

# EXECUTIVE SUMMARY

(In English & Hindi)

Of

**Draft EIA/EMP Report**

For

**Jairamnagar Limestone Mine**

**Production Capacity- 49999.95 TPA**

**Khasra no. 720/1,721, 722/8, 733, 734/1, 734/2, 734/5,**

**734/6 Village: Jairamnagar**

**Tehsil: Masturi , District: Bilaspur (Chhattisgarh).**

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

**Mining Lease Area: 2.995 Ha**

**Cluster Area: 8.676 Ha.**

**Project Cost: Rs. 75.37 LAKH**

**Category-B1**

<b>Project Proponent</b>	<b>EIA Consultant</b>
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## 1 EXECUTIVE SUMMARY

### 1.1 Introduction and Background

The Jairamnagar Limestone mine is situated at Khasra no. 720, 721, 722/8, 733, 734/1, 734/2, 734/5, 734/6. at village Jairamnagar, tehsil Masturi and district Bilaspur (C.G.). This site is 13.6 km away from district office Bilaspur and falling in Jurisdiction of Village – Jairamnagar which is 2.00 km away from the project site . The Chhattisgarh State Capital and District headquarter Bilaspur is connect by good tar road.

The letter of intent has been issued in favour of M/s Kanha Minerals, Prop: Mukesh Kumar Vidhani for lease period of 30 years by mining officer, office of collector (Mining Branch) Bilaspur through vide letter no. 133/Khani/U.P./2018 Bilaspur dated 20/04/2018(*Annexure -1*) & the extension of validity of LOI, order by DGM Court, Director, Directorate of Geology & Mining, Atal Nagar Nawa Raipur, vide letter no. 3838/Khani.2/No.12/2019, Raipur dated 28/08/2020. (*Annexure -2*)

The proposed production is 49,999.95 TPA (ROM).The estimated cost of project will be Rs.75.37 lakhs

First technical presentation was made in 366th SEAC; Chhattisgarh meeting dated 3rd May 2021. ToR was granted vide Letter No.549/SEAC.CG/Mine/1479 dated 11/06/2021

It is proposed to excavate approximately 49,999.95TPA (ROM) Limestone by Opencast Semi-Mechanized method. The lease area is 2.995 Ha and total mineable reserves is 3,03,314.30 Ton with 90% recovery the Recoverable reserves is 27,29,982.90 Tones. The expected life of the will be 6 years.

The studies were undertaken by The Consultant namely, Aseries Envirotek India Pvt. Ltd. (AEIPL) Noida. AEIPL is a National Accreditation Board for Education and Training (NABET) Accredited Consultant Organization (ACO) and is qualified to prepare EIA reports for Project / Activity 1(a) (Mining of Minerals), a mandatory requirement for agencies submitting such studies to regulators for the purpose of seeking EC.

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

S.No.	Particulars	Details
A.	<b>Nature of the Project</b>	Jairamnagar Limestone (Low Grade) Quarry mine of M/s Kanha Minerals
B.	<b>Size of the Project</b>	
1.	Mine area	2.995 ha
2.	Production Capacity	49,999.95 TPA
C	<b>Location Details</b>	
1.	Village	Jairamnagar
2.	Tehsil/Taluka	Masturi
3.	District	Bilaspur
4.	State	Chhattisgarh
5.	Topo sheet Numbers	64J/8. Latitude : 22° 1' 5.13"N to 22° 1' 12.57"N Longitude: 82°16'59.63"E to 82°17'8.36"E

## 1.3 Project Chronology till Date

1. The 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 Jairamnagar Limestone mine was submitted for carrying out environmental studies to the State Environment Impact Assessment Authority Chhattisgarh, on 30.11.2020
2. Tor was finalized by SEAC, C.G in its 366<sup>th</sup> meeting held on 03.05.2021.
3. ToR letter has been issued by SEAC, Chhattisgarh in favor of, Limestone Mine of M/s , Kanha Minerals Near Village Jairamnagar, Taluk-Masturi, District Bilaspur (Chhattisgarh) vide letter no.549/SEAC.CG/Mine/1479 dated 11/06/2021.

## 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 (Low Grade) 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'.

### 1.4.2 Utilities

**Table 1-1: Requirement for the mining**

Sr. No.	Usage	Total Water Requirement
1.	Domestic Purpose @25 lpd/worker	0.30 KLD (25 x12=300 L)
2.	Dust Suppression @ 0.5 L/Sqm (twice a day)	2.00 KLD (500m x 4m=2000sqm)
3.	Greenbelt Development@ 2.5 L/tree	3.54 KLD (1410 x 2.5=3535 L)
<b>Total</b>		<b>5.84 KLD</b>

### 1.4.3 Topography and Drainage

The area is located Southwest of Jairamnagar village of district Bilaspur. It falls in India Toposheet No. 64 J/8 and bounded by 22° 1' 5.13" to 22° 1' 12.57" and longitude 82°16'59.64" to 82°17'8.36". The maximum elevation of the area is about 264 m from M.S.L and minimum is 261 m from M.S.L. The general ground slope is towards east direction. The area is almost flat, with scanty vegetation. The climate of the area is very hot in the summers and cold in the winters

The Arpa river at a distance of ~ 5.60 km is flowing towards the west direction & the Lilagar river at a distance of ~ 4.80 km is flowing towards east direction. A seasonal nala flowing at about 4.15 km towards the south-east direction of the lease area. The drainage pattern in general is subparallel with medium density. The village pond is at a distance of 300 m towards south-east direction and a canal is at a distance of 210.0 m towards south-east direction.

#### 1.4.4 Local Geology

Area is covered by Alluvial soil. The Limestone deposit of the area is mainly of silicious Limestone type and belongs to the low grade Limestone formation, of Chandi formation overlain by Gunderdehi Shale. The Limestone bands low grade. Locally following lithological sequence is occurs in the area.

- |                        |  |
|------------------------|--|
| 1. Soil / Murrum       | About 0.5 to 1.5 (av 1.0m)             |
| 2. Weathered Limestone | Variable in thickness from 0.2 to 0-3m |
| 3. Bedded Limestone    | About 15-20 m Thickness                |
| 4. Intercalated shale  | Inter-layered within Limestone         |
| 5. Carbonaceous shale  | Basalt shale below Limestone           |

The Limestone of the area is massive in nature, medium to fine- grained and grayish in colour with a thickness ranging 15 m to 20 m and with 0.05 m to 0.1 m thin shale band at places which are being blended with Limestone, Limestone is flaggy in nature, predominantly grey in colour, fine to medium grain hard and compact and found to be associated with thin shale bands at places, the sure of Limestone are also seen in the nearby working pits with a maximum thickness of about 16m..

#### 1.4.5 Mineable Reserve & Life of Mine

2. Total Geological Reserves - **4,49,250.00 MT**
3. Reserves Blockage in Mine Boundary-105818.70 T
4. Reserves Blockage in Benches- 19,494.67 T
5. Reserves Blockage in crusher- 18,775.20 T
6. Reserves Blockage in pinching out area-1,847.10 T
7. Total Blockage-(2+3+4+5)-**1,45,935.68 T**
8. **Mineable Reserves (1-6) -3,03,314.30 T**
9. Recoverable Reserves(10 X 90%) – **27,29,982.90 T**
10. Proposed Annual Production: **49,999.95 TPA**

#### 1.5 Life of Mine

*Table : Life of Mine*

Life of mine	Mineable reserve/ Average annual production
	3,03,314.30 /49,999.95=6.0

### 1.5.1 Mining Method

- The mining operation was carried out by mechanized open cast mining method in very small scale.
- Scientific and controlled blasting is proposed to be carried out for production of Limestone. Small Scale drilling and blasting will be carried out for production of Limestone. Heavy hammer and hardened chisels will yield the sufficient quantity of Limestone.
- The present bench height is 3 meters and faces slope 45° angles.
- The ultimate pit depth will be 6 m i.e from the surface within 500m the lease area.
- Limestone will be transported from mine to the consumers by their own and hired trucks.
- Mining operation will be carried out in single day shift from 8am to 5pm with 1 hour lunch break.
- The year-wise production is being projected by considering the present requirement. The total recovery of Limestone is around 90%.

Year-wise proposed production for the ensuring five years of modified mining plans are as follows:

**Table 1: Year wise Production of Mineral and Waste**

Year	Area(m <sup>2</sup> )	Depth (m)	Volume (m <sup>3</sup> )	S. Gravity	Production (Tonnes)	RL
I	6663.86	3.0	19991.01	2.5	49,977.53	(262-259)
II	6666.66	3.0	19999.98	2.5	49,999.95	(261-258)
III	330.33	3.0	990.99	2.5	2,477.48	(261-258)
IV	323.05	3.0	969.15	2.5	2,422.88	(261-258)
V	315.27	3.0	945.81	2.5	2,364.53	(261-258)
<b>Total</b>					<b>1,07,242.35</b>	

**Table 3: List of Machinery Proposed to be used**

Type	No.	Dia of Hole	Size/capacity	Make	Motive Power	H.P.
Compressor	1	35mm	340CFM	Atlas Compco	Diesel	85
Jack Hammer	2	35mm	100	Atlas Compco	Com.Air	-
Excavator	2	1 cum	Nil	Nil	Diesel	110
Tipper	4	-	10 tons	Tata	Diesel	85
Pump	1			-	Disel	10
Tractor & Water Tank	1					



## **1.6 Meteorology Long Term Meteorology (Secondary Data)**

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

### **1.6.1 Temperature**

The district experiences a hot and semi humid climate. The annual temperature of the district varies between 8<sup>0</sup>C and 46<sup>0</sup>C .The maximum temperature is observed in the month of May and June whereas the minimum is observed in the months of December and January.

### **1.6.2 Wind**

Long- term wind direction data is presented in *Error! Reference source not found.*, and indicates that the predominant wind during the study period (1<sup>st</sup> December 2020 to 28<sup>th</sup> February 2021) is South East.

### **1.6.3 Rainfall**

As per IMD station Champa, is endowed with high rainfall. Areas of chronic shortfall are few and localized. The rainfall is typically late in coming, very heavy when it comes, concentrated in a few days and early in termination. The district receives its rainfall mainly from the south-west monsoon which usually sets in the third/fourth week of June and spread over a period from mid June to mid September with heaviest shower in the months of July and August. The average rainfall in the district is 1164 mm in the year 1994 to 2012.

### **1.6.4 Relative Humidity**

Most humid conditions were 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 83-79% in monsoon mornings to a low of 50-33% in summer evening.

### **1.6.5 Site Specific Meteorology**

Environmental monitoring was carried out for winter Season covering the months of (1<sup>st</sup> December 2020 to 28<sup>th</sup> February 2021). Meteorological data is collected for wind speed, wind direction, temperature, rainfall and cloud cover.

## 1.7 Existing Environment Scenario

Meteorological data showed that the average wind speed during the study period was observed to be 9.5 m/sec. It was observed that during study period wind blows pre dominantly from SE and Second pre dominantly from NE direction. Mean average temperature recorded during study period was 30.41°C with mean maximum temperature of 45.3°C and mean minimum of 19.3°C. The data obtained during the study period was compiled to obtain average data Existing Environment Scenario

### 1.7.1 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 1.5m height. At the conceptual stage, the mined out pits will be converted into water reservoir.

#### 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 Land covers an area of 23,357.30 ha. Out of which 3,400.42 (14.56%) is buildup land 6,542.34 (28 %) is crop land 3,652.18 (15.64%) fallow land 3,421.17 (14.65%) is forest land 4,176.81(17.88%) waste land 2,164.38(9.27%) Water bodies /River.

### 1.7.2 Soil Quality

The soils of study area are predominantly Sandy loam in texture. The pH of the soil is ranges from 6.3 to 7.86. The soil being of friable consistency, the bulk density of the soil is in the range of 1.11 to 1.50 g/cm<sup>3</sup>. Nitrogen content of the soil varies from 18.3 to 22.3 mg/100g. Available potassium content is 0.8-1.2 mg/100gm. Soils of the area are low to moderate fertility. This type of soil will require more frequent irrigation and fertilization.

### 1.7.3 Ambient Air Quality

The above analysis report shows that since this mine is not operating and traffic on the National Highway is also less, population in the village is not more. The baseline ambient air quality was found to be within the permissible limits of NAAQS. In study area results shows PM<sub>10</sub> varies from 73 µg/m<sup>3</sup> to 42µg/m<sup>3</sup>, PM<sub>2.5</sub> 41 µg/m<sup>3</sup> to 20 µg/m<sup>3</sup>, SO<sub>2</sub> 13 µg/m<sup>3</sup> to 5 µg/m<sup>3</sup> NO<sub>2</sub> 25 µg/m<sup>3</sup> to 10 µg/m<sup>3</sup> and Free Silica varies From 1.7 µg/m<sup>3</sup> to 0.83 µg/m<sup>3</sup>.

### 1.7.4 Noise

Generally, noise levels in public places like temples and community hall have higher values in day time.

#### Day time Noise Levels (Leq day)

- The day time (Leq day) noise levels observed in the range of 39.8 to 34.4 dB (A) in residential area.

#### Night time Noise Levels (Leq night)

- The night time (Leq night) Noise levels observed in the range of 33.9 to 29.1 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 45.3 dB (A) during day time and 36.2 dB (A) during night time

### **1.7.5 Water Environment**

#### **Groundwater Quality**

The analysis results shows that the pH for the ground water samples GW1, GW2, GW3, and GW4, ranged from 7.64 to 7.23 indicating neutral in nature. The TDS (Total Dissolved Solids) were found to be in the range 621.0 mg/l to 362.0 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 347-168 mg/l which is within permissible limit. Alkalinity indicates better buffering capacity of water and ranges between 234.0-172.0 mg/l.

Fluoride content varies from 0.71 mg/l – 0.53 mg/l which is within permissible limit. The overall ground water quality in the study area was found to be mineralized with respect to total dissolved solid, chloride (165.0 mg/l to 139.0 mg/l), sulphate (75.0 mg/l to 65.0mg/l) and hardness.

#### **Surface Water Quality**

Surface water samples were collected, analyzed, pH value in SW1, SW2, SW3 and SW4 was found to be in the range 7.53 and 7.80 mg/l which indicates that surface water is neutral in nature; TDS was found to be in the range of 392 to 239 mg/l. Dissolve oxygen were found about 5.6 and 8.2 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. The overall surface water quality of the available sources within the study area was found to be good physico-chemically with respect to all the parameters. There is no organic load-observed in the sources monitored indicating no pollution load in the source.

#### **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.

### **1.7.6 Cropping Pattern**

The main base of the economy of Bilaspur district, agriculture and forest produce is collection. Agriculture is mainly produced in paddy, maize crops and wheat, jowar, kodo

kutki, gram, tur, urad, sesame, Ram sesame, mustard. Besides agriculture, animal husbandry, poultry farming, fisheries also play a supporting role.

### 1.7.7 Socio Economic Status

The study area includes 49 villages within the 10 km. radius with a total population 71481. as per census 2011. In the study area about 43191 of the total population is literates. As per census 2011, about 25744 of the total are main workers, 11774 are marginal workers.

### 1.7.8 Impact on Air Environment

- Water sprinkling will be done twice during the day in summer season and once during the day in winter season for settling of dust particles.
- Sharp drill bits will be used for drilling and they will be maintained periodically to reduce the generation of dust.
- 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.
- Drilling machines will have bag filters attached to them also to prevent the dust to get air borne.

### 1.7.9 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.

The traffic study was carried out on T-point connecting to Masturi-Jairamnagar Road which is ~215 m, in North - East direction. This is single lane 2 way road. The traffic volume at the location is summarized as per the categorization and given below.

Post project PCU will be 270 PCUs (222.5 PCUs Existing + 47.5 PCUs Proposed PCUs) on Masturi-Jairamnagar Road. It can be clearly stated that the road used for carrying mineral to the end users is capable of handling the additional load due to mining activities.

*Table 1: Carrying Capacity of Roads*

Location	Existing Traffic Load			Total Traffic load including Applied Project		
	No of PCUs	V/C	LoS	No of PCUs	V/C	LoS
Project site to Masturi-Jairamnagar Road	222.50	0.11	<b>A</b>	270	0.135	<b>A</b>

### **1.7.10 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.

### **1.7.11 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**

The impact of mining on groundwater is not anticipated as the mining pit will be below the general ground level of the surrounding area. The water table is available within 30 meters from the surface level in rainy season and during summer the water table goes below 40 meters. The ultimate working depth will be maintained up to 7m hence will not touch the general water table.

Ground water pollution can takes place only if the mining rejects contain chemical substances. The chemicals get leached by the precipitation water and percolate to the groundwater table thus polluting it the water is potable in the sell lad bore well. There is no beneficiation process envisaged for the beneficiation of Limestone, hence the chances of contamination of water due to organic discharge or other effluent does not arise. Only hand sizing and sorting preferred for processing work.

### **1.7.12 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.

### **1.7.13 Impact on Top Soil**

During mining of limestone, 11019.14 cum of top soil will be generated and will be used for plantation.

### **1.7.14 Impact on Socio Economic Status**

Socio-economic survey was conducted in six 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.

## **1.8 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, 1 in 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. 0.90 lakhs/- every year will be spent on monitoring of environmental parameters.

## **1.9 Additional Studies**

### **1.9.1 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.

#### **1.10 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. 7.04 Lakhs/- would be spent on environment management activities every year.

#### **1.11 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.

