

EXECUTIVE SUMMARY

(In English & Hindi)

Of

Draft EIA/EMP Report

For

Flagstone Mine

Production Capacity 4104.00 TPA

Khasra no. 686, 635, 630, Near Village : Acholi

Tehsil & District : Mahasamund (Chhattisgarh).

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

Mining Lease Area: 3.84 Ha, Production Capacity: 4104.00TPA

Project Cost: Rs. 50.13 LAKH

Category-B1

In Favor of	Prepared By
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Table of Contents

1	Executive Summary.....	3
1.1	Introduction and Background	3
1.2	Location and Communication	4
1.3	Project Chronology till Date.....	5
1.4	Project Description.....	6
1.4.1	Study Area at a Glance	6
1.4.2	Utilities	6
1.4.3	Topography and Drainage	6
	Local Geology	7
1.4.4	Mineable Reserve & Life of Mine	7
1.5	Life of Mine	8
1.5.1	Mining Method	8
1.6	Meteorology Long Term Meteorology (Secondary Data)	9
1.6.1	Temperature	9
1.6.2	Wind	9
1.6.3	Rainfall	10
1.6.4	Relative Humidity.....	10
1.6.5	Site Specific Meteorology	10
1.6.6	Land Use.....	10
1.6.7	Ambient Air Quality	11
1.6.8	Noise.....	11
1.6.9	Water Environment.....	11
1.6.10	Socio Economic Status	12
1.6.11	Impact on Air Environment	12
1.6.12	Impact of Traffic Density:	12
1.6.13	Impact on Noise Environment	13
1.6.14	Impact on Water Environment.....	13
1.6.15	Impact on Flora and Fauna	14
1.6.16	Impact on Top Soil	14
1.6.17	Impact on Socio Economic Status	14
1.7	Environment Monitoring Program	14
1.8	Additional Studies	14
1.8.1	Risk Assessment and Disaster Management Plan.....	14

1.9	Environment Management Plan	15
1.10	Project Benefits	15

1 EXECUTIVE SUMMARY

1.1 Introduction and Background

The Achholi Flagstone mine is located at a distance ~1.1 km towards South - West direction, from Achholi village. The District Headquarter Mahasamund is ~13.75 km towards South direction and Chhattisgarh State Capital Raipur is ~ 45km, towards West direction and is connect by road.

Name	Shri Ashok Kumar Chandrakar	Annexure No.
Reference of TOR	639/Mine/Mahasamund/1581 Nawa Raipur Atal Nagar, dated 28/06/2021	Annexure - II
Area	3.84 hect.	Annexure - 1
Khasra No.	630, 635, 686	Annexure - 1
Applied Capacity	4104.00 TPA	Annexure - II
Village	Achholi	Annexure - 1
District	Mahasamund	Annexure - 1
LOI	Letter number 1694/KA/UTKHANIPATTA/KHA.LI/NA. KRA.80/2019 Mahasamund dated: 26/11/2020 07/Khani02/U.P.- Anu.Nispa./N.Kra.50/2017(4), Nawa Raipur, Dated 1/JAN/2022	Annexure - 2
NOC by Gram Panchayat	Gram Panchayat Achholi dated 17/02/2021	Annexure - IV
NOC by Forest Office	Noc of forest office Mahasamund letter no.291Mahasamund dated 08/01/2020	Annexure - V
Approval letter of Mine Plan	Letter No. - 770/Khani 02/Ma.Pl. Anumodan /Na.Kra.02/2019 (1) Nawa Raipur Dated :- 05/02/2021	Annexure - III
Geological Reserve	5,52,960.00 MT	Annexure – III
Recoverable Reserve	Rejects of Flagstone - 15,707.38 MT Reserve of Flag Stone – 2,98,440.14 MT	Annexure – III
	Total Recovarable Flag stone -3,14,147.52 MT	Annexure – III
Maximum Annual Mining Capacity	4104.00 TPA	TOR Annexure – II
Cluster Area	5.99 hect	Annexure - VI
Cost of Project	50.13 Lac	-

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.	Nature of the Project	Proposed Flagstone Mining Project of Shri Ashok Kumar Chandrakar, in Achholi Flagstone mining village, Achholi: Tehsil & District Mahasamund of Chhattisgarh
B.	Size of the Project	
1.	Mine area	3.84 ha
2.	Production Capacity	4104.00 TPA
C	Location Details	
1.	Village	Acholi
2.	Tehsil/Taluka	Mahasamund
3.	District	Mahasamund
4.	State	Chhattisgarh
5.	Topo sheet No.	64K/4.
6.	Latitude	21°13'38.80"N to 21°13'48.91"N
	Longitude	82° 4'40.87"E to 82° 4'51.10"E
D	Environmental Settings of the Area	
1.	Ecological Sensitive Areas	No protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration located within the 15 km radius of the mining lease. Some forest are present in the buffer zone: Forest area is 8.0 km from the project site.

2.	River / water body	Mahanadi River ~ 3.60 Km towards North Nalla ~ 2.30 Km towards West Village Pond ~ 800 m towards North - West Canal ~ 780 m towards North Reservoir ~ 11.10 Km towards South - East
3.	Nearest Human Habitation	Acholi ~ 1.10 Km towards South - West
4.	Nearest Town / City	Mahasamund ~ 12 Km towards South
5.	Nearest Railway Station	Belsonda Railway station at 9.20 km towards south-west
6.	Nearest Airport	Raipur Airport at ~33.35 km, in South - West direction
7.	State Boundary	None within study area
8.	Seismic Zone	Zone – II [as per IS 1893 (Part-I): 2002]
D.	Cost Details	
1.	Project Cost	50.13 lakhs
E.	Requirements of the Project	
1.	Water Requirement	8.50 KLD
2.	Fuel requirement	100
3.	Man Power Requirement	6

1.3 Project Chronology till Date

- The details of online file for the project proposal, 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 Flagstone mine was submitted for carrying out environmental studies to the State Environment Impact Assessment Authority Chhattisgarh, for the mine lease :-
- Details of First technical presentation made are as given below:-

Sr.No	Lessee	No. of SEAC meeting	Date of Presentation
1	Shri Ashok Kumar Chandrakar	367th	04/05/2021

- The details of TOR granted are as follows:

Sr.No	Lessee	TOR Letter No	Date
1	Shri Ashok Kumar Chandrakar	639/Mine/Mahasamund/1581 Naya Raipur Atal Nagar dated 28/06/2021	28/06/2021

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 Soapstone 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.	Purpose	Details	Total Water Requirement
1.	Domestic Purpose @25 lpd/worker	6 workers x 25 lit per day = 150 Lit/Day	0.15 KLD
2.	Stone Cutting/ Wet cutting	(Same Water is used through recycling)	2.00 KLD
3.	Dust Suppression @ 0.5 L/Sqm (twice a day)	Haul road Area = (500 m Length x 4 m width = 2000 sqm.) x 0.5 li/sqm = 1000 lit /day x 2 time = 2000 lit/day	2.00 KLD
4.	Greenbelt Development@ 2.5 Liter	1740 Trees X 2.5Lit/day = 4350 Lit/day	4.35 KLD
Total			8.50 KLD

1.4.3 Topography and Drainage

The area is located East of Acholi village of district Mahasamund. It falls in India Toposheet No. 64 K/4 and bounded by 22° 13' 46.12"N to 21° 13' 44.03"N and longitude 82°4'40.87"E to 82°4'47.72"E.

The topography of the area is Flat land. The stone is buried under the soil in entire lease area. The general slope is towards South. Altitude of the applied area is 271 m AMSL in all parts of lease area. The applied area is devoid of any vegetation.

At present there is no water source, which is passing through the lease area and its surrounding. Proper care will be taken at the time of mining. The distance of water bodies from applied mines given below –

S.No.	Particullar	Applied Mines
		Shri Ashok Kumar Chandrakar
1.	Mahanadi River	~ 3.60 Km towards North
2.	Nalla	~ 2.30 Km towards West
3.	Village Pond	~ 800 m towards North - West
4.	Canal	~ 780 m towards North
5.	Reservoir	~ 11.10 Km towards South - East

Local Geology

The applied area forms a part of the Charmuria Formation of Raipur Group of Chhattisgarh Supergroup of Meso to Neo Proterozoic age comprises of fractured Limestone. The sequence of formation is as follows :-

Meso to Neo Proterozoic	Chhattisgarh Supergroup	Raipur Group	Charmuria Formation	Purple limestone, dark grey bedded fractured limestone

The topography of the applied area is Flat land. The general slope is towards south-west. The applied area is devoid of any vegetation.

(Above Geological data is adopted from District Resource Map of Geological Survey of India)

1.4.4 Mineable Reserve & Life of Mine

Reserves	Shri Ashok Kumar Chandrakar
1) GEOLOGICAL RESERVES (InTon)	5,52,960.0
Less :	1,25,841.60
i) Reserve Blocked under mine Boundary (In Ton)	
ii) Reserve Blocked under Mine Benches (In Ton)	96,436.80
2) MINEABLE RESERVES(1- i - ii)(In Ton)	3,30,681.60
Less :	
iii) Mine Loss- 5% of Mineable Reserves (In Ton)	16,534.08
iv) Rejected stone from flagstone (In Ton)	15,707.38
3) RECOVERABLE RESERVES OF FLAGSTONE (2 -iii- iv) (In Ton)	2,98,440.14
4) TOTAL RECOVERABLE RESERVES OF FLAG STONE (3+iv) (In Ton)	3,14,147.52

5) TOP SOIL TO BE GENERATED (In m³)	88,983 m³
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1.5 Life of Mine

Table : Life of Mine

A	Estimated recoverable reserve	130894.80 cum Or 314147.52 MT
B	Average rate of production per year during five year plan	1692.9 cum Or 4062.96 tons
C	Expected rate of production after five year plan	1681.5 cum Or 4035.6 tons
D	Sanctioned granted period	30 year from the date of lease agreement
E	Plan period	10 years
F	Thus anticipated life of the quarry	About 78 years (up to 9m of mine depth from surface level)

1.5.1 Mining Method

Method of mining will be opencast mining method. Mode of working will be manual. Only Top soil will be removed by excavator and cutting of stone on the stone layer on mine surface will be done by stone cutter rest all the other operations like excavation and sizing etc. will be done manually by local labors by hardened chisels. Loading of sized stone on tractors will be done manually with the help of local labors. Transportation of flagstone will be done by tractors. Rejects of flagstone chip will also be loaded on tractors manually.

The gradient of the ramp with benches will be maintained to 1:15 i.e. 15 meter long ramp for every 1 meter of depth. Width of ramp will be 3 meter.

Width of benches will be maintained similar to height of benches. The quarry will be developed in 2 benches of 3m height x 3m width each out of which first bench will be of top soil and second bench will be of flagstone of 3.00 m height only. During advancement of mining the operational bench will be worked into 1.5m -1.5m height of sub-benches. Finally at mine boundary benches will be converted to 3m (H) x 3m (W).

Table 1: Year wise Production of Mineral and Waste

Year	Flagstone Production Capacity (MT)
1 st	4104.0
2 nd	4035.60

3 rd	4069.80
4 th	4104.0
5 th	4001.40
6 th	4035.60
7 th	3967.20
8 th	4001.40
9 th	4069.80
10 th	4104.0
Total	40492.8

Table 3: List of Machinery Proposed to be used

S. NO.	NAME OF MACHINERY	Number
1.	Tractor	1
2.	Water Tanker with water sprinkler	1
3.	Dewatering Pumps	1
4.	Stone Cutter	1

1.6 Meteorology Long Term Meteorology (Secondary Data)

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

1.6.1 Temperature

The average ambient temperature remains 26.2°C, varies from 15.5°C to 45.7°C. The minimum - maximum temperature range is 29.5 - 49 °C in summer and 8 - 25 ° C in winter. The average relative humidity remains around 62.6%, varies from 15.4% to 99.2%. The station pressure varies from 974 hPa to 960 hPa, averaged around 987 hPa..

1.6.2 Wind

Long- term wind direction data is presented in *Table 3-7*, and indicates that during the study period (9th March to 15th June) 2021 the first predominant wind direction is SW and second predominant wind direction is W.

1.6.3 Rainfall

The annual rainfall in the district is around 1258 mm. The rainfall increase slightly from South to North. Out of the total annual rainfall, 90% occurs in SW monsoon in-between 15th June to 15th August. Due to the sub-tropical climate the maximum temperature ranges between 33.8 to 44.2°C where as humidity varies from 35% and 85%.

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 88-82% in monsoon mornings to a low of 53-34% in summer evening.

1.6.4 Site Specific Meteorology

Baseline meteorological data representing the summer season 2021 (9th March to 15th June) was collected near project site. The parameters for which data collected are:

- Wind Speed
- Wind direction
- Temperature
- Rainfall

Baseline Meteorological Data

Meteorological data showed that the average wind speed during the study period was observed to be 6.01 m/sec. Wind rose diagram prepared for study period is shown as Figure 1-1. It was observed that during study period wind blows pre dominantly from SW and Second pre dominant direction is W. The data obtained during the study period was compiled to obtain average data.

1.7 Existing Environment Scenario

Land Use

Land Use of Mine Lease Area

It is proposed to work the deposit of Flagstone in next ten 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 25785.2 ha. Out of which 5201.34 (20.17%) is builtup land, 6834.19 (26.50%) is crop land, 3345.23 (12.97%) fallow land, 2983.72 (11.57 %) is forest land, 3545.08 (13.75 %) waste land, 3875.64 (15.04) Water bodies /River.

Soil Quality

The soils of study area are predominantly Sandy loam in texture. The pH of the soil is ranges from 7.28 to 7.95. The soil being of friable consistency, the bulk density of the soil is in the range of 1.2 to 1.8 g/cm³. The organic carbon content of the soil samples varies from 0.35 to 0.67 mg/100g.

1.7.1 Ambient Air Quality

The 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.

1.7.2 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 43.8 to 50.8 dB (A) in study area which is within the prescribed limit of 55 dB (A).
- The day time (Leq day) noise levels at mine site observed as 63.1 dB (A) in study area which is within the prescribed limit of 75 dB (A).

Night time Noise Levels (Leq night)

- The night time (Leq night) Noise levels observed in the range of 35.30 to 42.40 dB (A) which is within the prescribed limit of 45 dB (A) in study area.
- The night time (Leq night) Noise levels at mine site were observed in the range of 48.9 dB (A) which is within the prescribed limit of 70 dB (A).

1.7.3 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 7.25 to 7.71 indicating slightly alkaline in nature. The TDS (Total Dissolved Solids) were found to be in the range 438.0 mg/l to 513.0 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 205-240 mg/l which is within permissible limit. Alkalinity indicates better buffering capacity of water and ranges between 176.0-202.0 mg/l.

Fluoride content varies from 0.47 mg/l – 0.92 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 (54.0 mg/l to 71.0 mg/l), sulphate (21.0 mg/l to 36.0mg/l) and hardness.

Surface Water Quality

Surface water samples were collected, and analyzed, pH value was found to be 7.42 to 7.52 mg/l which indicate that surface water is alkaline in nature; TDS was found to be 408 to 432 mg/l. Dissolve oxygen were found about 6.1 and 6.5 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.

1.7.4 Socio Economic Status

The study area includes 25 villages within the 10 km. radius with a total population 44106 as per census 2011. As per census 2011, about 13068 of the total are main workers, 7842 are marginal workers.

1.7.5 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.
- 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.
- Green belt with tall trees will be planted. It will restrict the particulates and reduce the concentration of SO₂ and NO₂.
- Plantation along Kaccha road and statutory barrier etc. will also protect the soil from wind erosions.
- All the haulage roads including the main ramp from crusher to mine pit will be kept properly maintained and watered regularly during the working shift to prevent generation of dust due to the movement of dumpers, water tankers etc.
- Dust mask shall be provided to the workers engaged at dust generation points at loading points.

1.7.6 Impact of Traffic Density:

Comparison Carrying Capacity of Road in Existing & Proposed PCU

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 Belsonda – Bamhani PMGSY Road	435.00	0.21	B	453.00	0.226	B

*LOS- Level of Services

Not much impact will be there on the local transport. The LOS value from the proposed mine may be “Very Good” for PMGSY Road of Mahasamund near to mine site. So, the additional load on the carrying capacity of the concern roads is not likely to have any significant adverse effect.

1.7.7 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.

1.7.8 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

As evident from nearby wells, as well as also by villagers during the summer water table goes down below 30 meter and in rainy season water table comes up within 25 meter. Since the water table is below the maximum excavation depth of operation and the flow or extent of nearest hydrology is too far from the proposed lease area thus no impact can be assessed on water table, water flow or hydrology. Moreover no sewage or other effluents will be generated from the mine closure activity which are required to be discharged on water. Hence no water pollution can be assessed. The mine closure shall not cause any change or diversion of any source of water in the area or any drainage pattern. Garland around the mine will also maintain the natural drainage system.

1.7.9 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.

1.7.10 Impact on Top Soil

During mining of Flagstone 88983 MT of top soil will be generated and will be used for plantation.

1.7.11 Impact on Socio Economic Status

Socio-economic survey was conducted in 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.

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.

1.9 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.

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.

