EXECUTIVE SUMMARY

(In English & Hindi)

Of

Draft EIA/EMP Report

For

Baranji Limestone Mine

Khasra No. 207/13 (Part), Near Village Baranji, Tehsil: Lohandiguda, District – Baster (Chhattisgarh)

(Submitted for Public Consultation as per EIA Notification 2006 & its subsequent amendments till dated)

Mining Lease Area: 2.02 Ha. Production Capacity: 10,000 TPA,

Project Cost: Rs. 32.70 LAKH

Category-B1

In Favor of	Prepared By
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1 EXECUTIVE SUMMARY

1.1 Introduction and Background

The Limestone Project of Adivasi Harijan Stone Crusher Co-Operative Society, Baranji is situated in village Baranji, Tehsil: Lohandiguda District – Bastar (Chhattisgarh) over an area of 2.02 ha in khasra no. 207/13 (Part) for production capacity of 10,000 TPA.

Mining Lease was granted to Adivasi Harijan Stone Crusher Co-Operative Society, for the period of 20 years i.e from 19th July1999 to 18th July 2019. Now the lease period extend upto 50 years.

The Modified Mining plan and Progressive mine closure plan for period of 2016-17 to 2020-21of Baranji Limestone Mine was approved from the office of Regional Controller of Mines, Indian Bureau of Mines, Raipur vide letter number Baster/Chup/MP-1155/2018-Raipur/402 on Dated 10.07.2018.

Original the lease was granted for period of 19th July1999 to 18th July 2019 but as per the gazette notification Section 8A (3) all the mining leases granted before the commencement of the Mines and Minerals (Development & Regulation) Amendments Act 2015 shall be deemed to have been granted for a period of 50 years . Hence the lease period of mining lease increased 20 years to 50 for the period of 19th July1999 to 17.07.2049.

As per EIA Notification dated 14th September 2006 & its subsequent amendments; the proposed mining project falls under Activity (1a), namely Mining of Minerals. Such activities are further divided into category “A” and “B”. The Project Proponent has produced 3092.195 Tonne of Limestone without Environment Clearance. Therefore it is a violation case. Considering the violation of the EIA Notification, 2006 and the provisions of the notification No. S.O. 1030(E) dated 08.03.2018 and S. O. 804 (E) Dated 14/03/2017 and its subsequent amendments the cases of violation will be appraised by the Expert Appraisal Committee at the Central level and for B category the appraisal and approval thereof shall vest with the state or Union territory level Expert Appraisal Committee and State or union territory Environmental Impact Assessment Authorities in different states and Union territories constituted under sub-section (3) of section 3 of the Environment Protection Act 1986.

The proposal falls in projects activity no 1 (a) of schedule of the EIA Notification, 2006 and as the lease area is less than 100 ha. It falls under category B1 vide amendment EIA notification dated 14.08.2018. and the proposal will be appraised and requiring prior environmental clearance by SEIAA, Chhattisgarh.

The EIA study report has been based upon the following :-

- Field data collection on different aspects of environment including air, soil, water, land, meteorology, noise, flora, fauna, agriculture and socio-economy in the study area of 10 km radius with mine as its center.
- Study of opencast mining methodology, water requirement, source of pollutants and pollution control strategy.
- Ecological Prospective and Green Belt Development.

The EIA study evaluates the impact on the present environmental scenario and check out the environmental management plan incorporating further step to mitigate the adverse impacts of air, noise, water, land pollution on environment.

1.2 Location and Communication

Table 1-1: Location and Communication from ML area

S. No.	Particulars	Details
A.	Nature of the Project	Limestone Mining Project
B.	**Size of the Project**	
1.	Mine area	2.02 ha
2.	Production Capacity	10,000 MTPA
C	**Location Details**	
1.	Village	Baranji
2.	Tehsil	Lohandiguda
3.	District	Bastar
4.	State	Chhattisgarh
6.	Toposheet No.	65 E/16
D	**Communication**	
1	Nearest Town / City/village	Baranji 0.75 km, SW from mine site
2	Nearest Railway Station	Tokapal Railway Station ~ 19.60 km in SE
3	Nearest Airport	Jagdalpur Airport ~ 25.44 km in South-East direction from the mine site
4	State Boundary	Chhattisgarh-Odisha Inter State Boundary ~38.96 km in East.

1.3 Project Chronology till Date

1. Adivasi Harijan Stone Crusher Co-Operative Society, Baranji submitted relevant documents, namely Form-1 (as per the EIA Notification 2006, as amended till date) along with a Pre-feasibility Report, Approved Mining plan and proposed Terms of References (ToR) for carrying out environmental studies to the State Environment Impact Assessment Authority, Chhattisgarh, on 14th April 2018
2. A presentation to the SEAC, Chhattisgarh, to finalize the ToR for the EIA study before SEAC was held on 26.10.2018.
3. ToR letter has been issued by SEAC, Chhattisgarh in favor of, M/s Baranji Lime stone Mine, Village Baranji, Tehsil Lohandiguda, district Bastar, Chhattisgarh vide letter no. 341/SEAC, CHH/Mine/Bastar/706 on Dated 25.06.2019.
4. Monitoring studies during the Summer Season (March, April and May) 2019 and presented the findings in draft EIA report

1.4 Project Description

1.4.1 Study Area at a Glance

The study area is taken in accordance with the provisions of sector specific EIA guidance manual for Mining of Minerals manual, published by Ministry of Environment and Forests, during 2010. The study area for the Limestone Mining Project was as follows:

- The proposed project area (M. L. area) is considered as 'Core Zone'.
- 10 km radius from the boundary limits of the M.L. area is considered as 'Buffer Zone'.
- Study area (10 Km. radius) : 30552.33 Hect.

1.4.2 Utilities

Table 1-2: Requirement for the mining

S.No.	Requirements			Quantity and Nos.	
1.	Water Requirement	Domestic Propose	Drinking	0.240 KLD	0.96 KLD
			Sanitation	0.720 KLD	
		Dust Suppression		6405 m^2 area per 1.0 L	6.40 KLD
		Greenbelt Development		412 plants per 5 LPD	2.06 KLD
	Total				**9.42 KLD**
2.	Man-Power Requirement			24	

1.4.3 Topography and Drainage

- The mining lease area is gently sloping towards north and NE of the lease area.
- The general height of the area is around 544m from the above MSL and the highest contour of this lease area is 570 m above MSL.
- The lowest contour is 525 m above MSL.
- Indravati River is the main river of the area and 0.75 kms away flowing in the direction of East.
- Another nala of the area is flowing 1.25 kms away from the mining lease area in South-eastern direction and active only rainy season.

1.4.4 Regional Geology

Regional Geological Succession of the Lease area:

Table 1-3: Regional Geology

Group	Formations	Litho-Unit
Recent to Sub-Recent		
Indrawati Group (Late Proterozoic))	Jagdalpur Formation (200 Meters thick)	Purple Shale with purple grey stromatolitic dolomite Purple stromatolitic Limestone and shale
	Kanger Pormation (150 - 200 Meters)	Grey and black limestone

	Cheralur Formation (200 Meters thick)	Purple shale with Arkose sandstone , chart and pebble Conglomerate , grit
	Tirathgarh Formation (10O Meters Thick)	Quartz arenite (Chiriakot sandstone) Sub arkose and conglomerates
Achaean	Granites and super crustal	

1.4.1 Local Geology

Lithological succession observed in the lease area can be summarized as follows-

Recent	Alluvial Soil (0.00 mt.
Kanger Formation (150 - 20O Meters thick)	light to dark grey Limestone more than 50 meters thick

1.4.2 Mineable Reserve & Life of Mine

Table 1-4: Mineable Reserves

Total G1 Reserve in T	Total G1 reserve locked in 7.5 m limit	Mineable Reserves in T
6,30,765	2,92,129	3,38,636

Life of Mine			
Total mineable reserves	Average Annual Production	Total mineable reserves/Average Annual Production in years	Life of Mine in Years
3,38,636	10,000	33.86	34 Years

1.4.3 Mining Method

- The limestone is soft, so local labors with the help of heavy hammer chisel and digging rod produce sufficient quantity of limestone manually.
- The present bench height is 6 to 12 meters and face slope 45^0.
- The top R.L. is 570 m and bottom R.L. is 544m. The ultimate pit depth is 525 m.RL.
- The pit road is 3 times of tractors width and maintained in 1: 16 gradient. Single benches developed in systematic manner.
- Limestone will be transported from mine to stack yard by 2 tractors. Loading of limestone will be done by manual labors only.

Table 1-5: List of Machineries & Equipment

1.	Excavation	Manual	-
2.	Loading	Manual	-
3.	Transportation	Hired tractor of 3 T	2

		capacity	
4.	Water Pump	Tanker	1
5.	Crushing/screening	No crushing screening unit installed within lease area.	

1.5 Meteorology Long Term Meteorology (Secondary Data)

Information presented in subsequent paragraphs is from the Indian Meteorological Department (IMD), Long Term Climatological Tables, 1971-2000, Jagdalpur. These tables give useful information about a region's weather, since it was collected over a period of 30 years.

1.5.1 Temperature

May is generally the hottest month with a mean daily maximum temperature of about 38.0°C and mean daily minimum of about 24.1°C. The highest temperature recorded at Jagdalpur is 46.1°C on 22th May 1912. . December is generally the coldest month with the mean daily maximum temperature at about 27.8°C and mean daily minimum at about 11.1°C. Minimum temperature sometimes drops down to subzero temperatures and the lowest temperature recorded 2.8°C on 8th January 1946.

1.5.2 Wind

Long- term wind direction data indicates that the predominant wind during the study period (March, April and May)-2019 is West at daytime and wind direction is observed to be from N directions at evening.

1.5.3 Rainfall

As per IMD station at Jagdalpur the rainfall in region was observed to be 1445.5 mm in a year, bulk of rainfall was received in monsoon months from June to September. Maximum cloud cover was observed in the months of June to September.

1.5.4 Relative Humidity

Most humid conditions was found in the monsoons, followed by post-monsoons, winter and summer in that order. Mornings were more humid than evenings and humidity ranged from a high of 80-86% in monsoon mornings to a low of 34-53% in winter evenings.

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1.5.5 Site Specific Meteorology

Environmental monitoring was carried out for Post Monsoon season covering the months of (March, April and May)-2019. Meteorological data is collected for wind speed, wind direction, temperature, rainfall and cloud cover.

Mean average temperature recorded during study period was 37.45°C with mean maximum temperature of 41°C and mean minimum of 32°C.

Average wind speed recorded was 4.29 m/sec

Rainfall is not recorded during the study period.

1.6 Existing Environment Scenario

1.6.1 Land Use

Land Use of Mine Lease Area

At present, there is a pit in the area. It is proposed to work the deposit of Limestone in next five years by developing the mine by formation of proper benches, each of 2m height. At the conceptual stage, the mined out area of 1.4999 Ha will be converted in to a small water tank for public use and handowered to gram panchayat Baranji.

Land Use of the Study Area

The land use land cover map of the study area has been prepared using recent Landsat satellite image, area and distance calculations have been carried out using GIS software after geo- referencing and interpretation. Total area 30552.33 ha, out of which Forest land covers an area of 4510.10 ha., water bodies cover an area of 2741.99 ha., Agricultural land cover about 3053.75 ha

1.6.2 Soil Quality

The soil sample were collected from 7 locations, the soils of study area are predominantly Sandy Clay loam. The pH of the soil is ranges from 7.54 to 8.14. The soil being of friable consistency, the bulk density of the soil is in the range of 1.66 to 1.72 g/cm3 whereas the water holding capacity are in the range of 31.28% to 33.24 % respectively. It was observed that the Values of bulk density, porosity and water holding capacity varied according to the soil texture.

1.6.3 Ambient Air Quality

The major contribution to the air pollution is dust and other pollutant present in the air are SO2 and NO2. To assess the pre mining condition ambient air monitoring was carried out.

The baseline ambient air quality was found to be within the permissible limits of NAAQS.

1.6.4 Noise

Ambient noise samples were collected from 7 locations in the study area; samples were collected from residential as well as industrial area (Mine site).

Day time Noise Levels (Leq day)

- The day time (Leq day) noise levels observed in the range of 48.4 to 40.2 dB (A) in residential area.

Night time Noise Levels (Leq night)

- The night time (Leq night) Noise levels observed in the range of 42.4 to 38.4 dB (A) which is within the prescribed limit of 45 dB (A) in residential area.

Industrial Area Noise Levels (Leq)

- The noise levels at the mine site were found to be 59.2 dB (A) during day time and 56.6 dB (A) during night time.

1.6.5 Water Environment

Groundwater Quality

The analysis results shows that the pH for the ground water samples GW1, GW2, GW3, GW4, GW5, GW6 and GW7 ranged from 7.24 to 7.86 indicating slightly alkaline in nature. The TDS (Total Dissolved Solids) were found to be in the range 158.0 mg/l to 250 mg/ l which is within the permissible limit of 2000 mg/l. Total Hardness of Ground water samples in the study area was found to be 94.0 to 192/.0 mg/l which is within permissible limit..

Fluoride content varies from 0.24 mg/l – 0.86 mg/l which is within permissible limit. The overall ground water quality in the study area was found to be mineralized with respect to chloride (16.0 to 56.0 mg/l) and sulphate (24.0 mg/l to 56.0 mg/l).

Surface Water Resources

Indravati River is the main river of the area and 0.75 kms away flowing in the direction of East. There is no other river in the surrounding within 5 kms. Another nala of the area is flowing 1.25 kms away from the mining lease area in South-eastern direction and active only rainy season..

Surface Water Quality

Surface water samples were collected, analyzed and compared with Indian standard for drinking water 10500:2012, pH value was found to be 7.12 to 7.26 which indicate that surface water is alkaline in nature; TDS was found to be 186 mg/l to 412. Dissolve oxygen were found about 6.8 to 7.2 mg/l. It is seen that the physicochemical analysis of other parameters like chloride, calcium, magnesium, nitrate and fluoride were found within the desirable limit.

Biological Environment

Ecological study is essential to understand the impact of industrialization and urbanization on existing flora and fauna of the study area.

There is no wildlife sanctuary, National park, Biosphere reserve, Wildlife corridors, Tiger/ Elephant reserve within 10 km radius of the mining lease.

Flora of the Study Area

Floral study was carried out during Summer season.34 species of plant observed in study area during the survey out of which 14 species are also found in Core zone area.

Shrubs and Herbs: About 6 types of shurbs and Herbs found within study area out of which 3 are also found in core area..

Fauna of the Study Area

A general faunal survey was also conducted during the Summer Season 2018-19, and Nil gai (*Boselaphustragoca melus),* Jackal *(Canis aureus),* Jungle cat (*Felis chaus*), Common monkeys (*Presbytis phayrei*) and birds Striped Hyena *(Hyaena hyaena),* House crow (*Corvus splendens*), and Red vented bulbul (*Pycnonotus cafer*), were found.

1.6.6 Cropping Pattern

The climatic conditions of a region affect the agriculture cropping pattern of that area main crops of the district are paddy, maize, kodo, arhar, urad, kulthi and ramtil. are major crops grown in the study area.

1.6.7 Socio Economic Status

The study area includes 55 villages within the 10 km. radius with a total population 14304 forming 14304 household as per census 2011.In the study area about 26972 of the total population is literates. As per census 2011, about 15396 of the total are main workers, 16344 are marginal workers and 30952 are non-workers.

1.6.8 Anticipated Environmental Impact and Mitigation Measure

1.6.9 Topography

The mining lease area is in gentle sloping mound and the limestone deposit is almost flat bedded deposit. There is no top soil cover found over the limestone. Only some small plants and grasses will be removed for mining activity.

1.6.10 Drainage

There is Indrawati River of this region which is 0.75 km away from the lease area and the flowing towards south. Nala flowing at a distance of 1.25 km in the direction of SE, so there will be no change in water bodies or the land surface affecting drainage or run- off.

1.6.11 Impact on Air Environment

- Water sprinkling will be done twice during the day in summer season and once during the day in Summer season for settling of dust particles.
- Transportation of mineral will be done on Kaccha road which will generate dust and rest of the distance will be on National Highway will not cause air pollution.
- Regular maintenance of machinery and vehicles will be done to check the excess emissions. A system of regular overhauling of tractors, after specified hours of working shall be evolved and observed to avoid generation of obnoxious fumes.

1.6.12 Impact of Traffic Density:

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. Existing traffic on these roads was compared with the carrying capacity of these roads as per IRC guidelines and it was found that the roads are capable of handling the additional traffic/load. Not much impact

will be there on the local transport. The LOS value from the proposed mine may be "Very Good" for Chtrakoot PWD road.

1.6.13 Impact on Noise Environment

The expected noise levels in the working environment are compared with standards prescribed by occupational safety and health administration (OSHA-USA) & CPCB-NEW DELHI, the noise levels are expected to be in the acceptable range.

1.6.14 Impact on Water Environment

Impact on Surface Water Quantity

Surface water will not be utilized and impact on surface water quantity is not anticipated due to the proposed activity.

Impact on Surface Water Quality

The proposed opencast mining operation may cause water pollution. The sources of pollution generally are:

- Wash off from dumps
- Soil Erosion

Mitigation Measures

In open cast mining pits as well as on dumps, it is necessary that the rainwater falling outside the edge limit of the working areas will not be allowed to enter into the pit and working areas. Therefore it is proposed to develop garlands drains around the mining pits and dumps to arrest the surface runoff water and divert it to lower synclines without any contact with the mining operations.

In the lease for proper drainage of water, a set of garland drainages will be made in the mining lease area and the water will be accumulated at the lower most gradient by constructing siltation tanks which will act as water storage in the area as well as collection of silts. Silts will be regularly cleared regularly.

Impact on Groundwater Quantity

Groundwater will be used for mining activities, only 9.42 KLD water will be used during mining operation; and only fresh water will require for drinking propose which will be sourced from nearby village.

Impact on Groundwater Quality

Since water table is very deep & mining will be carried out much above the water table & therefore there will be no impact on ground water. The impact of mining on groundwater is not anticipated as the mining will be done till 2m only & not going to encounter the groundwater table.

Mitigation Measures of Groundwater

The water level in post monsoon season will be 25 m below the surface depending upon the relief of the area and in dry season it goes to 35 m below the general ground level.

The ultimate working depth will be maintained up to 525 m RL hence will not touch the general water table.

1.6.15 Impact on Flora and Fauna

As the mining activities will be confined to core zone only, no adverse impact is foreseen on the flora & fauna in the core zone. To prevent the entry of wildlife animals from entering the lease area proper fencing will be done all around the lease area.

1.6.16 Impact on Top Soil

During mining activity Limestone is exposed on the surface itself hence no mineral reject & top soil will be generated during this scheme period (five years). This will in turn result in minor changes of topsoil structure.

Mitigation Measures for Top Soil

However, the project design will take into account the preservation of the top soil and its subsequent use during the restoration of the site.

1.6.17 Impact on Socio Economic Status

Socio-economic survey was conducted in seven villages within the study area located in all directions with reference to the project site.

The respondents were asked for their awareness/opinion about the project and their opinion about the impacts of the project, which is an important aspect of socio-economic environment, viz. job opportunities, education, health care, transportation facility and economic status.

Proposed Action Plan for CER

S. No.	Focus Area	Proposed Budget (Rs. in Lakh/annum)
1.	Infrastructure Development (one activity every year) (Repairing of school and Panchayat Bhawan as required, Help in Sanitation development in nearest village)	0.20
2.	Social Forestry (At Gram Panchayat, Schools, Hospital)	0.10
3.	Awareness programme on cancer and AIDS (Distribution of free medicines)	0.10
4.	Health check - up Camps for villagers and free medicines. The camp will be conducted twice during the	0.20

	year for general health check-up	
6.	Drinking water and Sanitation facility for local villagers	0.10
7.	Education (Distribution of Books and School Uniforms to Girl Child) 100 student per year and Sports Development (Help in Organizing Sports Day in School) (Two activity every year)	0.30
	Total	**1.00**

1.7 Environment Monitoring Program

The monitoring of pollutant in mine will be carried out for air, water, soil and noise. It takes care of all monitoring needs of the mine. Additionally ambient air and work zone monitoring in mine will be conducted in every season near mining operation, loading and transportation (haul road) areas by Government approved private agency. The analysis results of air monitoring will be properly recorded and submitted to the statutory authorities from time to time. Noise measurement of mine equipment will be done once in a year, ambient air monitoring will be done once in one season at three locations (1 in upwind, 1in downwind, 1 in lease area. Ambient noise monitoring will be carried out at 3 locations, 1 within the lease area, and 2 locations of nearest habitation to the lease. Water quality monitoring will be done once in season at two locations& soil quality monitoring will be done once in a year at 2 locations within the study area. A total of Rs. 2.50 lakhs/- every year will be spent on monitoring of environmental parameters.

1.8 Additional Studies

1.8.1 Risk Assessment and Disaster Management Plan

The following natural /industrial problems may be encountered during the mining operation are:

- Inundation-filling of the mine pit due to excessive rains.
- Slope failures at the mine faces or stacks.

Water table will not be encountered during proposed working. No high risk accidents like landslides, subsidence flood etc. have been apprehended. But possibility of accidental disaster is also not ruled out. Therefore, all the statutory precautions will be taken for quick evacuation as per the Mines Act 1952, the Mines Rules 1955, Rule of MMR- 1961 and the Rules of MCDR-1988.

1.8.2 Ecological Damage Assessment & Remediation Plan

The assessment of ecological damage in respect to all environmental attributes such as Air, Water, Noise and Soil as well as Biological environment has been conducted comprising remediation plan & natural and community resource augmentation plan corresponding with economic benefits derived due to violation.

1.9 Environment Management Plan

The environment management plan is prepared with a view to facilitate effective environmental management of the project. Apart from having an Environmental Management

Plan, environment management cell consisting of mines manager, safety officer and environmental officer is constituted. A total of Rs. 2.50 Lakhs/- would be spent on environment management activities every year.

1.10 Project Benefits

The surrounding inhabitants around the mine lease area are mainly agricultural oriented. Opportunities for jobs activities will be created and mining will serve as a source of permanent livelihood. The mine will create employment directly or indirectly. Additional, certain works like transportation will be outsourced on contract. So, overall effect of mining is expected to be positive.