

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT & ENVIRONMENT MANAGEMENT PLAN of

Executive summary English

Dhuragaon – Kodebeda Cluster Limestone Quarry

at

Village- Dhuragaon & Kodebeda, Tehsil- Lohandiguda, District- Bastar, C.G.,

Area: 2.790 ha

at

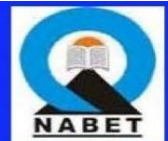
Project Name	Block/ Khasra	Area (Acres) / (Ha)	Location	Type of Land	Consent Letter
M/s Dhuragaon Limestone Quarry (Pro. Shri Santosh Nag	415, Part of 416	1.295	Village- Dhuragaon Tehsil- Lohandiguda, District- Bastar State – Chhattisgarh.	Private land	Shri Santosh Nag
M/s Kodebera Limestone Quarry (Pro. Shri Chandrabhan Kashyap)	299 and 297	1.540	Village- Kodebera Tehsil- Lohandiguda District- Bastar State – Chhattisgarh.	Private land	Shri Chandrabhan Kashyap



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P & M Solution



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Executive Summary

The project is proposed to 2 limestone mine in total area of 2835 hectares (under cluster approach). The Mining sites are situated at Village – Dhuragaon & Kodebera Tehsil - Lohandiguda, District- Bastar State – Chhattisgarh.

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Project Nature, Size & Location Nature

The proposed project is Limestone Mine Project.

Size

The total production of limestone is 14000 TPA from 1.295Ha & 40,000 TPA from 1.540Ha. Hence the total production of limestone comes out to be 54,000 tonnes/annum from two mines (under cluster).

Table- 1.2, Detail of the lease area in cluster

Village	Quarry	Area (Ha.)	Type of land
	M/s Dhuragaon Limestone Mine (Pro. Shri Santosh Nag)	1.295	private Non-forest

Draft EIA for the cluster of Dhuragaon- kodebeda Limestone Quarry Area – 2.835 hac

Dhuragaon & Kodebera	M/s Kodebera Limestone Mine (Pro. Shri Chandrabhan Kashyap)	1.540	Non-Agriculture
		2.835 Ha	

Location

The mine lease area is located in village – Dhuragaon & Kodebera, Tehasil–Lohandiguda, District – Bastar, Chhattisgarh covered in the Survey of India Topo Sheet No – 65 E/15, E/16

Site coordinates of M/s Dhuragaon Limestone Mine (Pro. Shri Santosh Nag) at Village Dhuragaon (1.295Ha)

BP. No.	LATITUDE	LONGITUDE	BP. No.	LATITUDE	LONGITUDE
BP 1	N 21°05'29.64"	E 81°26'1.05"	BP 12	N 21° 05'33.04"	E 81°26'2.42"
BP 2	N 21° 05'29.67"	E 81°26'3.72"	BP 13	N 21° 05'35.55"	E 81°26'5.54"
BP 3	N 21°05'29.96"	E 81°26'4.87"	BP 14	N 21° 05'34.83"	E 81°26'5.75"
BP 4	N 21°05'32.01"	E 81°26'4.28"	BP 15	N 21° 05'34.61"	E 81°26'4.91"
BP 5	N 21°05'32.01"	E 81°26'3.90"	BP 16	N 21°05'31.16"	E 81°26'5.53"
BP 6	N 21°05'33.67"	E 81°26'3.73"	BP 17	N 21°05'31.09"	E 81°26'5.22"
BP 7	N 21° 05'33.57"	E 81°26'2.55"	BP 18	N 21°05'30.05"	E 81°26'5.39"
BP 8	N 21°05'34.42"	E 81°26'2.52"	BP 19	N 21° 05'30.12"	E 81°26'05.73"
BP 9	N 21° 05'34.45"	E 81°26'1.86"	BP 20	N 21° 05'28.33"	E 81°26'05.83"
BP 10	N 21° 05'35.27"	E 81°26'1.94"	BP 21	N 21° 05'27.89"	E 81°26'00.98"
BP 11	N 21°05'35.23"	E 81°26'2.42"			

Site coordinates of M/s Kodebera Limestone Mine (Pro. Shri Chandrabhan Kashyap) at Village Dhuragaon & Kodebera (1.540Ha)

S.N.	LATITUDE	LONGITUDE
BP01	19°10'50.63"N	81°46'35.84"E

BP02	19°10'50.14"N	81°46'39.52"E
BP03	19°10'49.52"N	81°46'42.82"E
BP04	19°10'47.67"N	81°46'41.95"E
BP05	19°10'48.26"N	81°46'39.05"E
BP06	19°10'47.85"N	81°46'35.85"E
BP07	19°10'47.52"N	81°46'35.62"E
BP08	19°10'48.28"N	81°46'34.09"E

Environmental sensitivity:

S. No.	Permanent Features	Distance of the Area
1	Nearest school/collage	: Dhuragaon & Kodebera About 0.7 km
2	Nearest Hospital	: Gov. Hospital, Dhuragaon -1.0 km & Kodebera, 1.0 km SW.
3	Sensitive man-made land uses	: Temple- Dhuragaon & Kodebera - 1.08 m.
4	Site connectivity	: village road 250m
5	Nearest Railway Station	: Jagdalpur 21 km, SE direction.
6	Nearest Airport	: jagdalpur 21 km .
7	Nearest Highway	: NH-43, approx 2.3 km in West direction.

MINING**Limestone Mining**

Mining will be carried out by open cast bench method. following consideration taken for the proposed mine layout to be carried out systematically & scientifically:

1. All the operations will be carried out semi-mechanized with manually after blasting in the stone. Loading and unloading will be done manually or hire loader.
2. No OB/ waster material will be produced.
3. Some drilling and blasting will be required for removal of stone.
4. Roads will be properly made and sprayed by water for suppression of dust.

5. Roads in the lease area for the movement of loaded trippers/trucks.
6. No processing/beneficiation of Low grade Limestone has been planned or required except sizing & screen of Limestone.

WATER SUPPLY

Water requirement for the proposed project will be provided for the workers for drinking & domestic purpose. Water will also be provided for dust suppression. Fresh water will be only used for drinking purpose. The break up for water requirement is given below:

Table 2.6 Water Requirement

Activity	Calculation	Total water requirement (in KLD)
Drinking	45 *45L/1000	2
Dust Suppression	300 m* 6m* 0.5 lt * 2 /1000	1.8 (Approx. 2)
Plantation	1000*5L/1000	5.00
Total		9.0 KLD

Drinking: @ 45 lpcd per labor

*Dust Suppression: Total haulage road to be water sprinkled * road width *0.5 lt water*2times a day/1000*

Plantation: Plants in one year@ 5 L/per plant/1000*

BASE LINE DATA

The proposed project as a center, a radial distance of 10 km is considered as study area for baseline data collection and environmental monitoring. The baseline environment quality was carried out over a radial distance of 10 km around the mining lease area during Post-Monsoon Season covering the months of March 2023 to May 2023.

Environmental data has been collected in relation to proposed mining for:-

- (a) Air
- (b) Noise
- (c) Water
- (d) Soil

(e) Ecology and Biodiversity

(f) Socio-economy

Table : BASELINE ENVIRONMENTAL STATUS

Attribute	Baseline status
<p>Ambient Air Quality</p> <p>Ambient air quality was monitored at 5 locations within a 5 km radius of</p>	<p>The Ambient Air Quality Monitoring reveals that of monitoring stations with minimum Concentrations of PM10 were 38.84 $\mu\text{g}/\text{m}^3$ at AQ5 and maximum 60.18 $\mu\text{g}/\text{m}^3$ at AQ1. The result of PM2.5 reveals that the minimum concentration of 19.92 $\mu\text{g}/\text{m}^3$ at AQ5 while maximum concentration of 39.78 $\mu\text{g}/\text{m}^3$ was found at AQ1.</p> <p>The gaseous pollutants SO2 and NOx were 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 SO2 were found to be 5.12 $\mu\text{g}/\text{m}^3$ at AQ2 & 10.6 $\mu\text{g}/\text{m}^3$ at AQ2 respectively. The minimum & maximum concentrations of NOx were found to be 10.67 $\mu\text{g}/\text{m}^3$ at AQ5 & 22.06 $\mu\text{g}/\text{m}^3$ at AQ4 respectively.</p> <p>The free silica content in PM10 was found to be minimum 1.13 g/m^3 and maximum 1.45 g/m^3 at AQ2 and AQ3 respectively.</p>
<p>Noise Levels</p>	<p>Noise monitoring reveals that the minimum & maximum noise levels at day time were recorded as 49.54 dB (A) at NQ-6 & 61.23 dB (A) at NQ1 respectively. The minimum & maximum noise levels at night time were found to be 40.07 dB (A) at NQ6 & 52.41 dB (A) at NQ1 respectively.</p> <p>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.</p>

<p>Water Quality</p>	<ul style="list-style-type: none"> • 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 7.23 to 7.58. 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 2000mg/l. In ground water samples collected from the study area, the total dissolved solids are varying from 197mg/l to 358 mg/l. The TDS of the samples were within the desirable limit & the permissible limit of 500mg/l & 2000 mg/l respectively.
<p>Soil Quality</p>	<p>Samples collected from identified locations indicate the soil is sandy type and the pH value ranging from 6.49 to 7.68, which shows that the soil is alkaline in nature. Potassium is found to be from 77.33 mg/kg to 85mg/kg. The water holding capacity is found in between 23.62% to 26.23%.</p>
<p>Ecology and Biodiversity</p>	<p>There are no Ecologically Sensitive Areas present in the study area, but many reserved forests regions surround the project area.</p>
<p>Socio-economy</p>	<p>The project will throw opportunities to local people for both direct and indirect employment.</p> <p>The study area is still lacking in education, health, housing, water, electricity etc. It is expected that same will improve to a great extent due to proposed mining project and associated industrial and business activities.</p>

BIOLOGICAL ENVIRONMENT

Flora of the Buffer Zone

The present study on the floral assessment for the proposed project activity is based on extensive field survey of the area. The study is conducted in post monsoon season. The plant species are identified during floral survey and with the help of nearby institutions / University and by secondary sources. Besides the collection of plant species, information is also collected with vernacular names of plant species made by local inhabitants.

Core Zone: The core zone comprises of undulating land with mounds/hillocks of limestone. Only some part of the lease area is covered with very thin soil. Vegetation/trees observed in the core zone were *Acacia arabica*, *Ziziphus sp.*, *Calotropis sp.* and *Lantana camara* along with some grasses after monsoon. The most dominant tree species in the study area are *Artocarpus integrifolia*, *Azadirachta indica*, *Delonix regia*, *Eucalyptus sp.*, *Ficus religiosa*, *Mangifera indica*, *Madhuca indica*, *Syzygium cumini*, *Annona squamosa*, *Psidium guajava* and *Tamarindus indica*. etc.

Table: Anticipated impact and mitigation measures for biological environment

Impact Predicted	Suggestive measure
Disturbance to free movement / living of wild fauna viz. Birds, Reptiles etc.	<p>If birds are noticed crossing the Buffer zone, they will not be disturbed at all;</p> <p>Labors will not be allowed to discards food, plastic etc., which can attract animals/birds near the Buffer site;</p> <p>Only low polluting vehicles having PUC will be allowed for carrying mining materials.</p> <p>Noise level will be maintained within permissible limit (silent zone-50dB (A) during day time or residential zone 55dB (A)) as per noise pollution (regulation and control), rules, 2000, CPCB norms.</p>
Disturbance of riparian ecosystem/ wetlands	The riparian ecosystem or the wetlands will not be destroyed by the mine owners.

Monitoring of upstream and downstream water quality	Water quality will be monitored from upstream and downstream area to assess the impact on water quality and plankton and mining activity will be controlled to maintain the clean water conditions.
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LAND ENVIRONMENT

Mining Activity: Harvesting of river bed minerals and other associated activities are the main sources of environmental degradations and most serious ones are detailed hereunder:

- Damage of river bank due to access ramps to river bed, causing damage to vegetation, soil erosion, micro disturbance to ground water, possible inducement of charged river course.
- Loss of riparian vegetation standing along the bank due to making roads connecting successive access to river bed.
- Contamination of sand aquifer water due to ponding, due to uneven rocky bed of river, sand bed thickness varies considerably and digging more sand from a pocket where thickness of sand is more may cause ponding. In this stagnant water bio-degradable materials especially flora waste gets accumulated causing contamination and inducing an unhealthy environment
- Surface degradation due to stockpiling and road network.

Mitigation measures

- Minimum number of access roads to river bed for which cutting of river banks will be avoided and ramps are to be maintained.
- Access points to the river bed will be decided basing on least steepness of river bank and least human activity.
- Mining is avoided during the monsoon season and at the time of floods.
- Mining schedule is synchronized with the river flow direction and the gradient of the land.
- Haulage roads parallel to the river bank and roads connecting access to river bed will be made away from the bank
- Care will be taken to ensure that ponds are not formed in the river bed

- Access roads from public roads and up to river bank will be aligned in such a way that it would cause least environmental damage.
- Vegetation development is proposed along the road sides of the approach roads, to arrest soil erosion. While selecting the plant species, preference will be given for planting native species of the area.

AIR ENVIRONMENT

Anticipated impacts and evaluation

Information on air quality was studied and various modelling techniques predicted that the mining activity will not affect the air quality in a significant manner. In mining operations, loading, transportation and unloading operations may cause deterioration in air quality due to handling dry materials. In the present case, only wet materials will be handled, thus eliminating problems of fugitive dust. Also, the collection and lifting of minerals will be done manually without any blasting. Therefore the dust generated is insignificant as compared to mining process of other hard minerals like the process of drilling, blasting, mechanized loading etc.

Mitigation measures

The only air pollution sources are the road transport network of the trucks. The dust suppression measures like water spraying will be done on the roads. Utmost care will be taken to prevent spillage from the trucks. Overloading will be prevented. Plantation activities along the roads will also reduce the impact of dust in the nearby villages.

WATER ENVIRONMENT

Mining of sand from within or near a streambed has a direct impact on the stream's physical habitat characteristics. These characteristics include geometry, bed evaluation, substrate composition and stability, in stream roughness elements, depth, velocity, turbidity, sediment transport, stream

discharge and temperature. Altering these habitat characteristics can have deleterious impacts on both in stream biota and associated riparian habitat.

The detrimental effects to biota resulting from bed material mining are caused by three main processes:

- i. Alteration of flow patterns resulting from modification of the river bed
- ii. An excess of suspended sediment
- iii. Damage to riparian vegetation and in stream habitat.

NOISE ENVIRONMENT

Anticipated impacts and evaluation

As there will be no heavy earth moving machinery there will not be any major impact on noise level due to the mining and other association activities a detailed noise survey has been carried out and results are discussed in chapter 3. Blasting technique is not used for sand lifting, hence no possibility of land vibration. It was found that the mining activity will not have any significant impact on the noise environment of the region. The only impact will be due to transportation of materials by trucks.

Mitigation measures

As the only impact is due to transportation of sand to the construction through village roads, emphasis will be given on the following points.

- Minimum use of Horns at the village area.
- Timely maintenance of vehicles and their silencers to minimize vibration and sound.
- Phasing out of old and worn out trucks.
- Provision of green belts along the road networks.
- Care will be taken to produce minimum sound during loading.

It was found that the sand mining activity will not have any significant impact on the biological environment of the region. Since mining activity is carried out only during the day time, the movement of animals during the night will not be hindered. Proper mitigative measure will be taken by the contractor, in consultation with local NGOs working in the study area.

TRAFFIC ANALYSIS

From the traffic analysis it can be seen that the V/C ratio will be changed from 0.13 to 0.18 with LOS remain “A” i.e. “Excellent”. So the additional load on the carrying capacity will be affected to a minimum level.

ENVIRONMENTAL MANAGEMENT PLAN (EMP)

Proper environmental management plan is proposed for “Sand” mining project to mitigate the impact during the mining operation.

- Care will be taken that no cooking, or burning of woods will be allowed in the adjoining area.
- Prior to mining, short awareness program will be conducted for labors to make them aware to way of working.
- If some causality or injury to animal occurs, it will be informed to forest department and proper treatment will be given.
- No tree cutting, chopping, lumbering, uprooting of shrubs and herbs will be allowed.
- Corridor movement of wild mammals (If exists) will be avoided

ENVIRONMENTAL MANAGEMENT PLAN IMPLEMENTATION

Environmental Management Plan serves no purpose if it is not implemented with true spirit. Some loopholes in the EMP can also be detected afterwards when it is implanted and monitored. Thus, an implementation and monitoring programme has to be prepared.

The major attributes of environment are not confined to the mining site alone. Implementation of proposed control measures and monitoring programme has an implication on the surrounding area as well as for the region. Therefore, mine management will strengthen the existing control measures as elaborated earlier in this report and monitor the efficacy of the control measures implemented within the mining area relating to the following specific areas for eco-friendly mining:

- a. Collection of air and water samples at strategic locations with frequency suggested and by analyzing thereof. If the parameters exceed the permissible tolerance limits, corrective regulation measure will be taken.
- b. Collection of soil samples at strategic locations once in every year and analysis thereof with regard to deleterious constituents, if any.
- c. The effectiveness of drainage system depends upon proper cleaning of all drains provided in the surrounding of mine area. Any blockage due to siltation or loose material will be checked at least once in a month.
- d. Measurement of water level fluctuations in the nearby ponds, dug wells and bore wells.
- e. Regular visual examination will be carried out to look for erosion of river banks. Any abnormal condition, if observed will be taken care of.
- f. Measurement of noise levels at mine site, stationary and mobile sources, and adjacent villages will be done in every quarter of the year.
- g. Plantation/afforestation as will be done as per program i.e. along the road sides and near civic amenities, which will be allotted by Government bodies as it is not feasible to plant trees near the mine lease area. Post plantation, the area will be regularly monitored in every season for evaluation of success rate. For selection of plant species local people will also be involved.

BUDGET ALLOCATION FOR EMP IMPLEMENTATION

Annual budget for EMC is very essential for successful implementation of EMP. Costs will be both Capital and Recurring cost as given below. The fund allocated will not be diverted for any other purposes and the top management will be responsible for this.

Table :Budget of EMP

Sl. No	Description	Capital Cost 1 st year (Rs)	Recurring Cost (Rs) 2 nd year	Recurring Cost (Rs) 3 rd year	Recurring Cost (Rs) 4 th Year	Recurring Cost (Rs) 5 th Year
1	Pollution Control & Dust Suppression	-	1,00,000	1,00,000	1,00,000	1,00,000
2	Pollution Monitoring	-	1,00,000	1,00,000	1,00,000	1,00,000
3	Plantation and salary for one gardener (part time basis).	65,000	65,000	65,000	65,000	65,000
4	Haul road Maintenance Cost (670 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
TOTAL (Rs)		1,65,000	4,15,000	4,15,000	4,15,000	4,15,000

MONITORING SCHEDULE AND PARAMETERS

Table : Monitoring schedule and parameters

S. No	Description of Parameters	Schedule and Duration of Monitoring
1	Air Quality a) In the vicinity of the mine b) In the vicinity of the transportation network	24 hourly samples twice a week for one month in each season except monsoon season
2	Water Quality Water quality of surface and groundwater around the site Drinking water must conform to drinking water standards	Once in a season for 4 season in a year
3	Ambient Noise Level	Twice in a year for couple of years & then once in a year
4	Soil Quality	Once in two years on project monitoring area
5	Inventory of Flora (tree plantation, survival etc)	Once in two years on project monitoring area

6	Socio-economic condition of local, population, physical survey	Once in 3 or 4 years
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BENEFIT OF MINING

- ✓ Controlling river channel.
- ✓ Protecting banks.
- ✓ Reducing submergence of adjoining agricultural lands due to flooding.
- ✓ Reducing aggradations of river level.
- ✓ Generating useful economic resource for construction.
- ✓ Generating employment and improvement of socio economic conditions of the study area.
