

# DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT & ENVIRONMENT MANAGEMENT PLAN Of

## Executive Summary English

**Dhaur & Patora Cluster Limestone Quarry**  
at  
**Village- Dhaur & Patora, Tehsil- Patan, District- Durg, C.G.,**  
**Area: 9.01 ha**  
at

Project Name	Block/ Khasra	Area (Acres ) / (Ha)	Location	Type of Land	Consent Letter
M/s. Mittal Infracon Dhaur Limestone Mine	916/1, 916/4, 916/5, 916/6 (P), 917, 918, 919, 929/1, 929/2, 929/3, 929/4, 929/5, 929/6, 929/7 and 929/8	4.46	Village-Dhaur Tehsil- Patan District- Durg State – Chhattisgarh.	Private land	Shri Sanjay Agrawal
M/s. Rock Ore Minerals Patora limestone Mine	478/1, 478/2, 479/1, 480/1, 481, 482, 541, 542/2, 543, 545, 546, 547/1, 547/2, 547/3, 547/4.	4.55	Village- Patora Tehsil- Patan District- Durg State Chhattisgarh.	Private land	Shri Rana Arun Kumar Singh



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*P & M Solution*



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## **EXECUTIVE SUMMARY**

### **INTRODUCTION**

Environmental Impact Assessment (EIA) is a process, used to identify the environmental, social and economic impacts of a project prior to decision-making. It is a decision making tool, which guides the decision makers in taking appropriate decisions for proposed projects. EIA systematically examines both beneficial and adverse consequences of the proposed project and ensure that these impacts are taken into account during the project designing.

The Mining Lease Of Limestone At Khasra No.478/1,2,479/1,480/1,481,482,541 Part Of 542/2,543,545,546,547/1,2,3,4&916/1,916/4,916/5,916/6(P),917,918,919,929/1,929/2,929/3,929/4,929/5,929/6,929/7 And 929/8.At Village – Patora And Dhour,Tehsil-Patan,District-Durg, State–Chhattisgarh.Area-4.55 Ha & 4.46 Ha (Under Cluster) Has Been Granted To Partner Rana Vikrant Singh And Partner Shri Sanjay Agrawal .

### **Location of the project –**

The mining lease is located in Village – Patora & Dhour, Tehsil - Patan, District- Durg, District- Raipur (C.G.)

### **Geographical Co-ordinates of the Mine lease area**

**(Partner – shri Rana Vikrant Singh)**

<b>S.No</b>	<b>Latitude</b>	<b>Longitude</b>	<b>S. No</b>	<b>Latitude</b>	<b>Longitude</b>
<b>1</b>	21°06'28.056"N	81°24'44.721"E	<b>13</b>	21°06'34.165"N	81°24'49.097"E
<b>2</b>	21°06'29.519"N	81°24'44.933"E	<b>14</b>	21°06'33.460"N	81°24'49.178"E
<b>3</b>	21°06'29.575"N	81°24'45.310"E	<b>15</b>	21°06'33.497"N	81°24'50.192"E
<b>4</b>	21°06'30.380"N	81°24'45.277"E	<b>16</b>	21°06'35.998"N	81°24'50.430"E
<b>5</b>	21°06'30.306"N	81°24'44.127"E	<b>17</b>	21°06'35.615"N	81°24'54.524"E
<b>6</b>	21°06'31.420"N	81°24'44.148"E	<b>18</b>	21°06'35.034"N	81°24'54.436"E
<b>7</b>	21°06'31.459"N	81°24'46.112"E	<b>19</b>	21°06'35.362"N	81°24'53.411"E
<b>8</b>	21°06'32.856"N	81°24'46.067"E	<b>20</b>	21°06'35.011"N	81°24'53.136"E
<b>9</b>	21°06'32.729"N	81°24'44.655"E	<b>21</b>	21°06'34.545"N	81°24'54.104"E

Project: **DEIA Part of Patora - Dhour Limestone Quarry– (under cluster approach) over an area of 9.01 Ha at Village- Patora & Dhour Tehsil– Patan District – Durg, Chhattisgarh.**

<b>10</b>	21°06'32.124"N	81°24'44.722"E	<b>22</b>	21°06'31.150"N	81°24'52.516"E
<b>11</b>	21°06'32.112"N	81°24'43.413"E	23	21°06'31.129"N	81°24'50.186"E
<b>12</b>	21°06'33.808"N	81°24'43.278"E	<b>24</b>	21°06'27.333"N	81°24'49.975"E

**Geographical Co-ordinates of the Mine lease area**

**(Partner - Shri Sanjay Agrawal)**

<b>S.No</b>	<b>Latitude</b>	<b>Longitude</b>
<b>1</b>	21°05'53.30"N	81°26'31.88"E
<b>2</b>	21°05'53.16"N	81°26'22.88"E
<b>3</b>	21° 05'49.84"N	81°26'21.28"E
<b>4</b>	21° 05'51.06"N	81°26'16.05"E
<b>5</b>	21° 05'58.49"N	81°26'17.28"E
<b>6</b>	21° 05'58.92"N	81°26'15.80"E
<b>7</b>	21° 05'00.09"N	81°26'16.71"E
<b>8</b>	21° 05'58.63"N	81°26'22.25"E

**Connectivity**

The lease area is about 20kms from Durg. The ML area can be approached from Naya Raipur Marg and National Highway 53 which is at a distance of 12 Km North Direction. The Nearest Railway Station Maroda Railway Station 9.8 Km. The Nearest Airport is Swami Vivekanand Airport at a distance of 60 Km NE Direction.

**Mailing/ Correspondence Address of Project Proponent:**

**M/s Rock Ore Minerals**

**(Partner – Shri Rana Vikrant Singh)**

Village- Patora , Tehsil- Patan, District- Durg, State – Chhattisgarh

**M/s Mittal Infracon**

**(Partner -Shri Sanjay Agrawal),**

Village- Dhour, Tehsil- Patan, District- Durg, State – Chhattisgarh

Project: **DEIA Part of Patora - Dhour Limestone Quarry**– (under cluster approach) over an area of **9.01 Ha** at Village- **Patora & Dhour Tehsil– Patan District – Durg, Chhattisgarh.**

### Size of the Project:

**Table 1.1, Detail of the lease area in Cluster**

Mine	Village	Khasra No.	Area (Ha)	Type of land
<b>Partner - Rana Vikrant Singh</b>	Patora	478/1,2,479/1,480/1,481,482,541 part of \ 542/2,543,545,546,547/1,2,3,4	4.55 Ha	Pvt Land
<b>Partner - Shri Sanjay Agrawal</b>	Dhour	916/1,916/4,916/5,916/6(p),917,918,919,929/1,929/2,929/3,929/4,929/5,929/6,929/7 and 929/8	4.46 Ha	Pvt Land
<b>Total</b>			<b>9.01Ha</b>	

The total Mine Lease areas considered is 9.01 Ha (under cluster approach). The proposed production is **79,804TPA for Partner -Rana Vikrant Singh** and the proposed production is **69,828 MT for Partner -Shri Sanjay Agrawal.** (79804 MT+69828TPA) =**1,49,632 TPA.**

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

The anticipated life of mine for mine at village Dhour/ Patora, (9.01 ha) is average production of limestone proposed =79,804 & 69,828 T/year and the minable reserve is 11,89,587T/18,00,920 year. So the anticipated life of mine calculated is = 7.77 year or say 8 years.

The anticipated life of mine for mine at village Dhour & Patora, (9.01ha) is average production of limestone proposed= 6000 MT/year and the minable reserve is 1, 02,097.5 MT/year. So the anticipated life of mine calculated is = 16/27 year or say Total 42 years.

### MINING

Open cast semi mechanized method of mining will be adopted in the lease area. The excavation will be carried out usually by manual labor with the use of pick-axes, crowbars, chisels; sledge hammers etc. and loaded into tractor/truck/tipper. The limestone will be suitably blended to be supplied in market. Rest is interring burden.

### Production Plans for First Five Years of (Partner -Rana Vikrant Singh)

Year Wise	Production (MT)
1 <sup>st</sup> Year	29925
2 <sup>nd</sup> Year	50233
3 <sup>rd</sup> Year	76951

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4 <sup>th</sup> Year	79803
5 <sup>th</sup> Year	79804
<b>TOTAL</b>	<b>316716</b>

**Production Plans for First Five Years of (Partner -Shri Sanjay Agrawal)**

Year Wise	Production (MT)
1 <sup>st</sup> Year	19238
2 <sup>nd</sup> Year	39900
3 <sup>rd</sup> Year	39900
4 <sup>th</sup> Year	49875
5 <sup>th</sup> Year	69828
<b>TOTAL</b>	<b>218741</b>

**Summary of Land use at different stage will be as follows (inHa):**

**Partner – Shri Rana Vikrant Singh**

Land use:	Area in hectares					
	Present land use	Forest land	Agri. land	Stony waste land	Land use at the end of 5 years	Land use upto mine line
<b>A. Lease area</b>	4.550	nil	4.550	nil	4.550	4.550
<b>B. Quarrying &amp; allied</b>						
1. Area under pit	nil	nil	nil	nil	2.580	3.360
2. Area for dumping	nil	nil	nil	nil	0.594	0.594
3. Area for road	nil	nil	nil	nil	0.060	nil
4. Area for infrastructure	nil	nil	nil	nil	0.030	nil
5. Plantation*	nil	nil	nil	nil	0.594	0.594
6. Storage of Mineral	nil	nil	nil	nil	nil	nil
7. crushing unit	nil	nil	nil	nil	nil	nil
9. Unused area	4.550	nil	4.550	nil	1.346	0.596
<b>Total</b>	<b>4.550</b>	<b>nil</b>	<b>4.550</b>	<b>nil</b>	<b>4.550</b>	<b>4.550</b>

**Partner -Shri Sanjay Agrawal**

Land use:	Area in hectares					
	Present land use	Forest land	Agri. land	Stony waste land	Land use at the end of 5 years	Land use upto mine line
<b>A. Lease area</b>	4.460	nil	4.460	nil	4.460	4.460
<b>B. Quarrying &amp; Allied</b>						
1. Area under pit	nil	nil	nil	nil	2.370	3.780
2. Area for dumping	nil	nil	nil	nil	0.408	0.408
3. Area for road	nil	nil	nil	nil	0.160	nil
4. Area for infrastructure	nil	nil	nil	nil	nil	nil
5. Plantation*	nil	nil	nil	nil	0.408	0.408
6. Storage of Mineral	nil	nil	nil	nil	nil	nil
7. crushing unit	nil	nil	nil	nil	0.050	nil
9. Unused area	4.460	nil	4.460	nil	1.472	0.272
<b>Total</b>	<b>4.460</b>	<b>nil</b>	<b>4.460</b>	<b>nil</b>	<b>4.460</b>	<b>4.460</b>

Systematic working will be done by formation of benches as per M.M.R. 1961. All applicable rules of MMR 1961, Mines Act-1952, MCR-2016 and MCDR-1988 will be followed for safe, scientific & systematic working to follow the principles of safety & conservation of human health & mineral.

**Disposal of Waste**

**Nature of waste, its rate of yearly generation and proposals for disposal of waste:**

The topsoil will be called as overburden/waste. The area is slightly covered with soil with average thickness of about 1.0m. below the soil cover the desired ore Limestone is exposed. Waste will be generated during the Quarrying period

**Waste Generation of (Rana Vikrant Singh)**

There is total approx. 11359 m<sup>3</sup>soil/OB generated from the pit area during in plan period. Details of soil management is given below: -

Soil/OB	5040m <sup>3</sup>
20 % Swell factor	2065 m <sup>3</sup>
Total soil with swell factor	12391 m <sup>3</sup>
Height of soil in 4.5 m out of 7.5 m safety zone area	Dumping area is 0.594 m <sup>2</sup> and Height 1.0 m

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Dumping	<ol style="list-style-type: none"> <li>1. 0.594 M<sup>2</sup> soil will be dumped on 0.594 m<sup>2</sup> (4.5 m out of 7.5 m safety zone area) safety zone area 1 m height.</li> <li>2. 2070 CUM soil will be dumped on 694 m<sup>2</sup> area in 3 m height.</li> <li>3. Remaining 8088 CUM soil will be dumped on near adjacent land.</li> </ol>
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### **Waste Generation of (Shri Sanjay Agrawal)**

There is total approx 5040m<sup>3</sup>soil/OB (m<sup>3</sup>with 76% Swell factor) generated from the pit area during in plan period. Details of soil management is given below: -

Soil/OB	7857 m <sup>3</sup>
20 % Swell factor	1571 m <sup>3</sup>
Total soil with swell factor	9428 m <sup>3</sup>
Height of soil in 4.5 m out of 7.5 m safety zone area	Dumping area is 3953 m <sup>2</sup> and Height 1.0 m
Dumping	3953 CUM soil will be dumped on 3953 m <sup>2</sup> (4.5 m out of 7.5 m safety zone area) safety zone area 1 m height and remaining 5475 CUM soil will be dumped on near adjacent land.

### **Selection of Dumping Site of (Shri Rana Vikrant Singh)**

Location of disposal of O.B. is shown in the Production and Development Plan. Overburden will be generated in the proposed years, dumped into statutory boundary (7.5m Barrier zone) at the height of 2.0m of the lease area for plantation. No waste material will have generated from mine area.

### **Selection of Dumping Site of (Shri Shri Sanjay Agrawal)**

Location of disposal of O.B. is shown in the Production and Development Plan. Overburden will be generated in the proposed years, dumped into statutory boundary (7.5m Barrier zone) at the height of 1.0m of the lease area for plantation. No waste material will have generated from mine area.

### **Use of Mineral**

The Limestone will be used as BF grade in steel plants and in lime kilns for manufacture of industrial lime. The low grade limestone above threshold value and fines generated during mining will be used in cement plants.

### **General Features**

#### **i) Land-use pattern**

There is no forest land or agriculture land in the mine lease area. The entire mining lease is covered with alluvial soil.

#### **ii). Surface drainage pattern**

Tandula Canal lies at a distance of 1.54 Km in the South Direction.

#### **iii). Transportation Route:**

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. Then depending on the capacity of the mine, the number of trucks that will be added to the present scenario will be compared to the carrying capacity.

#### **Existing Traffic Scenario & LOS**

<b>Road</b>	<b>V</b>	<b>C</b>	<b>Existing V/C Ratio</b>	<b>LOS</b>
SH 22	830	1100	0.13	A

Source: Capacity as per IRC: 64-1990

**V= Volume of Vehicles in PCU's/day & C= Capacity of Road in PCU's/day**

**The existing Level of Service (LOS) is "A" & "B" i.e. excellent & very good.**

#### **During Mine operation (For Cluster Area)**

Proposed Capacity of mine/annum : 69828 T/Annum

No. of working days : 240 days

Proposed Capacity of mine/day : 317.5 or say 318 TPD

Truck Capacity : 10 tones

No. of trucks deployed/day : 31.8 or say 32 Trucks

No. of trucks deployed/day to and from :  $32*2 = 64$

PCU/day ( $64*3$ ) : 192 PCU

#### **Modified Traffic Scenario & LOS**

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Road	V	C	Modified V/C Ratio	LOS
State Highway 22	830 + 192 = 1022	1100	0.15	A

## 2.7 MANPOWER REQUIREMENT

### Manpower requirement (Shri Rana Vikrant Singh)

The manpower requirement for the proposed project will be given below who will be utilized for excavation & loading of minerals into trucks or tractor-trolleys. Break-up of Man-power requirement is given in below:

Highly Skilled		
S No	Designation	No of Person
1	Mining Manager	3
2	Mining Mate/Blaster	3
Skilled		
1	Compressor Operator	2
2	Excavator Operator	2
3	Jack hammer Operator	2
4	Supervisor	5
Semi-Skilled		
1	Driver for water sprinkler	2
2	Blasting helper	2
3	Security guard for mine and office	2
4	Pump Operator	1
5	Office Staff	3
Un-Skilled		
1	Labor	8
<b>Total</b>		<b>35</b>

### Manpower requirement (Shri Shri Sanjay Agrawal)

The manpower requirement for the proposed project will be given below who will be utilized for excavation & loading of minerals into trucks or tractor-trolleys. Break-up of Man-power requirement is given in below:

#### Manpower requirement

Highly Skilled		
S No	Designation	No of Person

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1	Mining Manager	1
2	Mining Mate/Blaster	1
<b>Skilled</b>		
1	Compressor Operator	1
2	Excavator Operator	1
3	Jack hammer Operator	1
4	Supervisor	1
<b>Semi-Skilled</b>		
1	Driver for water sprinkler	1
2	Blasting helper	1
3	Security guard for mine and office	2
4	Pump Operator	1
5	Office Staff	1
<b>Un-Skilled</b>		
1	Labor	8
<b>Total</b>		<b>20</b>

#### **DESCRIPTION OF BASELINE-ENVIRONMENT**

This section contains the description of baseline studies of the 10 km radius of the area. 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 propose mining for:-

- (a) Land
- (b) Water
- (c) Air
- (d) Noise
- (e) Biological
- (f) Socio-economic

**(a) Land Use:** Land use involves the management and modification of natural environment or wilderness in to built environment such as settlements and semi-natural habitats such as arable fields, pastures, and managed woods. It also has been defined as "the total of arrangements, activities and inputs that people undertake in a certain land cover type.

#### **(b) Land Use Pattern of the Study Area (within 10 km Buffer)**

<b>Land Use Type</b>	<b>Area (Ha.)</b>
Scrub Land	520.51
Agriculture Land	29,893.19
River/Water Bodies	315.88

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Settlement	960.10
Stone Quarry	65.77
<b>Total</b>	<b>31755.45</b>

To assess the land use pattern surrounding the 10 km radius of the site, a detailed study was carried out. The land use pattern study reveals that the 10 km environs are predominantly agricultural land.

### **Analysis Results of Baseline Environment**

#### **(a) Results of Analysis of the Soil.**

- The pH limit fixed for drinking water samples as per IS-10500 Standards is 6.5 to 8.5 beyond this range the water will affect the mucus membrane or water supply system. During the study period, the pH was varying for ground waters from 7.02 to 7.36. The pH values for all the samples collected in the study area during study period were found to be within the limits.
- The desirable limit for total dissolved solids as per IS-10500 Standards is 500 mg/L whereas the permissible limit in absence of alternate source is 2000 mg/L. In ground water samples collected from the study area, the total dissolved solids are varying from 310 mg/L to 412mg/L. The TDS of the samples were within the desirable limit & the permissible limit of 500 mg/L & 2000 mg/L respectively.

#### **(b) WATER ENVIRONMENT**

Water quality assessment is one of the essential components of EIA study. Such assessment helps in evaluating the existing health of water body and suggesting appropriate mitigation measures to minimize the potential impact from development projects. Water quality of ground water has been studied in order to assess proposed water-uses in construction, drinking, cooling and horticulture purpose.

The water quality at the site and other locations within the 10 km impact zone was monitored during March to May 2022.

#### **(c) AMBIENT AIR QUALITY**

The Ambient Air Quality Monitoring reveals that of eight monitoring stations the minimum concentrations of PM<sub>2.5</sub> are 26.20 µg/m<sup>3</sup> at AQ1 and maximum 44.11 µg/m<sup>3</sup> at AQ8 (Core Zone). The results of PM<sub>10</sub> reveals that the minimum concentration of 47.12 µg/m<sup>3</sup> at AQ3 while maximum concentration of 66.38 µg/m<sup>3</sup> is found at AQ8. These values for PM<sub>10</sub> and

PM2.5 are within prescribed CPCB limit of 100  $\mu\text{g}/\text{m}^3$  and 60  $\mu\text{g}/\text{m}^3$  respectively for residential and rural areas at all stations.

The gaseous pollutants  $\text{SO}_2$  and  $\text{NO}_2$  are within the prescribed CPCB limit of 80  $\mu\text{g}/\text{m}^3$  for residential and rural areas at all stations. The minimum & maximum concentrations of  $\text{SO}_2$  were found to be 9.24  $\mu\text{g}/\text{m}^3$  at & 14.17  $\mu\text{g}/\text{m}^3$  at AAQ5 respectively. The minimum & maximum concentrations of  $\text{NO}_2$  are found to be 12.12  $\mu\text{g}/\text{m}^3$  at AAQ3 & 20.13  $\mu\text{g}/\text{m}^3$  at AAQ8 respectively.

#### **(d) NOISE ENVIRONMENT**

Noise monitoring reveals that the minimum & maximum noise levels at day time were recorded as 47.16 dB (A) at NQ5 & 60.12 dB (A) at NQ2 respectively. The minimum & maximum noise levels at night time were found to be 37.34 dB (A) at NQ5 & 47.22 dB (A) at NQ2 respectively.

There are several sources in the 10 km radius of study area, which contributes to the local noise level of the area. On the commencement of the project, the sound from traffic activities will add to the ambient noise level of the area. This will be kept under check by taking proper suggestive measures.

#### **(e) BIOLOGICAL ENVIRONMENT**

##### **1. Introduction**

The biodiversity we see today is the fruit of billions of years of evolution, shaped by natural processes. The vast array of interactions among the various components of biodiversity makes the planet habitable for all species, including humans. There is a growing recognition that, biological diversity is a global asset of tremendous value to present and future generations. At the same time, the threat to species and ecosystems has never been as great as it is today. Species extinction caused by human activities continues at an alarming rate. Protecting biodiversity is in our self-interest.

The biological study was under taken by Ecology & Biodiversity Expert, as a part of the EIA study report to understand the present status of ecosystem prevailing in the study area, to compare it with past condition with the help of available data, to predict changes in the biological environment as a result of present activities and to suggested measures for maintaining its health.

**Durg District** is located in the center region of the state of Chhattisgarh, India within the longitudes 81.4279° E and latitudes 21.1623° N. The total area of the district is 2,238 square kilometers. The population is 33.4 lakhs.

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The district's headquarters, Durg town, is situated on the National Highway NH-06. Durg town lies between Chhattisgarh's two largest cities: Chhattisgarh's capital, Raipur, and Rajnandgaon, the district headquarters of the neighboring Raipur district.

**Objectives and Purpose of Study:**

The basic objectives of the study are to evaluate the status of the flora and fauna of the core area and the buffer areas with specific reference to the rare or endangered or endemic or threatened (REET) species. The study is also designed to evaluate the adverse impacts of the proposed activity, if any and to suggest remedial / mitigation measures in accordance with the objectives as desired by the IAIA and the Ministry of Environment, Forests & Climate Change (MoEF& CC), Government of India (GOI).

**Methodology**

**Field study period:** The ecological survey has been conducted for one season. The details are given below:

Pre Monsoon: (March to May 2022).

Core zone: At the project site.

Buffer zone: Around the project site in 10 km radius.

**Mode of Data Collection**

Detailed survey was conducted to evaluate floral and faunal composition of the study area. Primary data on floral and faunal composition was recorded during site visit and secondary data was collected from the Forest department and published relevant literature. Inventory of flora and fauna is prepared on the basis of collected data. The mode of data and parameters considered during field investigations is given below:

**Terrestrial Ecology Status:** Primary data are generated through site visit, and sampling of species based on the Dept. of Environment & Forest publication of flora and fauna of the area. Primarily the visual assessment of the flora and fauna along with the identified species are recorded for the study purposes. Subsequently a general checklist of all plants encountered was prepared for the study area. This is meant to indicate the biodiversity for wild and cultivated plants. The plants so encountered were classified into life form spectrum according to the classification of Raunkiaer's classification of life form spectrum.

**Life Form Spectrum**

Raunkiaer defined life forms as the sum of adaptations of plants to the climate. Braun-Blanquet (1951), whose system is adapted in this study, modified the Raunkiaer's system.

### **ANTICIPATED ENVIRONMENTAL IMPACTS & MITIGATION MEASURES**

#### **Impact on Ambient Air Quality**

The mining is proposed to be carried out by opencast other than fully mechanized method. The air borne particulate matter generated by ore and handling operations as well as transportation is the main air pollutant. The emissions of Sulphur dioxide (SO<sub>2</sub>), Oxides of Nitrogen (NO<sub>x</sub>) contributed by vehicles plying on haul roads are marginal. Prediction of impacts on air environment has been carried out taking into consideration proposed production and net increase in emissions.

#### **Mitigation Measures**

- Water sprinkling will be done on the haul roads twice in a day.
- The dust generated during the process will be minimized by water spray at the working faces before and after the activity.
- Cyclic route will be followed for the transport of materials i.e. loaded & unloaded vehicles will have different route of transportation. Width of the internal road can be maintained more than 10 m.
- Plantation will be carried out on approach roads and in Lease boundary.
- Planning transportation routes of mined material so as to reach the nearest paved roads by shortest route. (minimize transportation over unpaved road);
- Personal Protection Equipment's (PPE) like dust masks, ear plugs etc. will be provided to mine workers.
- Rock breaker will be used for breaking over size boulders in order to reduce dust and noise generation, which otherwise would be generated due to secondary blasting.
- Speed limit will be enforced to reduce airborne fugitive dust from vehicular traffic.
- Deploying PUC certified vehicles to reduce their noise emission.
- Haul road shall be covered with gravels
- Spillage from the trucks will be prevented by covering tarpaulin over the trucks.
- Ambient Air Quality Monitoring will be conducted on regularly basis to assess the quality of ambient air.

#### **Prevention and control of Gaseous Pollution**

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Proper maintenance of machines improves combustion process & makes reduction in the pollution. Good maintenance and monitoring of fuel and oil will not allow significant addition in the gaseous emission.

**Noise Environment**

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 levels is felt only near the active working area.

The impact of noise on the villages is negligible as the villages are far located from the mine workings. Since there is no involvement of major machinery, the impact of noise levels will be minimal.

S. No	Impact Prediction	Mitigation Measures
1	Noise Impact due to mining activities.	The noise levels from all the sources are periodical and restricted to particular operation.
2	Noise impact due to vehicular movement.	Proper maintenance, oiling and greasing of machines at regular intervals will be done to reduce the generation of noise. Plantation along the sides of approach roads, around office building and mine area will be done to minimize the propagation of noise. Personal Protective Equipment's (PPE) like earmuffs/earplugs will be provided to all operators and employees working near mining machineries or at higher noise zone. Periodical noise level monitoring will be done

**Biological Environment**

S. No	Impact Predicted	Suggestive measure
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1	Disturbance of free movement/living of wild fauna	<p>Care will be taken that noise produced during vehicles movement for carrying OB and ore materials are within the permissible noise level.</p> <p>Care will be taken that no hunting of animals (birds) carried out by labors.</p> <p>If wild animals are noticed crossing the core zone, it will not be disturbed at all.</p> <p>Laborers will not be allowed to discards food, plastic etc., which can attract animals near the core site.</p> <p>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.</p> <p>Noise level will be within permissible limit (silent zone-50dB during day time) as per noise pollution (regulation and control), rules, 2000, CPCB norms.</p>
2	Harvesting of flora	<p>No tree cutting, chopping, lumbering, uprooting of shrubs and herbs should be allowed.</p> <p>Collections of economically important plants will be fully restricted.</p>

**Land Environment**

S. No.	Impact Prediction	Mitigation Measures
1	Change in the Topography of the Land / Land Degradation	As an abatement measure restoration of quarry pit is proposed by converting it in a water reservoir and put to an economical use like fish breeding or irrigation.
2	Solid waste generation	About 5% mineral wastes will be generated. Top Soil will backfilled in the mined out areas on which plantation will be raised.
3	Change in Drainage Pattern	Water flow / course will not be obstructed and natural drains or nallahs will not be disturbed. Run-off from mine and mineral stack

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		will be prevented to avoid being discharged to surroundings, particularly to agricultural land. Garland drains and, catch pits has been constructed to prevent run off affecting the surrounding agricultural land. Green belt has been developed in boundary.
4	Impact on the Agricultural Practice at nearby area due to dust generation	Agriculture activities are practiced nearby areas may impacted because of dust generation but imitative measures such as regular water sprinkling on active areas for example haul roads, excavation sites will be strictly followed so that impact is minimized.

**Water Environment**

S.No	Impact Prediction	Mitigation Measures
1	Effect on the Ground Water Table	Max Elevation of the ML area is 305m AMSL Ultimate depth of mine is up to 330m AMSL. Ground Water table is 25m to 30m AMSL. The mining activity will not intersect with the ground water table.
2	Wash off from the dumps	No dumping has been proposed.
3	Soil Erosion	Reclamation of the mined out area will be done with plantation to avoid the soil erosion
4	Waste Water generation/ Discharge	Portable Bio-toilets will be used; hence no sewage / liquid effluent will be generated and contamination is also not expected due to percolation.
5	Siltation in nearby agriculture field	Garland drains have been constructed on the sloping side barrier of the ML area. The garland drain has been routed through settling tank to remove suspended solids from flowing into storm water.

**10.5 ADDITIONAL STUDIES**

**DISASTER MANAGEMENT PLAN**

This includes high risk accidents like Earthquakes, fire, seismic activities etc. and emergency plan proposed for quick evacuation, ameliorative measures to be taken etc. The lessee will coordinate to meet such eventualities along with the assistance from the local authorities.

- The shallow depth of activities will not involve any high risk accident due to side falls/collapse.

- The complete mining operation will be carried out under the Management and control of experienced and qualified Mines Manager having Certificate of Competency to manage the mines granted by DGMS.
- All the provisions of Mines Act 1952, MMR 1961 and Mines Rules 1955 and other laws applicable to mine will strictly be complied with.
- During heavy rainfall the mining activities will be closed.
- All persons in supervisory capacity will be provided with proper communication facilities.
- Disaster Warning System” as developed will be strictly implemented.

The disaster management plan is aimed to ensure safety of human life and property and protection of environment Following are the objective of the disaster management plan.

- (i) First Aid to injure.
  - (ii) Rescue operation and provision of adequate medical facilities to the injured.
  - (iii) Safety of the human life in the buffer zone if needed.
  - (iv) Protecting and minimizing damage to property and the environment.
  - (v) Initially restrict and ultimately bring the incident under control.
  - (vi) Identify any dead.
  - (vii) Inform to the administration, DGMS and statutory persons as per Rules.
  - (viii) Setting up an Emergency response organization under mines manager with assigned duties and responsibilities for incident response and emergency response.
  - (ix) Setting up a permanent organization for completion of emergency and restoration of normalcy by complying with health, safety, and environmental laws and regulations.

## **10.6 PROJECT BENEFITS AND COSTS EVALUATION**

The project will improve the physical infrastructure, social infrastructure like improvement of road conditions water supply during dry season, drainage, educational institutions and improved environmental conditions, etc. The project also provides direct employment and indirect employment to persons. It increases economic activities, better living standard, educational facility, health facility and infrastructural development. The project will contribute to district mineral fund which will directly provide aid to the local authority to fund the development projects. The management will provide free saplings of fruit bearing

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and other trees, etc. to local during monsoon season plantation. This will increase the consciousness in workers and near-by villagers for greenery. Fruit trees can contribute towards their financial gains.

The CSR activities are increasingly being taken up by the project proponent not only as fulfilling of mandatory provisions but also for the formation or enhancement of brand image. Besides the above, CSR is seen more as a responsibility towards society rather than a business promotion activity.

All the activities listed are for community development as a whole and not for individual person or a family. Each development initiative will be implemented in close collaboration with the village Panchayat. The Project proponent may avail the services of a NGO for the implementation of the above programme, if felt needed.

**Budget for Environmental Management Plan**

Sl. No	Description	Capital Cost 1 <sup>st</sup> year (Rs)	Recurring Cost (Rs) 2 <sup>nd</sup> year	Recurring Cost (Rs) 3 <sup>rd</sup> year	Recurring Cost (Rs) 4 <sup>th</sup> Year	Recurring Cost (Rs) 5 <sup>th</sup> Year
1	Pollution Control & Dust Suppression	1,30,000	1,30,000	1,30,000	1,30,000	1,30,000
2	Pollution Monitoring	-	30,000	30,000	30,000	30,000
3	Plantation and salary for one gardener (full time basis) (8*12 = 96,000)	2,50,000	96,000	96,000	96,000	96,000
4	Haul road Maintenance Cost (50 m)	1,00,000	1,00,000	1,00,000	1,00,000	1,00,000
5	Occupational health and safety cost	50,000	50,000	50,000	50,000	50,000
<b>TOTAL (Rs)</b>		<b>5,30,000</b>	<b>5,60,000</b>	<b>5,60,000</b>	<b>5,60,000</b>	<b>5,60,000</b>

**Budget for Occupational Health**

Particulars	Recurring Cost per year (Rs.)
For occupational health checkup	75,000
<b>Total</b>	<b>75,000</b>

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**Budget for Water, Shelter and Sanitation for Mine Worker**

<b>Scheme</b>	<b>Capital Cost (In Rs)</b>	<b>Recurring Cost (In Rs)</b>
Drinking water facility (Water Cooler)	25,000	5,000
Rest shelter	1,00,000	10,000
Sanitation (Urinal and Toilet)	40,000	5,000
<b>Total</b>	<b>1,65,000</b>	<b>20,000</b>

**CONCLUSION**

As discussed, it is safe to say that the proposed facilities are not likely to cause any significant impact to the ecology of the area, as adequate preventive measures will be adopted to keep the various pollutants within the permissible limits. Green belt development around the area will also be taken up as an effective pollution mitigative technique, as well as to serve as biological indicators for the pollutants released from the premises of “Dhour & Patora Cluster Limestone Mine”.