

EXECUTIVE SUMMARY

(In English & Hindi)

Of

Draft EIA/EMP Report

For

**Proposed Achholi Flagstone Mining Project of
Relashwar Chandrakar, Mohan Lal Sahu, Vishnu sahu and
Roshan Dewangan in Achholi Flagstone Mining Cluster**

AT

**Village : Achholi , Tehsil & District Mahasamund of
Chhattisgarh**

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

Total Mining Lease Area: 4.31 Ha

{(1 ha. (Shri Relashwar Chandrakar) + 0.67 ha (Shri Mohan Lal Sahu) + 1 ha (Shri Vishnu Sahu) + 1.64 ha.
(Shri Roshan Dewangan)},

Total Area of Achholi Flagstone Mine Cluster - 23.62 Ha

Total Production Capacity: 26,591.04 TPA

{ (5130.00 (Shri Relashwar Chandrakar) + 3,777.84 (Shri Mohan Lal Sahu) + 6,739.2 (Shri Vishnu
Sahu) + 10,944.00 (Shri Roshan Dewangan) }

Total Project Cost : Rs. 72.77 Lakhs

Category-B1

Project Proponents	EIA Consultant
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1 EXECUTIVE SUMMARY

1.1 Introduction and Background

The Achholi Flagstone mine cluster is located at a distance ~0.50 from Achholi village (from mines of Releshwar chandrakar). The District Headquarter Mahasamund is ~15.0 km towards South – East direction and Chhattisgarh State Capital Raipur is ~45.00 km, towards West direction and is connect by good tar road.

Name	Shri Relashwar Chandrakar	Shri Mohan Lal Sahu	Shri Vishnu Sahu	Shri Roshan Dewangan	Total	Annexure No.
Reference of TOR	641/Mine/Mahasamund/1583 Nawa Raipur Atal Nagar, dated 28/06/2021	643/Mine/Mahasamund/1595 Nawa Raipur Atal Nagar, dated 28/06/2021	627/Mine/Mahasamund/1596 Nawa Raipur Atal Nagar, dated 28/06/2021	651/Mine/Mahasamund/1580 Nawa Raipur Atal Nagar, dated 28/06/2021	-	Annexure - II
Area	1.00 hect.	0.67 hect.	1.00 hect.	1.64 hect.	4.31 hect	Annexure - 1
Khasra No.	1170	1408, 1280/1	79/2, 1307	125/1, 125/2, 127, 128/1, 128/2, 131, 132, 148/2	1170, 1408, 1208/1, 79/2, 1307, 125/1, 125/2, 127, 128/1, 128/2, 131, 132, 148/2	Annexure - 1
Applied Capacity	5130.00 TPA	3777.84 TPA	6739.2 TPA	10,944.00 TPA	26,591.04 TPA	Annexure - II
Village	Achholi	Achholi	Achholi	Achholi	Achholi	Annexure - 1
District	Mahasamund	Mahasamund	Mahasamund	Mahasamund	Mahasamund	Annexure - 1
LOI	Letter number 1687/KA/UTKHA NIPATTA/KHA.LI./NA.KRA.66/2019 Mahasamund dated: 25/11/2020	Letter number 805/K/E-NIVIDA/KHA.LI./NA.KRA.60/2018 Mahasamund, dated: 30/05/2019	Letter number 395/K/E-NIVIDA/KHA.LI./NA.KRA.61/2018 Mahasamund, dated: 26/02/2019	Letter number 1685/K/UTKHA NI PATTA/KHA.LI./NA.KRA.73/2019 Mahasamund dated: 25/11/2020	-	Annexure - 1
	09/Khani02/U.P.-Anu.Nispa./N.Kra.50/2017(4), Nawa Raipur, Dated 1/JAN/2022	4701/Khani-2/Na.Kra. 43/2020, Nawa Raipur, Atal Nagar Dated 26/Nov/2020	4699/Khani-2/Na.Kra. 44/2020, Nawa Raipur, Atal Nagar Dated 26/Nov/2020	10/Khani02/U.P.-Anu.Nispa./N.Kra.50/2017(4), Nawa Raipur, Dated 1/JAN/2022	-	
NOC by Gram Panchayat	Gram Panchayat Achholi dated 12/05/2016	Gram Panchayat Achholi dated 25/06/2019	Gram Panchayat Achholi dated 25/06/2019	Gram Panchayat Achholi dated 17/02/2021	-	Annexure - IV
NOC by Forest Office	Noc of forest office Mahasamund letter no.6094 dated 17/12/2018	Noc of forest office Mahasamund letter no.3908 dated 23/07/2018	Noc of forest office Mahasamund letter no.3910 dated 23/07/2018	Noc of forest office Mahasamund letter no.581 dated 25/01/2019	-	Annexure - V

Approval letter of Mine Plan	Letter No. - 793/Khani 02/Ma.Pl. Anumodan /Na.Kra.02/2019 (3) Nawa Raipur Dated:-06/02/2021,	Letter No. - 870-2/ KHA..LI./Teen-6/ 2019 Raipur Dated 15/07/2019,	Letter No. - 873- 2/Kha.Li./ Teen- 6/2019 Raipur Dated: - 15/07/2019	Letter No 795/Khani 02/ Ma.Pl. Anumodan /Na.Kra.02/2019 (3) Nawa Raipur, Dated: - 06/02/2021	-	Annexure - III
Geological Reserve	1,44,000 MT	96,480 MT	1,44,000 MT	2,36,160.00 MT	6,20,640 MT	Annexure - III
Recoverable Reserve	Rejects of Flagstone - 2,478.13 MT Reserve of Flag Stone – 47084.51 MT	Rejects of Flagstone – 3,063.74 MT Reserve of Flag Stone – 27,573.70 MT	Rejects of Flagstone – 6,297.90 MT Reserve of Flag Stone – 56,681.21 MT	Rejects of Flagstone – 5,361.20 MT Reserve of Flag Stone – 1,01,862.65 MT	Rejects of Flagstone – 17200.97 MT Reserve of Flag Stone – 23,3202.07 MT	Annexure - III
	Total Recoverable Flag stone - 49,562.64 MT	Total Recoverable Flag stone - 30,637.44 MT	Total Recoverable Flag stone - 62,979.11 MT	Total Recoverable Flag stone - 10,7223.85 MT	Total Recoverable Flag stone - 2,50,403.04 MT	Annexure - III
Maximum Annual Mining Capacity	5,130.00 TPA	3,777.84 TPA	6,739.2 TPA	10,944.00 TPA	26,591.04 TPA	TOR Annexure - II
Cluster Area	23.62 hect	23.62 hect	23.62 hect	23.62 hect	-	Annexure - VI
Cost of Project	16.01 Lac	13.05 Lac	20.012 Lac	23.70 Lac	72.77 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 Environmental setting

Table 1-1: Location and Environmental setting

S.N o.	Particulars	Details					
A.	Nature of the Project	Proposed Flagstone Mining Project of Shri Releshwar Chandrakar, Shri Mohan Lal Sahu, Shri Vishnu sahu and Shri Roshan Dewangan in Achholi Flagstone mining Cluster					
B.	Size of the Project						
1.	Mine area	4.31 Ha { (1 ha. (<i>Shri Releshwar Chandrakar</i>) + 0.67 ha (<i>Shri Mohan Lal Sahu</i>) + 1 ha (<i>Shri Vishnu Sahu</i>) + 1.64 ha. (<i>Shri Roshan Dewangan</i>)} }					
2.	Production Capacity	26,591.04 TPA (ROM) { (5130.00 (<i>Shri Releshwar Chandrakar</i>) + 3,777.84 (<i>Shri Mohan Lal Sahu</i>) + 6,739.2 (<i>Shri Vishnu Sahu</i>) + 10,944.00 (<i>Shri Roshan Dewangan</i>)} }					
C	Location Details						
1.	Village	Achholi					
2.	Tehsil	Mahasamund					
3.	District	Mahasamund					
4.	State	Chhattisgarh					
5.	Toposheet No.	64K/4					
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	S.No.	Particullar	Applied Mines			
				Shri Raleshwar Chandrakar	Shri Mohan Lal Sahu	Shri Vishnu Sahu	Shri Roshan Dewangan
		1.	Mahanadi River	~2.0 km, North-west	~1.50 km, West	~760 m North-west.	~250 m, North-west
		2.	Kodar Nallah	~0.75 km., West	~0.26 km, South.	~0.105 km, West	~0.175 km, West
		3.	Village Pond	~0.36 km., South-west	~1.15 km, East	~0.65 km, South-east	~1.15 km, South-east
		4.	Canal	~0.39 km., North-east	~0.66 km, North-East	~0.535 km, West	~0.74 km, East
		5.	Reservoir	~12.60 km, South-east	~13.30 km, East	~13.60 km, South-east	~13.90 km, South-east
3.	Nearest Human Habitation	Shri Releshwar Chandrakar		Shri Mohan Lal Sahu		Shri Vishnu Sahu	Shri Roshan Dewangan
		Achholi (~50.0 m, West direction.)		Accholi (~0.4 km, South – East direction.)		Accholi (~1.0 km, South - East direction)	Achholi (~1.30 km, South - East direction)

S.N o.	Particulars	Details			
4.	Nearest Town / City	Mahasamund (~15.00 km, South direction)	Mahasamund (~15 km, South - East)	Mahasamund (~15.33 km, South – East direction)	Mahasamund (~16.00 km, South – East direction)
5	National Highway	NH-6 at a distance of ~4.80 km (Raipur-Pithora road) towards south direction from mine site.	NH-6 at a distance of ~5.0 km (Raipur-Arang road) towards south direction from mine site.	NH-6 at a distance of ~5.00 km (Raipur-Arang road) towards south-east direction from mine site.	NH-6 at a distance of ~6.20 km (Raipur-Pithora road) towards south-east direction from mine site.
6	State Highway	State Highway ~17.60 km (Rajim-Fingeshwar-Mahasamund road) towards south-east.	State Highway Rajim-Fingeshwar-Mahasamund road ~30.0 km towards South from mine site.	State Highway Rajim-Fingeshwar-Mahasamund road ~18.70 km towards South from mine site.	Rajim-Fingeshwar-Mahasamund road ~19.15 km towards South East from mine site.
7.	Nearest Railway Station	Belsonda station at 9.30 km towards south.	Belsonda Railway station ~ 9.20 km, South.	Belsonda Railway station ~ 9.50 km, South.	Belsonda Railway Station /Railway line (~10.15 km in south direction)
8.	Nearest Airport	Raipur Airport at ~33.35 km, towards SW direction from Mine boundary	Raipur Airport at ~33.45 km, towards South - West direction from Mine bound.	Raipur Airport at ~33.20 km, towards South West direction from Mine boundary.	Raipur Airport (~ 32.50 km in South - West direction).
9.	State Boundary	None within study area			
10.	Seismic Zone	Zone – II [as per IS 1893 (Part-I): 2002]			
D	Cost Details				
1.	Project Cost	72.77 lakhs (16.01 lakhs -Shri Raleshwar Chandrakar,13.05 Lakhs- Shri Mohan Lal Sahu, 20.012 Lakhs-Shri Vishnu Sahu and 23.70 Lakhs Shri Roshan Dewangan)			
E	Requirements of the Project				
1.	Water Requirement	18.75 KLD			
2.	Fuel requirement	100			
3.	Man Power Requirement	33			

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 carrying out environmental studies to the State Environment Impact Assessment Authority Chhattisgarh for the mine lease are as follows :-

Sr.No	Lessee	Date of submission
1	Shri Relashwar Chandrakar	04/03/2021
2	Shri Mohan Lal Sahu	12/03/2021
3	Shri Vishnu Sahu	12/03/2021
4	Shri Roshan Dewangan	03/03/2021

- Details regarding First technical presentation made are as given below:

Sr.No	Lessee	No. of SEAC meeting	Date of Presentation
1	Shri Relashwar Chandrakar	367 th	4/05/2021
2	Shri Mohan Lal Sahu	368 th	5/05/2021
3	Shri Vishnu Sahu	368 th	5/05/2021
4	Shri Roshan Dewangan	371 st	28/05/2021

- The details of TOR granted are as follows :-

Sr.No	Lessee	TOR Letter No	Date
1	Shri Relashwar Chandrakar	641/Mine/Mahasamund/1583, Naya Raipur, Atal Nagar	28/06/2021
2	Shri Mohan Lal Sahu	643/Mine/Mahasamund/1595, Naya Raipur, Atal Nagar	28/06/2021
3	Shri Vishnu Sahu	627/Mine/Mahasamund/1596, Naya Raipur, Atal Nagar	28/06/2021
4	Shri Roshan Dewangan	651/Mine/Mahasamund/1580, Naya Raipur, Atal Nagar	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 1-2: Water Requirement for the mining

Sr. No.	Usage	Water Requirement								Total
		Relashwar Chandrakar (1.00 ha.)		Shri Mohan Lal Sahu (0.67 ha.)		Shri Vishnu Sahu (1.00 ha.)		Roshan Dewngan (1.64 ha.)		
1	Domes- tic Purpos- e @25 lpd/wo- rker	7 workers x 25 lit per day = 175 Lit/Day	0.18 KLD	6 workers x 25 lit/day = 150 lit/day	0.15 KLD	8 workers x 25 lit/day = 200 lit/day	0.20 KLD	12 workers x 25 lit/day = 300 lit/day	0.30 KLD	0.83 KLD
2	Stone Cuttin- g/ Wet cutting	(Same Water is used through recycling)	0.50 KLD	(Same Water is used through recycling)	0.50 KLD	(Same Water is used through recycling)	0.50 KLD	(Same Water is used through recycling)	0.50 KLD	2.00 KLD
2	Dust Suppre- sion @ 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	2.0 KLD	Haul road Area = (500 m length x 4 m width = 2000 sqm.) x 0.5 li/sqm = 1000 lit/day x 2time = 2000 lit/day	2.00 KLD	Haul road Area = (500 m length x 4 m width = 2000 sqm.) x 0.5 li/sqm = 1000 lit/day x 2time = 2000 lit/day	2.00 KLD	Haul road Area = (500 m length x 4 m width = 2000 sqm.) x 0.5 li/sqm = 1000 lit/day x 2time = 2000 lit/day	2.00 KLD	8.00 KLD
3	Green- belt Develo- pment @ 2.5 L/tree	813 Trees X 2.5Lit/day = 2032.5Lit/ day	2.03 KLD	573 trees x 2.5 lit/day = 1432.5 lit/day	1.43 KLD	673 trees x 2.5 lit/day = 1690 lit/day	1.68 KLD	1113 trees x 2.5 lit/day = 2782.5 lit/day	2.78 KLD	7.92 KLD
Total ::			4.71 KLD		4.08 KLD		4.38 KLD		5.58 KLD	18.75 KLD

1.4.3 Topography and Drainage

Relashwar Chandrakar :- The topography of the area is flat land. The stone is buried under the soil in the entire lease area. The general slope is towards South – west. Altitude of the applied area is 267 m AMSL in all parts of lease area.

Mohan Lal Sahu :- The topography of the area is flat land. The stone is buried under the soil in the entire lease area. The general slope is towards South. Maximum altitude of the applied area is 265 m AMSL at norther part while lowest Side is 263 m AMSL at southern part of lease area.

Vishnu Sahu :- The topography of the area is flat land. The stone is buried under the soil in the entire lease area. The altitude of the applied area is 261 m AMSL almost in whole part of lease area. However the general slope is considered towards west.

Roshan Dewangan :- The topography of the area is flat land. The stone is buried under the soil in the entire lease area. The general slope is towards west. Maximum altitude of the applied area is 261 m AMSL at eastern part while lowest Side is 260 m AMSL at western part of lease area.

All four 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 Raleshwar Chandrakar	Shri Mohan Lal Sahu	Shri Vishnu Sahu	Shri Roshan Dewangan
1.	Mahanadi River	~2.0 km, North-west	~1.50 km, West	~760 m North-west.	~250 m, North-west
2.	Kodar Nallah	~0.75 km., West	~0.26 km, South.	~0.105 km,West	~0.175 km, West
3.	Village Pond	~0.36 km., South-west	~1.15 km, East	~0.65 km, South-east	~1.15 km, South-east
4.	Canal	~0.39 km., North-east	~0.66 km, North-East	~0.535 km,West	~0.74 km, East
5.	Kodar -Reservoir	~12.60 km, South-east	~13.30 km, East	~13.60 km, South-east	~13.90 km, South-east

1.4.4 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
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1.4.5 Mineable Reserve & Life of Mine

Table 1-3: Reserve Estimation

<i>Reserves</i>	Shri Raleshwar Chandrakar	Shri Mohan Lal Sahu	Shri Vishnu Sahu	Shri Roshan Dewangan	Total
1) GEOLOGICAL RESERVES (In Ton)	1,44,000	96,480	1,44,000	2,36,160	6,20,640.00
Less :	58,608.00	41,212.80	48,398.40	79,516.80	2,27,736.00
i) Reserve Blocked under mine Boundary (In Ton)					
ii) Reserve Blocked under Mine Benches (In Ton)	33,220.80	21,225.60	25,624.80	43,776.00	1,23,847.20
2) MINEABLE RESERVES (1- i - ii) (In Ton)	52,171.20	34,041.60	69,976.80	1,12,867.20	2,69,056.80
Less					
iii) Mine Loss-10% of Mineable Reserves (In Ton)	2,608.56	3,404.16	6,997.68	5,643.36	18,653.76
iv) Rejected stone from flagstone (In Ton)	2,478.13	3,063.74	6,297.91	5,361.19	17,200.97
3) RECOVERABLE RESERVES OF FLAGSTONE (2 - iii- iv)(In Ton)	47,084.51	27,573.70	56,681.21	1,01,862.65	2,33,202.07
4) TOTAL RECOVERABLE RESERVES OF STONE (3+iv) (In Ton)	49,562.64	30,637.44	62,979.12	1,07,223.84	2,50,403.04
5) TOP SOIL TO BE GENERATED (In m3)	17,790 m3	11,514 m3	19,917 m3	32,634 m3	81,855 m3

1.5 Life of Mine

Table : Life of Mine

		Shri Raleshwar Chandrakar	Shri Mohan Lal Sahu	Shri Vishnu Sahu	Shri Roshan Dewangan
A)	Estimated Recoverable reserves	20,651.10 cum or 49,562.64 tons	11,489.04 cum. or 27,573.70 tons	23,617 cum or 56,681.21 tons	44,676.60 cum or 10,7223.84 tons
B)	Average rate of production per year during Five year plan	2,080.5 cum. or 4,993.2 tons	1,110.51 cum or 2,665.22 tons	2,297.81 cum or 5,514.74 tons	4,491.6 cum or 10,779.84 tons
C)	Expected rate of production after five year plan	2,049.15 cum. or 4,917.96 tons	11,873 cum or 2,849.52 tons	2,425.63 cum or 5,821.5 tons	4,443.72 cum or 10,664.93 tons
D)	Sanctioned Granted period	30 year from the date of lease agreement	30 year from the date of lease agreement	30 year from the date of lease agreement	30 year from the date of lease agreement
E)	Plan period	10 years	10 years	10 years	10 years
F)	Thus anticipated life of the quarry	About 10 years. (Up to 9m of mine depth from surface level)	About 10 years. (Up to 9m of mine depth from surface level)	About 10 years. (Up to 9m of mine depth from surface level)	About 10 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 manually with the help of local labors. Transportation of flagstone will be done by tractors. Hand Broken stone 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 3 benches of 3m height x 3 m width each out of which first bench will be of top soil and third bench will be of flagstone i.e last bench of 3 m height only. However during advancement of mining operation the mine will be worked into 1.5 m -1.5 m height of sub-benches. Finally at mine boundary benches will be converted to 3m (H) X 3m (W).

Table: Extent of Opencast Mechanized

S. NO.	NAME OF MACHINERY	NUMBER			
		Shri Raleshwar Chandrakar	Shri Mohan Lal Sahu	Shri Vishnu Sahu	Shri Roshan Dewangan
1.	Tractor	1	1	1	1
2.	Water Tanker with water sprinkler	1	1	1	1
3.	Dewatering Pumps	1	1	1	1
4.	Stone Cutter	1	1	1	1
Total-		4	4	4	4

1.6 Meteorology Long Term Meteorology (Secondary Data)

Information presented in subsequent paragraphs is from the Indian Meteorological Department (IMD) Raipur Mana, 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 month from March to May are considered as hottest with increase in temperatures. 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 Raipur is 46.1°C on 22th May 1912. From November, both day and night temperatures start decreasing rapidly. 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.

1.6.2 Wind

Long- term wind direction data indicates that the predominant wind during the study period (9th March to 15th June)-2021 is South West and second predominant wind direction is West.

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%.

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

1.6.5 Site Specific Meteorology

Baseline meteorological data representing the summer season 2021 (9th March to 15th June) was collected near project site

Meteorological data showed that the average wind speed during the study period was observed to be 6.08 m/sec. 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

1.7.1 Land Use

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 26,032.30 ha. Out of which 5389.42 (20.70%) is builtup land, 7532.26 (28.94 %) is crop land, 3489.52 (13.41%) fallow land, 2367.92 (9.09 %) is forest land, 3721.07 (14.29 %) waste land, 3532.11 (13.57) 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 7.26 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.

1.7.3 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.

1.7.4 Noise

Day time Noise Levels (Leq day)

- The day time (Leq day) noise levels observed in the range of 48.5 to 51.7 dB (A) in study area which is within the prescribed limit of 55 dB (A) in residential area.
- The day time (Leq day) noise levels at mine site observed as 60.2 to 62.5 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 38.5 to 41.7 dB (A) which is within the prescribed limit of 45 dB (A) in residential area.

- The night time (Leq night) Noise levels at mine site were observed in the range of 47.6 to 49.5 dB (A) which is within the prescribed limit of 70 dB (A).

1.7.5 Water Environment

Groundwater Quality

The analysis results shows that the pH for the ground water samples GW1, GW2, GW3, GW4, GW5 and GW6 ranged from 7.24 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 (22.0 mg/l to 36.0 mg/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.

1.7.6 Socio Economic Status

The study area includes 26 villages within the 10 km. radius with a total population 45,187 as per census 2011. As per census 2011, about 21,553 are working population.

1.7.7 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 State 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 dumpers & excavators, 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 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 like excavations and loading points.

1.7.8 Impact of Traffic Density : -

The traffic survey, to ascertain the traffic density in the study area was conducted towards east direction about 4.23 km on the junction of PMGSY Road and the connecting haul road to mining site of Acholi Farshi Pathar Mines. The composition of Traffic includes two wheelers, three wheelers, four wheeler (Passenger Cars) and four wheeler like heavy vehicles like Trucks, Lorries, Bus etc. The recommended PCU Factors for various types of vehicles on Rural Roads has been adopted from IRC 64-1990 guidelines.

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 PMGSY Road	425.50	0.213	B	515.50	0.260	B

**LOS- Level of Services*

Conclusion

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.

1.7.9 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.

1.7.10 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 25.00 meter. Since the water table is below the maximum excavation depth (9m) of operation in 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 activities which are required to be discharged on water. Hence no water pollution can be assessed

1.7.11 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.

1.7.12 Impact on Top Soil

During mining of flagstone top soil will be generated and will be used for plantation.

1.7.13 Impact on Socio Economic Status

Socio-economic survey was conducted in sampling 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. 0.80 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.

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.

