

**EXECUTIVE SUMMARY**  
**OF**  
**ENVIRONMENTAL MANAGEMENT PLAN REPORT**  
**OF**  
**AKOLDIH KHAPRI LIMESTONE (LOW GRADE)**  
**QUARRY MINING PROJECT**

**APPLICANT**

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**District: Raipur (Chhattisgarh)**

## 1.0 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 Environmental Impact Assessment Documentation has been prepared in terms of EIA notification of the MoEF dated 14-9-2006 and its subsequent amendments thereof and the EIA Guidance Manual for Mining of Minerals (Feb, 2010) of MoEF, Govt. of India, for seeking environmental clearance for mining in the existing area of Akoldih Khapri Limestone (Low Grade) Quarry Mining Project measuring 4.09 Ha falling under category “B1” due to the order of Hon’ble NGT (PB), Ministry of Environment, Forest & Climate Change ( MoEF &CC), Govt. of India vide Office Memorandum F.No.J-13012/12/2013-IA-II (I) dated 24.12.2013.

### 1.1 Location of the Project

The mining area is located at Khasra No. 427/1-2, 428, 429, 430, 431, 432, 433, 453, 454, 455/1-2, 456, 458, 459, 461, 463, 465, 482 & 483, Village – Akoldih Khapri, Tehsil - Arang, District - Raipur, and State - Chhattisgarh.

**Table No. 1.1 Latitude & Longitude of Lease Area**

Boundary Pillars No.	Latitude	Longitude
1.	21°18'7.89"N	81°47'18.64"E
2.	21°18'7.77"N	81°47'20.90"E
3.	21°18'6.93"N	81°47'21.16"E
4.	21°18'6.95"N	81°47'22.82"E
5.	21°18'4.69"N	81°47'22.41"E
6.	21°18'4.90"N	81°47'19.84"E
7.	21°18'2.82"N	81°47'19.91"E
8.	21°18'1.36"N	81°47'20.36"E
9.	21°18'0.36"N	81°47'20.99"E
10.	21°18'1.12"N	81°47'21.14"E
11	21°18'0.11"N	81°47'20.99"E
12	21°17'59.43"N	81°47'20.92"E

13	21°17'59.37"N	81°47'20.09"E
14	21°17'58.67"N	81°47'20.00"E
15	21°17'58.85"N	81°47'18.29"E
16	21°17'57.06"N	81°47'17.94"E
17	21°17'57.38"N	81°47'16.24"E
18	21°17'53.92"N	81°47'15.26"E
19	21°17'54.31"N	81°47'13.17"E
20	21°18'0.60"N	81°47'14.63"E
21	21°18'0.49"N	81°47'15.62"E
22	21°18'1.17"N	81°47'15.80"E
23	21°18'0.93"N	81°47'17.43"E
24	21°18'1.49"N	81°47'17.60"E
25	21°18'1.39"N	81°47'17.99"E
26	21°18'2.23"N	81°47'18.23"E
27	21°18'2.36"N	81°47'17.61"E
28	21°18'4.35"N	81°47'17.32"E
29	21°18'4.31"N	81°47'18.66"E

**Table No. 1.2 Salient Features of Project**

<b>Project Name</b>	Akoldih Khapri Limestone (Low grade) Quarry Mining
<b>Location of mine</b>	Village : Akoldih Khapri Tehsil: Arang District : Raipur State : Chhattisgarh
<b>Area</b>	4.09 Ha

<b>Geo-Coordinates</b>	<b>Boundary Pillars No.</b>	<b>Latitude</b>	<b>Longitude</b>
	1.	21°18'7.89"N	81°47'18.64"E
	2.	21°18'7.77"N	81°47'20.90"E
	3.	21°18'6.93"N	81°47'21.16"E
	4.	21°18'6.95"N	81°47'22.82"E
	5.	21°18'4.69"N	81°47'22.41"E
	6.	21°18'4.90"N	81°47'19.84"E
	7.	21°18'2.82"N	81°47'19.91"E
	8.	21°18'1.36"N	81°47'20.36"E
	9.	21°18'0.36"N	81°47'20.99"E
	10.	21°18'1.12"N	81°47'21.14"E
	11	21°18'0.11"N	81°47'20.99"E
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	22	21°18'1.17"N	81°47'15.80"E
	23	21°18'0.93"N	81°47'17.43"E
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	25	21°18'1.39"N	81°47'17.99"E
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	28	21°18'4.35"N	81°47'17.32"E
	29	21°18'4.31"N	81°47'18.66"E
<b>Khasra No.</b>	427/1-2, 428, 429, 430, 431, 432, 433, 453, 454, 455/1-2, 456, 458, 459, 461, 463, 465, 482 & 483		
<b>Minerals of mine</b>	Limestone		
<b>Total Mineable reserves</b>	6,87,565.35 T		
<b>Life of Mining Plan</b>	10 Years		
<b>Life of mine as per the present mineable reserve.</b>	18 years as per the present mineable reserve.		
<b>Average Proposed production</b>	39,814.5 TPA		
<b>Method of mining</b>	Open cast Semi Mechanized		
<b>No of working days</b>	300 days		

<b>Water demand</b>	Total water requirement is about 9.48 KLD = 1.04 KLD (Drinking & Domestic Uses) + 6.44 KLD (Plantation) + 2 KLD (Dust Suppression).
<b>Sources of water</b>	CGWA ( Bore well)
<b>Man power</b>	23
<b>Nearest railway station</b>	Mardhar railway station - About 8.95 km in WNW direction.
<b>Nearest airport</b>	Swami Vivekananda International Airport - About 13.35 Km in SSW direction.
<b>Seismic zone</b>	Zone II

**Table 1.3: Environment Sensitivity**

S.NO.	Particulars	Details
1	Nearest Railway Station	Mardhar railway station - About 8.95 km in WNW direction.
2	Nearest Airport/Airstrip	Swami Vivekananda International Airport, Raipur - About 13.35 Km in SSW direction.
3	Nearest School	Govt Primary School is about 4.12 km in NNw direction.
4	Nearest Hospital	Primary Healthcare Centre is about 7.43 km in SSW direction.
5	Nearest Temple	Shiv Temple is about 1.56 km in E direction.
6	Built-up Area	Akoldih about 0.87 Km towards E direction.
7	Nearest National / State Highway / Other Road	SH-09 is about 5.36 Km in NNE direction.
8	Ecological Sensitive Areas (Wild Life Sanctuaries) within 10km radius.	No Wildlife Sanctuary within 10 Km Buffer Area.

**1.2 GREEN BET PLANT**

During the proposal period about 100 trees per year will be planted around the mining lease.

Area covered by afforestation is 1.074 Ha during conceptual period which will be rehabilitated providing plantation. Details of proposed plantation are mentioned below:

**Table 1.2**  
**TOTAL GREEN BELT PLAN**

पौधों की कुल संख्या - 4090				
अवस्था	प्रस्तावित वृक्षारोपण हेतु नियत स्थान	पौधों की प्रजातियां	पौधों की संख्या	टिप्पणी
प्रथम वर्ष	बैरियर जोन	नीम, खमेर, सिरस, चिरोल, करंज, बबूल, सिस्सू एवं अन्य स्थानीय	200	<ul style="list-style-type: none"> <li>4 पौधों के बीच में एक सिरस पौधे का रोपण किया जाएगा।</li> <li>पौधों से पौधों के बीच की दूरी 3 मी.</li> </ul>

		प्रजातियां		<p>एवं पंक्ति से पंक्ति की दूरी 2.5 मी. और गड्ढे का आकार 0.70मी. x 0.70मी. x 0.70मी. एवं गड्ढे में गोबर की खाद और शेष मिट्टी से भरा जाएगा।</p> <ul style="list-style-type: none"> <li>परिनाली के निर्माण के दौरान निकली हुई मिट्टी में सूबबूल, नीम, बबूल, प्रोसोपिस और अन्य स्थानीय प्रजातियों के बीज बुवाई की जाएगी।</li> <li>ट्रेंच 45 सेमी x 45 सेमी x 45 सेमी विकसित की जाएगी।</li> <li>तार की बाड़ की सुरक्षा के साथ।</li> </ul>
प्रथम वर्ष	गैर खनन क्षेत्र	खमेर, चिरोल, करंज, महुआ, सेजा, बीजा, एवं अन्य स्थानीय प्रजातियां	750	<ul style="list-style-type: none"> <li>4पौधों के बीच में एक सिरस पौधे का रोपण किया जाएगा।</li> <li>पौधों से पौधों के बीच की दूरी 3 मी. एवं पंक्ति से पंक्ति की दूरी 2.5 मी. और गड्ढे का आकार 0.70मी. x 0.70मी. x 0.70मी. एवं गड्ढे में गोबर की खाद और शेष मिट्टी से भरा जाएगा।</li> <li>सुरक्षा हेतु तार की बाड़ की जावेगी।</li> </ul>
	परिवहन मार्ग	खमेर, चिरोल, करंज, बीजा, जंगल जलेबी, कदम एवं अन्य स्थानीय प्रजातियां	890	<ul style="list-style-type: none"> <li>परिवहन मार्ग के दोनों ओर एक पंक्ति में 4-5 फीट ऊंचाई पौधों के वृक्षारोपण किए जाएंगे।</li> <li>पौधों से पौधों के बीच की दूरी 3 मी. एवं पंक्ति से पंक्ति की दूरी 2.5 मी. और गड्ढे का आकार 0.70मी. x 0.70मी. x 0.70मी. एवं गड्ढे में गोबर की खाद और शेष मिट्टी से भरा जाएगा।</li> <li>पौधों की सुरक्षा हेतु प्रभावशाली 6 फीट ऊंचाई का ट्री गार्ड।</li> </ul>
प्रथम वर्ष	ग्रामवासियों में वितरण हेतु) ग्राम पंचायत)	नीम, आम, कटहल, बेर, आँवला, हर्रा, महुआ, कबीट, नींबू, बहेरा, बेल एवं अन्य स्थानीय प्रजातियां	750	<ul style="list-style-type: none"> <li>ग्रामवासी इन पेड़ों को अपने खेतों की मेड़ पर लगाएंगे।</li> </ul>

ग्राम पंचायत के सहयोग से ग्राम पंचायत के चिन्हित क्षेत्र में	नीम, आम, कटहल, बेर, आँवला, हरी, महुआ, कबीट, नींबू, अचार एवं अन्य स्थानीय प्रजातियां	800	<ul style="list-style-type: none"> <li>• गड्ढे का आकार 0.70मी. x 0.70मी. x 0.70मी. एवं गड्ढे में गोबर की खाद और शेष मिट्टी से भरा जाएगा।</li> <li>• सुरक्षा हेतु तार की बाड़ की जावेगी।</li> </ul>
ग्राम पंचायत के प्राथमिक शाला, आंगनवाड़ी एवं ग्राम पंचायत परिसर में	कदम, नीम, खमेर, सिस्सू एवं अन्य स्थानीय प्रजातियां	800	<ul style="list-style-type: none"> <li>• गड्ढे का आकार 0.70मी. x 0.70मी. x 0.70मी. एवं गड्ढे में गोबर की खाद और शेष मिट्टी से भरा जाएगा।</li> <li>• सुरक्षा हेतु परिसर में बाउंड्री वाल की व्यवस्था है।</li> </ul>
दूसरे वर्ष से 5वें वर्ष तक मृत पौधों का प्रतिस्थापन किया जाएगा ।			
रखरखाव एवं समस्त गतिविधियां द्वितीय वर्ष से पट्टा अवधि के अंत तक किया जाएगा ।			

The following characteristics should be taken into consideration while selecting plant species for green belt development and tree plantation.

- They should be fast growing and tall trees.
- They should be perennial and evergreen.
- They should have thick canopy cover.
- Plantation should be done in appropriate alternate rows around the proposed site to prevent lateral pollution dispersion.
- The trees should maintain regional ecological balance and conform to soil and hydrological conditions. Indigenous species should be preferred.

### **1.3 BASE LINE DATA**

This section contains the description of baseline studies of the 10 Km radius of the area surrounding “Akoldih Khapri Limestone (Low Grade) Quarry Mining Project”. 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) Biological
- (e) Noise
- (f) Socio-economic

#### **1.4 AMBIENT AIR QUALITY**

The results of AAQ are given in Annexure, the results when compared with National Ambient Air Quality Standards (NAAQS) of Central Pollution Control Board (CPCB) for "Residential, Rural and Industrial Areas" show that the average values of ambient air quality parameters are well within the stipulated limit.

The minimum and maximum level of PM<sub>10</sub> recorded within the study area was in the range of 62.42µg/m<sup>3</sup> to 88.76µg/m<sup>3</sup>. The minimum and maximum level of PM<sub>2.5</sub> recorded within the study area was in the range of 38.92µg/m<sup>3</sup> to 58.71µg/m<sup>3</sup>. The minimum and maximum level of SO<sub>2</sub> recorded within the study area was in the range of 7.22µg/m<sup>3</sup> to 8.35µg/m<sup>3</sup>. The minimum and maximum level of NO<sub>2</sub> recorded within the study area was in the range of 15.23µg/m<sup>3</sup> to 18.81µg/m<sup>3</sup>.

#### **1.5 NOISE ENVIRONMENT**

The result of Noise Quality at Night time Leq (Ln) varies from 39.2 to 46.6 dB (A) and the hourly daytime Leq (Ld) varies from 49.4 to 53.7 dB (A) within the study area. Low noise level is due to absence of any major industry in the area.

#### **1.6 WATER ENVIRONMENT**

The water quality in the impact zone was assessed through physico- chemical and bacteriological analysis of ground and surface water samples. The results have been compared with the drinking water quality standards specified in IS: 10500. It was observed that all the physico chemical parameters and heavy metals from surface and ground water samples are below stipulated drinking water standards.

All the ground water samples analyzed can be considered fit for drinking purpose in the absence of alternate sources.

Comparing the values of pH, DO, BOD and total coliforms with 'Use based classification of surface waters' published by Central Pollution Control Board; it can be seen that all the analyzed surface waters can be compared with class "B" and can be used as "Outdoor bathing (Organized)".

#### **1.7 SOIL ANALYSIS REPORT**

Physical characteristics of soil were characterized through specific parameters viz bulk density, porosity, water holding capacity, pH, electrical conductivity and texture. Soil pH plays an important role in the availability of nutrients. Soil microbial activity as well as solubility of metal ions is also dependent on pH. In the study area, variations in the pH of the soil were found to

be neutral (7.37 to 7.81). 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 352-390 $\mu$ mhos/cm.

The soils with low bulk density have favorable physical condition where as those with high bulk density exhibit poor physical conditions for agriculture crops.

## **1.8 BIOLOGICAL ENVIRONMENT**

The lease area as well as buffer zone area reveals no endangered and endemic species of flora and fauna in the area.

## **1.9 WATER REQUIREMENT**

The total water consumption in the Mine is about 9.48 KLD. The water is used in the following purposes.

- For dust suppression & mining allied activity.
- For drinking & domestic consumption.
- For greenbelt development.

This water will be met from old bore well, hand pump and mine sump located in ML area.

The following table shows the water balance of the mine activity:

**Table No. 1.3**

### **WATER CONSUMPTION (KLD)**

<b>Activity</b>	<b>Water requirement (KLD)</b>
Dust suppression	<b>2.00</b>
Domestic	<b>1.04</b>
Plantation	<b>6.44</b>
<b>Total</b>	<b>9.48</b>

## **1.10 WASTE DUMP DISPOSAL**

There is Soil (overburden) overlain the deposit, and that will be used in afforestation so, Dumping of waste rock is not required.

### **1.10.1 LAND FOR DISPOSAL OF WASTE WITH JUSTIFICATION:**

Not required as the available soil will be used to develop area for plantation; weathered waste/rejects will also be used in repair and maintenance of roads.

## **1.11 SOCIO-ECONOMICS**

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. Akoldih Khapri Limestone (Low Grade) Quarry Mining Project is providing employment to local population and it will be give preference to the local people whenever there is requirement of man power.

### **1.12 OCCUPATIONAL HAZARDS AND SAFETY**

Occupational safety and health is very closely related to productivity and good employer-employee relationship. The factors of occupational health in Akoldih Khapri Limestone (Low Grade) Quarry Mining Project are mainly dust and land degradation. Safety of employees during operation and maintenance etc. shall be as per Mines rules and regulations.

To avoid any adverse effect on the health of workers due to various pollutants, sufficient measures relating to safety and health will also be practiced:

- Provision of rest shelters for mine workers with amenities like drinking water etc.
- All safety measures like use of safety appliances, such as dust masks, helmets, shoes, safety awareness programs, awards, posters, slogans related to safety etc.
- Training of employees for use of safety appliances and first aid in vocational training center.
- Regular maintenance and testing of all equipment as per manufacturers' guidelines.
- Periodical Medical Examination (PME) of all workers by a medical Officer
- First Aid facility is provided at the mine site.
- Close surveillance of the factors in working environment and work practices which may affect environment and worker's health.
- Working of mine as per approved mining plan and environmental plans.

### **1.13 ENVIRONMENTAL MANAGEMENT PLAN**

The mining activities involve, excavation, loading, haulage and transportation of mineral. These activities lead to generation of air borne dust, which can cause air pollution in and around the mining lease area, if appropriate control measures are not taken. Similarly mining causes Land Degradation, Noise and Water Pollution etc. in the area.

In order to minimize impacts of mining on different environmental parameters and to keep air and water quality within prescribed limits of CPCB, a rapid Environmental Management Plan (EMP) is prepared to strictly follow it. This helps in resolving all environmental and ecological issues due to

mining in the area. The environmental management plan includes all measures and safety precautions necessary for safe mining along with rehabilitation measures for mined out areas.

<b>ANNUAL EMP COST</b>			
<b>S NO.</b>	<b>Particulars</b>	<b>Budget Provisions (Rs)</b>	
		<b>Capital</b>	<b>Recurring</b>
1(a)	Overhead water sprinkling facility with solar pump for outgoing and incoming transportation vehicles for haul and transportation.	1,00,000	10,000
1(b)	Cost of Water own (4000 liter capacity) 2 tanker x 200 Rs./per day X 300 days	Nil	96,000
2	Two Settling Tank [ 2.5m (W) x 10m (L) 2m (D) ] Garland drain [ 1430m (L) x 2m (W) x 1.5 m(D) ]	2,14,500	5,000
3	Prepare & Maintenance of approach road (Max. Road length 392m , Width 6.0m) 392m @ 400Rs./Meter	1,56,800	50,000
4	Monitoring twice a year (Air , Water & Noise twice a year)	Nil	40,000
5	Plantation (4090 plants will be planted & Distribution during the five year) = 4090 Per year x 50/sapling	2,04,500	5000
6	Wire Fence 1430 m x200	90,000	10,000
<b>Labour Welfare</b>			
7	Drinking Water Facility & Temporary rest shelter (23 x 15 feet)	30,000	5,000
8	Separate toilets for Male & Female No. of 2	10,000	5,000
9	Occupational health Survey 23 labour @ 500 Rs. = 5,000 Rs./twice per year x 2	Nil	23,000
10	PPES to Work(Helmet shoes, gloves, goggle etc) , 23 labor @1000 Rs.	23,000	3000
11	First Aid Kits , Number of kits 5	20,000	10,000
12	Fire Safety (1 nos.) , @ 30,000	30,000	10,000
<b>Solid Waste Management</b>			
a.	Bins 2 Nos.	1500	5,000
b.	Pit and Composed	500	
c.	Transport of Dry Waste	500	
14	Vehicle Maintenance + PUC Certification	Nil	25,000
15	Signage and Caution Board	5,000	1,000

	<b>Total EMP Cost</b>	<b>8,86,300</b>	<b>2,98,000</b>
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### 1.15 CONCLUSION

As discussed, it is safe to say that the project is not likely to cause any significant impact on the ecology of the area, as adequate preventive measures will be adopted to contain the various pollutants within permissible limits. Green belt development around the area will also be taken up as an effective pollution mitigates technique, as well as to control the pollutants released from the premises of the Proposed Mine.

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