***Biological Impact Mitigation***

- Green belt will be developed along the core zone boundary which will act as a pollution barrier for the biological environment.
- The drilling and transportation will be carried out during the day time only minimizing the impact on the wild fauna movement.
- Fencing around the entire mine lease area is recommended in order to restrict the entry of stray animals into the mining area.

***Socio-Economic Environment Impact Mitigation***

In order to mitigate the adverse impacts likely to arise in the surrounding area due to proposed project activity, it is necessary to formulate an effective mitigation plan. The suggestions are as follows:

## *Before Commencing and During Initial Phase:*

- Communication with the local community should be institutionalized and done on a regular basis. The forum could provide opportunities to discuss local critical issues and prepare programmers of mutual benefits.
- Information regarding the proposed dragging plan should be communicated to the local community in the form of display Poster, booklets and audio-visuals.

## *Mining Phase:*

- Project proponent should take appropriate steps to keep environment clean and healthy during construction phase.
- Provision of adequate drinking water, toilet and bathing facilities should be made available on project site also in labour camp site.

- Water shall be sprinkle/spread over the truck and road to suppress dust during transportation of mining material to control air pollution and thereby avoid adverse health impact.
- A barrier located in the direction of the wind; with a height of approximately three times the height of the storage pile for reduce PM10 emissions.
- While transportation of dragging material, truck, tractors should be covered.
- Proper Training and awareness programme should be carried out so that the workers understand the importance of wearing the personal protective and safety equipment's.

## 5.0 Environmental Monitoring Program

The environmental monitoring is important in terms of evaluating the performance ofpollution control equipments installed in the project. The sampling and analysis of the environmental attributes will be as per the guidelines of Central Pollution Control Board/Chhattisgarh Environment Conservation Board (CECB). The frequency of sampling andlocation of sampling will be as per the directives of CPCB/CECB.

Environmental monitoring will be conducted on regular basis by the lessees included on thecluster to assess the pollution level in the surrounding area. Usually, as in the case of thestudy, an impact assessment study is carried over short period of time and the data cannotbring out all variations induced by the natural or human activities. Therefore, regular monitoring programme of the environmental parameters is essential to take into account the changes in the environment.

**Objective of environmental monitoring:**

- To verify the result of the impact assessment study in particular with regard to new developments;
- To follow the trend of parameters which have been identified as critical;
- To check or assess the efficacy of the controlling measures
- To ensure that new parameters, other than those identified in the impact assessment study, do not become critical through the commissioning of new installations or through the modification in the operation of existing facilities;
- To check assumptions made with regard to the development and to detect deviations inorder to initiate necessary measures; and
- To establish a database for future Impact Assessment Studies for new projects.

## *6.0 Risk Assessment*

The hazards and its risk assessed during the operation phase of the proposed FarshiPathar mining project are low, medium & high. The project proponents are proposed to implement all the mitigation measures to prevent the impact or consequences of the risk expected to be happened in both the project sites. The level of impact after implementing the mitigation measures will be low/medium in all the hazards identified.

### 7.0 Emergency Response and Disaster Management Plan

Impact of disaster can be significantly reduced through attempts at preparedness, mitigation, and post-event rehabilitation work. Based on hazard identification in the proposed project, an emergency plan has been prepared and the same plan will be implemented by the project implementing agency with the coordination of District Authorities to minimize the damage. The risk assessment and disaster management plan is detailed in Chapter 7 of the EIA report.

### 8.0 Project Benefits

Mining is back bone of infra-structure development of country. Proposed project has following benefits as given below:

- Employment for local people
- Revenue for the State Government in form of excise duties, GST, taxes, levies etc.
- Generate business opportunity for the people
- Need based funds will be used for welfare of people in villages
- EMP funds will improve environmental quality.
- The operation of the limestone mining would help to improve socio-economic condition of people in villages through separate fund allocated for Need Based Activity.

## *9.0 Budget for Social Development*

The total estimated cost of the project is 48.16 lacs . Rs 1,25,000/- lac will be allocated for Need based activity for causes of village for drinking water, sanitation, education, health.

## *10.0* Environment Management Plan (EMP)

The detailed Environment Management Plan has been prepared based on the mining activities and the impacts imparting on land/soil, air, noise, water by the activities. The EMP and the cost for the environment protection measures are detailed in Chapter 10 of EIA report.

**Expenditure Proposed for Environmental Protection Activities:**

| S.No. | Particulars | Sangita Chandrakar | Sushmita Chandrakar | Krishn Kumar Chandrakar |
|---|---|---|---|---|

| | | Capital Cost in Rs | Recurring Cost in Rs | Capital Cost | Recurring Cost in Rs | Capital Cost in Rs | Recurring Cost in Rs |
|---|---|---|---|---|---|---|---|
| 1 | Air Pollution Control | - | 1,44,000 | | 1,44,000 | | 1,44,000 |
| 2 | Green Belt Development | 63,300 | 2,42,000 | 85,800 | 2,43,200 | 72,400 | 2,43,200 |
| 3 | Maintenance of Road | - | 20,000 | | 20,000 | | 20,000 |
| 4 | Facilities for Mine workers | 50,000 | 81,500 | 50,000 | 22,500 | 50,000 | 81,500 |
| | **Total ::** | **1,13,300** | **4,88,000** | **1,35,800** | **4,30,000** | **1,22,400** | **4,89,000** |
| **Total Capital Cost in Rs** | | **3,71,500** | | | | | |
| **Total Recurring Cost in Rs** | | **14,07,000** | | | | | |
| **Total Cost of EMP in Rs** | | **17,78,500** | | | | | |

## 11. 0 Conclusion

As discussed, it is safe to say that the collection of minor mineral from the proposed lease area is not likely to cause any significant impact on the ecology of the area as the mineral is and waste generated is non-toxic and does not harm the surrounding environment.

Adequate measures will be taken to control the fugitive emissions to be generating during mining operation. Green belt development in the statutory boundary, approach roads, Govt. buildings, Schools also proposed with the help of local Govt. department and local people as social forestry in the area for betterment of environment.