Executive Summary

Of

Draft Environmental Impact Assessment/ Environmental Management Plan

For

Public Hearing

Of

Limestone Quarry

Name of Applicant	Land Khasra	Area of applied lease	Address of Applied Land	Max. Production capacity
M/s Ganpati Metals & Minerals Partner- Shri Gautam Chand Jain & Shri Ajay Gupta	289/1 Part, 291 Part, 292/1 Part, 292/2 Part, 294 Part, 383, 384/1, 384/2, 385/1, 385/2, 385/3, 386/1, 386/2 Part, 387/2, 389 Part, 390, 394/1	4.17 ha	Village- Chunkatta, Tehsil- Patan, District- Durg, State- Chhattisgarh	3,00,000 MT
M/s Ganpati Metals & Minerals Partner- Shri Gautam Chand Jain & Shri Ajay Gupta	281/1 Part, 281/2 Part, 281/3, 281/4, 286/2 Part, 288/1 Part, 288/2, 289/1 Part, 412 Part & 413 Part	2.95 ha	Village- Chunkatta, Tehsil- Patan, District- Durg, State- Chhattisgarh	1,50,000 MT
M/s Rama Crushers Prop.- Shri Sankalp Singh Rajput	418, 419, 421/2, 424, 425	3.01 ha	Village- Chunkatta, Tehsil- Patan, District- Durg, State- Chhattisgarh	50,025 MT

Environment Consultant

Parivesh Environmental Engineering Services

Accredited EIA Consultant Organization by NABET, QCI, New Delhi

QCI – NABET Certificate No.- NABET/EIA/24-27/RA 0367;
Validity: -13/11/2027

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EXECUTIVE SUMMARY

1.1 INTRODUCTION

The quarry lease of Lime Stone Quarry of M/s Ganpati Metals & Minerals (4.17 ha) is situated at Khasra No.- 289/1 Part, 291 Part, 292/1 Part, 292/2 Part, 294 Part, 383, 384/1, 384/2, 385/1, 385/2, 385/3, 386/1, 386/2 Part, 387/2, 389 Part, 390, 394/1 and M/s Ganpati Metals & Minerals (2.95 ha) is situated at Khasra No.- 281/1 Part, 281/2 Part, 281/3, 281/4, 286/2 Part, 288/1 Part, 288/2, 289/1 Part, 412 Part & 413 Part, and M/s Rama Crushers (3.01 ha) is situated at Khasra No.- 418, 419, 421/2, 424, 425, near Village- Chunkatta, Tehsil- Patan & District- Durg, State- Chhattisgarh.

The quarry plans have been approved for 5 years only by Office of Collector (Mining Branch) of District- Durg (Chhattisgarh), Vide Letter No.- (क्रमांक/83/खनि. अनु.- 01/2023-24, दुर्ग, दिनांक- 19/04/2024) for an extent of 4.17 ha and (क्रमांक/1314/खनि. अनु.- 01/2024-25, दुर्ग, दिनांक- 10/10/2024) for an extent of 2.95 ha and (क्रमांक/587/खनि. अनु.- 01/2023-24, दुर्ग, दिनांक- 04/07/2024) for an extent of 3.01 ha.

Letter of Intent was issued by Office of Collector (Mining Branch) of District-Durg (Chhattisgarh), Vide Order No.- (क्रमांक/2070/खनिज/उ.प./2024, दुर्ग, दिनांक- 11/03/2024 to M/s Ganpati Metals & Minerals- 4.17 ha) and (क्रमांक/966/खनिज/ खनि.लि./उ.प./2024, दुर्ग, दिनांक- 29/08/2024 to M/s Ganpati Metals & Minerals -2.95 ha) and (क्रमांक/560/खनिज/खनि.लि./उ.प./2024, दुर्ग, दिनांक- 02/07/2024 to M/s Rama Crushers- 3.01 ha).

These 3 mines are new mining lease that lies in Toposheet No. F44P8 and F44P12. It is proposed to carry out opencast semi-mechanized mining operations in the Limestone quarry, by developing benches of 3 m height and 3 m width.

Estimated project costs are Rs. 60 Lakhs for 4.17 ha of M/s Ganpati Metals & Minerals and Rs. 79.55 Lakhs for 2.95 ha of M/s Ganpati Metals & Minerals and Rs. 82.74 Lakhs for 3.01 ha of M/s Rama Crushers. The project proponent is intended to the maximum production

3,00,000 MT (M/s Ganpati Metals & Minerals- 4.17 ha), 1,50,000 MT (M/s Ganpati Metals & Minerals- 2.95 ha) and 50,025 MT (M/s Rama Crushers- 3.01 ha).

1.1.1 LOCATION OF LEASE AREA

The Applied Mine leases are situated in Chunkatta Village. The Project Proponents of Limestone Quarry are M/s Ganpati Metals & Minerals, Partner- Shri Gautam Chand Jain & Shri Ajay Gupta (4.17 ha & 2.95 ha) and M/s Rama Crushers, Prop.- Shri Sankalp Singh Rajput (3.01 ha).

S. No.	Details	
1.	Name of applicant and Address	**M/s Ganpati Metals & Minerals** **Partner- Shri Gautam Chand Jain & Shri Ajay Gupta** Satti Chaura, Ganjpara, Durg, District- Durg, Chhattisgarh **(Lease area- 4.17 ha & 2.95 ha)**
		M/s Rama Crushers **Prop. Shri Sankalp Singh Rajput** 143, Ward No.1, Main Road Jarvay, Hirapur Basti, Tatibandh Raipur, Tehsil & District- Raipur, Chhattisgarh- 492001 **(Lease area- 3.01 ha)**
2.	E-mail	ganpati.envi111@gmail.com ramacrushers.envi111@gmail.com

1.1.2 DETAIL OF MINING LEASE FOR 3 MINES

S. No.	Particulars	Details
1.	**Project Name**	Lime Stone Quarry of M/s Ganpati Metals & Minerals (4.17 ha & 2.95 ha) & M/s Rama Crusher (3.01 ha) in Village- Chunkatta, Tehsil- Patan & District- Durg, State- Chhattisgarh,
2.	**Applicant**	M/s Ganpati Metals & Minerals, Partner Shri Gautam Chand Jain & Shri Ajay Gupta (4.17 ha. & 2.95 ha) and M/s Rama Crusher, Prop.-Shri Sankalp Singh Rajput (3.01 ha)
3.	**Toposheet No.**	F44P8 & F44P12
4.	**Lease Hold Area**	Lease area- 10.13 ha for 3 mines (4.17 ha & 2.95 ha of M/s Ganpati Metals & Minerals + 3.01 ha of M/s Rama Crusher).
	Village	Chunkatta
	Tehsil	Patan
	District	Durg
	State	Chhattisgarh

<table>
<tr><th>S. No.</th><th>Particulars</th><th>Details</th></tr>
<tr><td>5.</td><td>Category of the Project</td><td>Category: “B-1”</td></tr>
<tr><td>6.</td><td>Mode of Mining</td><td>Opencast Semi-Mechanized</td></tr>
<tr><td>7.</td><td>Name of the Mineral</td><td>Limestone</td></tr>
<tr><td>8.</td><td>Use of Mineral</td><td>Used for construction of building projects, bridges, etc.</td></tr>
<tr><td>9.</td><td>Proposed Production of Mine</td><td>Total Production: 18,95,100 MT for 3 mines</td></tr>
<tr><td>10.</td><td>Plan Period</td><td>5 Years</td></tr>
<tr><td>11.</td><td>Lease Period</td><td>30 Years</td></tr>
<tr><td>12.</td><td>Drilling/ Blasting</td><td>Drilling and Blasting will be done when required</td></tr>
<tr><td>13.</td><td>Working Days</td><td>300</td></tr>
<tr><td rowspan="2">14.</td><td rowspan="2">Nearest Habitation</td><td>Name</td><td>Distance (km)</td><td>Direction</td></tr>
<tr><td>Chunkatta Village</td><td>0.5</td><td>NW</td></tr>
<tr><td>15.</td><td>Nearest Town</td><td colspan="3">Bhilai City, 12.0 km, NW direction</td></tr>
<tr><td rowspan="3">16.</td><td rowspan="3">Nearest Road</td><td>Name</td><td>Distance (km)</td><td>Direction</td></tr>
<tr><td>SH-22</td><td>0.65</td><td>SSW</td></tr>
<tr><td>NH-53</td><td>10.85</td><td>N</td></tr>
<tr><td>17.</td><td>Nearest Railway Station</td><td colspan="3">Marauda Railway Station, 9.1 km, NW direction.</td></tr>
<tr><td>18.</td><td>Nearest Airport</td><td colspan="3">Swami Vivekanand Airport, Raipur, 33.55 Km, ENE direction.</td></tr>
<tr><td>19.</td><td>Nearest Tourist Places</td><td colspan="3">None within 10 km radius</td></tr>
<tr><td>20.</td><td>Inter State Boundary</td><td colspan="3">None within 10 km radius</td></tr>
<tr><td>21.</td><td>Archaeological Sites</td><td colspan="3">None within 10 km radius</td></tr>
<tr><td>22.</td><td>Eco-sensitive Zones</td><td colspan="3">N/A</td></tr>
<tr><td>23.</td><td>Reserved/ Protected Forest</td><td colspan="3">None within 10 km radius</td></tr>
<tr><td>24.</td><td>Nearest Streams/ Rivers/ Water Bodies</td><td colspan="3"><table><tr><th>River/Nallah/Canal/Dam</th><th>Distance</th><th>Direction</th></tr><tr><td>Sheetala Mata Taalab</td><td>4.9</td><td>NNE</td></tr><tr><td>Maroda-2 Reservoir</td><td>5.9</td><td>NW</td></tr><tr><td>Maroda-1 Reservoir</td><td>9.0</td><td>NW</td></tr><tr><td>Beloudi Water Tank</td><td>10.3</td><td>SSE</td></tr><tr><td>Semari Reservoir</td><td>10.8</td><td>SE</td></tr><tr><td>Khapri Tank</td><td>11.3</td><td>SW</td></tr></table></td></tr>
<tr><td>25.</td><td>Public Building Places</td><td colspan="3"><table><tr><th>Name</th><th>Distance (Km)</th><th>Direction</th></tr><tr><td colspan="3">Temples</td></tr><tr><td>Maa Shitla Mandir</td><td>0.45</td><td>NW</td></tr><tr><td>Panchmukhi Hanuman Mandir</td><td>3.9</td><td>SE</td></tr><tr><td colspan="3">Schools</td></tr><tr><td>Government School Mahka Kala</td><td>3.1</td><td>N</td></tr></table></td></tr>
</table>

S. No.	Particulars	Details		
		Krishna Public School	4.35	W
		Danveer Tularam College, Utai	5.2	WNW
		Chhattisgarh Swami Vivekanand Technical University	7.4	WNW
		Hospital		
		Selud Hospital	0.8	WSW
		Government Hospital	3.3	E
		Govt. Office & Post Office		
		Post Office, Pahandor	5.0	NNE
		CISF RTC	5.1	WNW
		Jayanti Stadium	11.7	NW
26.	**Nearest Steel Plant**	Bhilai Steel Plant is about 9.3 km in NNW direction.		
27.	**Water Requirement**	17.41 KLD for 3 mines		
28.	**Seismic Zone**	Zone – II as per IS – 1893 (Part-1) - 2002		

1.2 PROJECT DESCRIPTION

Opencast Semi Mechanized mining will be applied for 3 mines on the Lime Stone Quarry of M/s Ganpati Metals & Minerals, Partner- Shri Gautam Chand Jain & Shri Ajay Gupta (4.17 ha & 2.95 ha) and M/s Rama Crushers, Prop.- Shri Sankalp Singh Rajput (3.01 ha). The lease area is 10.13 ha for 3 mines. The proposed capacity of the project within a period of Five years will be 18,95,100 MT for 3 mines. The average number of working days in the year would be 300 days. The height of the bench will not be kept more than 3.0 m and the width 3.0 m the benches will always be kept safe according to the provisions of CGMMR 2015.

1.2.1 MINING & METHOD OF MINING

Mining Method: Opencast Semi-Mechanized Method.

1.2.1.1 PRODUCTION FOR THE FIVE YEARS PLAN PERIOD

Table 1.1 Year wise production of Mineral for 3 mines

Year	Production in Year for 3 mines		
	Partner Shri Gautam Chand Jain & Shri Ajay Gupta (4.17 ha)	Partner Shri Gautam Chand Jain & Shri Ajay Gupta (2.95 ha)	Shri Sankalp Singh Rajput (3.01 ha)
1st Year	1,00,005	1,00,005	30000

Year	Production in Year for 3 mines		
	Partner Shri Gautam Chand Jain & Shri Ajay Gupta (4.17 ha)	Partner Shri Gautam Chand Jain & Shri Ajay Gupta (2.95 ha)	Shri Sankalp Singh Rajput (3.01 ha)
2nd Year	1,50,000	1,24,995	30000
3rd Year	2,00,010	1,30,005	50025
4th Year	3,00,000	1,30,005	50025
5th Year	3,00,000	1,50,000	50025
Total	**10,50,015 MT**	**6,35,010 MT**	**210075 MT**

1.2.1.2 EXTENT OF MECHANIZATION (M/S GANPATI METALS & MINERALS - (4.17 HA & 2.95 HA)

1. Mining operation will be carried out by semi mechanized method. mining machinery such as excavator/Loader (1.25 m^3 bucket capacity), Jack Hammer Drill machine (32 mm Diameter) compressor etc. are use during mining, per day required machines details are

2. **Excavator/ Loader: -**

S. No.	Description	Value of M/s Ganpati Metals & Minerals (4.17 ha)	Value of M/s Ganpati Metals & Minerals (2.95 ha)
1	Production of limestone per day	1000 Ton	500 Ton
2	Product volume of Limestone ROM production per day/2.5	400 cum	200 cum
3	Loading capacity of excavator per shift per day(L)	L= (BxQx.NxTxE)/S	L= (BxQx.NxTxE)/S
4	Bucket capacity(B)	1.25 cum	1.25 cum
5	Quantity of filling(Q) {80%}	1.0 cum	1.0 cum
6	Average number of loading cycle per hour(N) {45 sec. each=3600/45=80}	80 Cycle	80 Cycle
7	No of effective working hour per shift (Time= T)	5 hours	5 hours
8	Efficiency of utilization(E) {60%}	0.60	0.60
9	Swell factor (S)	1.5	1.5
10	So, loading capacity per day will be (L) = (1.25 x 1.0 x 80 x 5 x 0.60)/1.5	200 cum	200 cum
11	No. of excavator required (product volume of limestone(cum)/200	2 nos	1 no

3. Truck/ Tipper: -

S.N.	Detail	Value of M/s Ganpati Metals & Minerals (4.17 ha.)	Value of M/s Ganpati Metals & Minerals (2.95 ha.)
1	Excavation per day	400T	500 T
2	Maximum capacity of Truck	10T	10T
3	One dumper can carry (80% as safety measures)	8 T	8 T
4	Nos. of trips required per day excavation per day/8= 62.5	50 Trips	63 Trips

4. Drilling Machine:

S.N.	Description	Value of M/s Ganpati Metals & Minerals (4.17 ha)	Value of M/s Ganpati Metals & Minerals (2.95 ha)
1	Yield per blast hole (Spacing x Burden x 3.00 Ton Depth of hole x Tonnage Factor) (1m x 0.8m x 1.5m x 2.5 ton/cum)	3.00 Ton	3.00 Ton
2	Maximum production of ROM proposed	300000 Ton/ Annum or 1000 Ton/ Day	150000 Ton/ Annum or 500 Ton/ Day
3	No of holes to be drilled per day (max. production Ton/ 3 Ton)	333.33=334 holes	166.66= 167 holes
4	Meter age to be drilled per shift including sub grade drilling (no. of holes x1.5) + 10% (no. of holes x 1.5)	(501 + 50.1 = 551.10 = 551) m/ shift	(250.5+25.05=275.55= 276) m/ shift
5	Performance of Jack hammer considered	5m/ Hour	5m/ Hour
6	Effective drilling hour in a shift	5.5 Hour	5.5 Hour
7	Meter age to be drilled by one Jack hammer in a shift (5 m x 5.5)	27.5 m	27.5 m
8	No of Jack hammer required for 276 m drilling (meter age to be drilled per shift including sub grade drilling/ 27.5 m= 21 & 10 nos)	21 nos	10 nos

S.N.	Description	Value of M/s Ganpati Metals & Minerals (4.17 ha)	Value of M/s Ganpati Metals & Minerals (2.95 ha)
Therefore, 21 nose & 10 nose jack hammers will be required to drill 334 nose & 167 nose blast holes in a shift			
9	type of explosives used/to be used	Special gelatin, detonating fuse of required length.	Special gelatin, detonating fuse of required length.
10	whether secondary blasting is needed, if so, describe it briefly	No secondary drilled will be required	No secondary drilled will be required

5. Other machines: -

S. N.	Name of Machine	Capacity	Quantity Required	Purpose
1.	Portable air compressor	30 cum/ min	8 nos.	Power of drilling
2.	Tractor mounted water tanker cum sprinkler	4 KL	2 no.	For sprinkling of water on haul roads and for plantation.
3.	Diesel operated water pump	05 HP	2 nos.	For pumping water from quarry in rainy season.

(M/S RAMA CRUSHERS - (3.01 HA)

The estimated mineable reserve of this area is of the order of 957045 MT to 33 m depth below soil cover & OB. The Conceptual quarry plan is prepared for the lease period of 5 years. Ultimate pit limit is fixed keeping final pit slope at the angle of 45°. This will cover about 1.617 ha area in first five year.

Exploration

As the quarry area is less than five hectares, the prospecting/exploration work is not required as the existence of mineral in the area have already been established.

Drilling

Drilling will not be required for exploration work but jack hammer drilling may be used for blasting purpose to break the hard rock in this mine scheme period. Drilling of the blast holes is proposed by the compressed air operated jack hammer or wagon drill. Height of the bench is proposed to be kept at 3.0 m. The jack hammer will drill up

to 1.5m depth and such as the balance excavation will be in three to four stages. The specification of the jack hammer and wagon drills are as follows:

1. Drilling Pattern for Jack Hammer

Specification of the Jack Hammer Unit

Type	Make	No.	Diam. Of Hole	Drilling Rods	Capacity	Motive Power	HP
Tractor Compressor or Jack Hammer	Hindustan Atlas COPCO	1 1 2+1	30-40mm	1500mm	210 CFM	Diesel Compressed	50

Blasting: (Broad Parameters)

The quarry operation will be in small scale and the maximum production per year will be 957045 MT in five years. In view of this small-scale quarrying activity the blasting parameters will be simple and use of explosive will also be less. Blasting will be done by Simple Square and triangle pattern. Blasting will be done by licensed contractor. The lessee will be obtaining necessary permission from DGMS before blasting & inform DM and DGMS in form 13. The mineralization in the QL area is amenable to direct excavation by hydraulic excavators only after blasting and based up on the nearby mining activity, about 70% of the total excavation is consider for the blasting:

Broad Parameters:

Parameters	Wagon Drill
Spacing	1.5
Burden	0.5m
Depth of Hole	1.5m
Charger per Hole	350 gms
Powder Factor	8.03 t./kg
Dia of Hole	32mm

Type of Explosive Used/ to be used

Slurry Explosive frequency of blasting will be once or twice a week. Delay detonators will be used.

Powder Factor in Ore and overburden

8.03t/kg of explosive in ore. Blasting will be done for heaving purpose only.

Powder factor: 1.5m x 0.5m x 1.5m x 2.5t/ 0.35 kg = 8.03/kg

Yearly production :20010 m^3x2.5t= 50025 tonne

Average daily excavation: 50025/300= 166.75 ton

Average quantum of explosive to be required daily = 166.75/8.03 = about 20.7659 kg

Whether Secondary Blasting is needed:

Secondary blasting will not be needed.

Storage of Explosives:

As Blasting will be done by licensed contractor, hence magazine is not required in mining area.

Precautions to be observed during Drilling and Blasting:

All the necessary precautions such as hoisting of red flag at a safe Distance, alarming the people by whistling and shouting will be taken before blasting. A qualified blaster having blasters certificate will do blasting, Muffle blasting and wet drilling will be done to control flying rock particles to avoid effect on nearby agricultural fields.

Development of Machinery:

Excavator, tippers, Wagon drill compressor and etc.

1.3 DESCRIPTION OF THE ENVIRONMENT

For monitoring the environmental parameters like meteorology, air, water, soil and noise quality, the monitoring stations have been established in the study area. Additionally, three stations were selected for surface water sampling. The baseline data has been collected in the post-monsoon season (October 2023 to December 2023) and pre-monsoon season (March 2025 to May 2025). The detail of the sampling locations is given in below: -

Table 1.2: Sampling Location for 3 mines

Particulars	Ganpati Metals & Minerals (4.17 ha) Distance	Rama Crushers (3.01 ha) Distance	Ganpati Metals & Minerals (2.95 ha) Distance	Direction	Latitude	Longitude
Ambient Air, Soil, Noise, Monitoring Location						
Monitoring Month (October, November, December 2023)						
Project Site	----	----	----	----	21° 6'15.39"N	81°25'39.95"E
Selud	0.30	0.86	0.67	SW	21° 6'4.10"N	81°25'15.54"E
Dhaur	2.28	2.07	2.06	NE	21° 7'0.82"N	81°26'41.18"E
Gondpendhri	2.90	2.51	2.90	SE	21° 5'15.86"N	81°26'50.29"E
Utai	3.02	3.40	3.15	W	21° 6'39.61"N	81°23'44.84"E

Particulars	Ganpati Metals & Minerals (4.17 ha) Distance	Rama Crushers (3.01 ha) Distance	Ganpati Metals & Minerals (2.95 ha) Distance	Direction	Latitude	Longitude
Mahkakalan	3.56	3.38	3.47	NNW	21° 8'11.63"N	81°25'18.44"E
Dhurrabhata	4.07	4.53	4.46	SW	21° 4'35.33"N	81°23'45.59"E
Bodal	7.16	7.44	7.23	S	21° 2'15.57"N	81°25'48.36"E
Monitoring Month (March, April, May 2025)						
Khapli	3.90	4.48	4.21	WSW	21° 5'41.45"N	81°23'12.03"E
Panhandor	5.04	4.86	54.80	NNE	21° 8'42.72"N	81°26'58.05"E
Ground Water Monitoring Location						
Monitoring Month (October, November, December 2023)						
Selud	0.30	0.86	0.67	SW	21° 6'4.10"N	81°25'15.54"E
Dhaur	2.28	2.07	2.06	NE	21° 7'0.82"N	81°26'41.18"E
Gondpendhri	2.90	2.51	2.90	SE	21° 5'15.86"N	81°26'50.29"E
Utai	3.02	3.40	3.15	W	21° 6'39.61"N	81°23'44.84"E
Mahkakalan	3.56	3.38	3.47	NNW	21° 8'11.63"N	81°25'18.44"E
Dhurrabhata	4.07	4.53	4.46	SW	21° 4'35.33"N	81°23'45.59"E
Bodal	7.16	7.44	7.23	S	21° 2'15.57"N	81°25'48.36"E
Monitoring Month (March, April, May 2025)						
Khapli	3.90	4.48	4.21	WSW	21° 5'41.45"N	81°23'12.03"E
Panhandor	5.04	4.86	4.80	NNE	21° 8'42.72"N	81°26'58.05"E
Surface Water Location						
Monitoring Month (October, November, December 2023)						
Dhaur	2.28	2.07	2.28	NE	21° 7'4.10"N	81°26'37.25"E
Achanakpur	3.43	3.28	3.16	E	21° 6'32.08"N	81°27'28.65"E
Monitoring Month (March, April, May 2025)						
Selud	0.30	0.86	0.30	SW	21° 6'2.52"N	81°25'10.55"E

1.3.1 LAND ENVIRONMENT

1.3.1.1 LAND USE

The land use pattern of the study area based on the latest satellite imagery is given below: -

Table 1.3: LULC Classe for 3 mines

S. No.	LULC Class	Area (ha)	Area (%)
1.	Built up land	1472.94	4.57
2.	Waste Land	1.08	0.003
3.	Water bodies	936.54	2.91
4.	Sand	2.88	0.008
5.	Coal/Stone Quarry	1770.12	5.50
6.	Open Scrub	10.53	0.03
7.	Dense Scrub	4.41	0.01

S. No.	LULC Class	Area (ha)	Area (%)
8.	Agricultural Land	27970.65	86.94
	Total	**32169.15**	**100**

1.3.1.2 SOIL QUALITY

Soil samples were collected from 10 representative sampling locations. The soil analysis results are given below: -

- It has been observed that the pH of the soil in the study area ranged from 6.81 to 7.58.
- The electrical conductivity was observed to be in the range of 0.052 mmhos/cm to 0.100 mmhos/cm.
- The nitrogen values range between 95 to 240 kg/ha.
- The phosphorus values range between 11.5 to 27.9 kg/ha, indicating that the phosphorus content in the study area falls Up to very less to less.
- The total potassium values range between 161.3 – 255.4 kg/ha.

1.3.2 WATER ENVIRONMENT

Surface Water

The analysis results indicate that pH and total coliform of the Surface water was found to be in range of 7.09 – 7.23 and 75 - 110 MPN/100ml.

Ground Water

- The analysis results of ground water samples showed the pH in range of 7.21 -7.89 where specified standard limits of 6.5 to 8.5.
- Colour and turbidity of the samples < 1 Hazens and <1 NTU respectively.
- The total hardness of the samples ranged from 146 mg/l – 496 mg/l.
- Calcium and magnesium concentrations ranged from 44.9 mg/l -158.7 mg/l and 6.8 mg/l- 23.4 mg/l respectively .
- The total dissolved solids of the samples ranged from 328.0 mg/l – 726.3 mg/l. The TDS values are within the stipulated 2000 mg/l.
- Range of chlorides and sulphates concentrations ranges from 39.1 mg/l-195.7 mg/l and 6.5 mg/l- 19.5 mg/l respectively.
- Fluoride concentration ranged from 0.12 mg/l – 0.22 mg/l and is found to be within the permissible limits.

- Iron concentrations in ground water varied from 0.18-0.39 mg/l.
- Aluminium concentration in ground water is below detection limit at all locations.

1.3.3 AIR ENVIRONMENT

To assess the baseline status of the air quality in the study area systematic ambient air quality monitoring has been carried out for criteria pollutants (PM_{10}, $PM_{2.5}$, NO_X, SO_2) at 10 (Including mine site) representative ambient air quality monitoring stations.

1.3.3.1 METEOROLOGY

The recorded meteorological data for the study period at mine site is given below: -

Table 1.4: Summary of Meteorological Parameters

Month & Year	Temperature (°C)		Relative Humidity (%)		Precipitation (mm)	Wind Speed (mph)
	Max	Min	Max	Min		
October 2023	31.5	16.2	80	59	151.9	18.33
November 2023	30.8	14.1	76	53	53.4	1.94
December 2023	28.9	11.8	74	42	8.9	1.94

1.3.3.2 AMBIENT AIR QUALITY

The observation based on the perusal of the results is summarized below: -

PM_{10}:- The maximum value for PM_{10} observed at Panhandor 86.4 µg/m^3 and minimum value for PM_{10} observed at Mahka Kalan 61.2 µg/m^3. The 24 hours applicable limit for industrial, Residential Rural and Other Areas is 100 µg/m^3.

$PM_{2.5}$:- The maximum value for $PM_{2.5}$ observed at Panhandor 44.6 µg/m^3 and minimum value for $PM_{2.5}$ observed at Dhaurabhata 25.4 µg/m^3. The 24 hours applicable limit for industrial, Residential Rural and Other Areas is 60 µg/m^3.

SO2:- The maximum value for SO_2 observed at Panhandor 26.4 µg/m^3 and minimum value for SO_2 observed at Mahka Kalan 10.6 µg/m^3. The 24 hours applicable limit for industrial, Residential Rural and Other Areas is 80 µg/m^3.

NO_X:- The maximum value for NO_2 observed at Khapli 34.7 µg/m^3 and minimum value for NO_2 observed at Mahka Kalan 15.8 µg/m^3. The 24 hours applicable limit for industrial, Residential Rural and Other Areas is 80 µg/m^3.

Conclusion

The results of the monitored data indicate that the ambient air quality of the region in general is conformity with respect to norms of National Ambient Air Quality standards, at all locations monitored.

1.3.4 NOISE ENVIRONMENT

The noise monitoring has been conducted for determination of noise levels at 10 locations in the study area. The noise levels at each location were recorded for 24 hrs. The results obtained were compared with the national standards and were found to be within the standards. The collected data are: -

A) Day time Noise Levels L_{eq} (day)

The daytime (L_{eq} day) noise levels are observed to be in the range of 46.4 –53.7 dB(A) which are within the prescribed limit of 55 dB(A). The maximum noise level of 53.7 dB(A) was observed at Utai and the minimum noise level of 46.4 dB(A) was observed at Mahkakalan during the study period.

B) Night time Noise Levels L_{eq} (night)

The nighttime (L_{eq} night) Noise levels are observed to be in the range of 40.2 – 44.0 dB(A) Which are within the prescribed limit of 45 dB(A). The maximum noise level of 44.0 dB(A) was observed at Utai and the minimum noise level of 40.2 dB(A) at Dhaurabhata during the study period.

1.3.5 BIOLOGICAL ENVIRONMENT

Based on the field studies and review of published literature, it is observed that there no schedule-I species in the buffer zone. There are no National Parks within the study area of 10-km radius. However, there are no RF/PF are present within 10 km radius from the mine site.

1.3.6 SOCIO-ECONOMIC ENVIRONMENT

Project will generate both direct and indirect employment. At present agriculture is the main occupation of the people as more than half of the population depends on it. With the implementation of the proposed mining project the occupational pattern of the people in the area will change making more people engaged in industrial and

business activities rather in agriculture. Thus, there will be a gradual shifting of population from agriculture to mining and industry. The study area is still lacking in education, health, housing, water, electricity etc. It is expected that same will improve to a great extent due to proposed mining project and associated industrial and business activities. All persons aged seven years and above, who can both read and write with understanding in any language have been considered as literate in this study.

1.4 ANTICIPATED ENVIRONMENTAL IMPACTS & MITIGATION MEASURES

Impact	Mitigation Measures
Land Environment	
Land will be degraded due to mining and dumping of waste	➢ Rehabilitated by plantation (1.75 ha for 3 mines). ➢ Presently lease area (10.13 ha for 3 mines). ➢ Total mined out area (7.257 ha for 3 mines).
Water Environment	
Discharge of effluents water from the mine. Intersection of ground water table during mining operations.	➢ There will be no discharge of effluent from the mine. Mine sump will act as reservoir of water and also allow settlement of sediments, if any, so that clear water is available for dust suppression and plantation and other activities like washing etc. ➢ As per the approved Modified Mining Plan ultimate pit level will be above the ground water table and hence it will not be intersected.
Air Environment	
➢ Dust will be generated mainly during excavation, loading & unloading activities. ➢ Gaseous pollutants will by generated mostly by the traffic.	➢ It will be ensured that all the vehicles plying in the working zone are properly tuned and maintained to keep emissions within the permissible limits. ➢ At loading & unloading points and transportation routes, arrangement for water sprinkling will be made to minimize dust generation. ➢ In order to predict changes in the air quality, ISCST-3 Air Quality Simulation model was used released by USEPA. The maximum incremental ground level concentrations of particulate matter PM_{10} & $PM_{2.5}$, and gaseous pollutants NO_X & CO from the different mining activities for the study period (post-monsoon) with EMP were observed within the National Ambient Air Quality Standards.
Noise Environment	
➢ Noise due to mining activities. ➢ Noise due to vehicular movement.	➢ The noise levels from all these sources are periodical and restricted to particular operation. ➢ The noise measurement data indicated that present noise levels in the study area is within the permissible limits of National Ambient Noise Quality Standards.

Impact	Mitigation Measures
	➢ Thus, due to natural attenuation effects by proper green belt/ maintenance of machines etc., the impact of noise levels will be minimal.
Socio-Economic Environment	
➢ Employment generation ➢ Health impacts ➢ Education Facilities	➢ The mining activity puts negligible change in the socio-economic profile. ➢ No displacement (0) is proposed due to the present mine. ➢ Approx. total 115 local workers will get employment opportunities along with periodical training to generate local skills. ➢ New patterns of indirect employment/ income will generate. ➢ Regular health Checkup camp.
Biological Environment	
➢ Impact on biodiversity ➢ Impact on threatened species	➢ The core zone and buffer zone does not encompass any threatened flora or fauna species. ➢ Native species should be preferred for afforestation and reforestation measures in the region. It is very important to promote native species during reforestation/afforestation

1.5 ENVIRONMENTAL MONITORING PROGRAMME

1.5.1 AIR

Air quality monitoring will be carried out as per norms of SPCB and CPCB.

1.5.2 WATER

Regular monitoring of ground water quality will be carried out at suitable locations. Water samples will be collected four times in a year i.e. Pre - Monsoon, Monsoon, Post - Monsoon and winter.

1.5.3 NOISE

Noise level will be recorded periodically at mine site near operating machines during day and night time.

1.5.4 HEALTH AND SANITATION

Periodical medical checkup of workers is being done and medical facility provided. Toilets and urinals will be provided near the mine site. Drinking water will be made available to the workers.

1.6 ADDITIONAL STUDIES

1.6.1 PUBLIC HEARING

Public Hearing will be conducted as per EIA notification 2006 and subsequent amendments.

1.6.2 RISK ASSESSMENT & MANAGEMENT

1.6.2.1 RISK ASSESSMENT AND DISASTER MANAGEMENT PLAN

The complete mining operation will be carried out under the management control and direction of a qualified mine manager holding. The DGMS have been regularly issuing standing orders, model standing orders and circulars to be followed by the mine management in case of disaster, if any. Moreover, mining staff will be sent to refresher courses from time to time to keep them alert.

1.6.2.2 DISASTER MANAGEMENT PLAN

Emergency preparedness is an important aspect in the planning of Disaster Management. Personnel would be trained suitably and prepared mentally and physically in emergency response through carefully planned, simulated procedures. Similarly, the key personnel and essential personnel shall be trained in the operations.

1.7 PROJECT BENEFITS

The impact on the civic amenities will be substantial after the commencement of mining activities. Medical facilities will be provided in the form of first-aid facility at the mine. These medical facilities will also be available to local people in the surrounding in case of emergencies.

- Generation of employment and improved standard of living;
- Increased revenue to the State by way of royalty, taxes and duties; and
- Superior communication and transport facilities etc.

The employment of local people in primary and secondary sectors of project will upgrade the prosperity of the region.

This proposed mining will generate direct and indirect employment. Economy of the area will get a boost and there will be overall growth of the region in terms of

education, health, training, awareness, transport, automobile, industry, and infrastructure. The standard of living accordingly will also get an upliftment on the positive side. Plantation will be carried out as social forestry programme in villages, school and the areas allocated by the Panchayat/ State authorities to improve environment of its surrounding area.

1.8 ENVIRONMENTAL MANAGEMENT PLAN

Environmental Management Plan (EMP) aims at the reservation of ecological system by considering in – built pollution abatement facilities at the mine site. Some of the major criteria governing the environmental measures will be adopted.

S. No.	Particulars	Environment Management Plan
1.	Land Environment	➢ Rehabilitated by plantation (1.75 ha for 3 mines). ➢ Presently lease area (10.13 ha for 3 mines). ➢ Total mined out area (7.257 ha for 3 mines).
2.	Water Environment	➢ Measurement of water level fluctuations to assess impact of mining activity on the water table depletion in close proximity of dug wells and bore wells. ➢ Rainwater harvesting (percolation tank) has been proposed for augmenting ground water resources and for arresting/ reversing the declining trends of ground water levels. ➢ Regular monitoring and analysis of water samples at strategic locations will be carried out to monitor the water quality of the area. ➢ Domestic waste water will be channelized into septic tank followed by soak pit.
3.	Air Environment	**Unpaved Roads** ➢ Water sprinkling will be done for dust suppression. ➢ Levelling of roads will be done to maintain the uniform speed of the trucks/tippers. **Paved Roads** ➢ The roads will be maintained. ➢ Regular cleaning will be done to reduce the chances of road dust to become airborne. ➢ Water sprinkling will be done on a fixed stretch of paved road passing through the villages. ➢ Adequate transportation routes will be decided to transport the mineral and will be maintained properly. ➢ Speed breakers will be constructed to restrict the speed of transporting vehicles. However, limiting of vehicular speed will be adopted.

S. No.	Particulars	Environment Management Plan
		Transportation ➢ The vehicles will be maintained to control the air emissions. ➢ The speed of the vehicles will be maintained uniform. ➢ PUC certified vehicles will be used. ➢ The loaded vehicles will be covered with tarpaulin. ➢ Over loading will be avoided.
4.	Noise Environment	Regular inspection and maintenance of vehicles and equipment will be performed to ensure efficiency and worn parts will be replaced. ➢ Limited numbers of equipment's will be used on-site. ➢ The vehicles will be maintained in good condition and overloading will be avoided. ➢ Speed limits will be enforced in relation to road conditions and on-route communities. ➢ Road surfaces will be maintained in good condition to reduce tyre noise and to assure continuous traffic flow to avoid prolonged idling. ➢ Noise monitoring will be conducted on a regular basis to determine compliance with noise criteria. ➢ Personal protective devices i.e., earmuffs and earplugs will be provided to workers, working in high noise areas. ➢ Periodical medical checkup will be organized for all workers to check any noise related health problems.
5.	Occupational Health and Safety	**Heat & Light** ➢ The mine site will have adequate drinking water supply so that workers do not get dehydration. ➢ Lightweight and loose-fitting clothes having light colors will be preferred to wear. ➢ Rigorous exercise and more physical activities will be avoided in hot weather. **Noise** ➢ Noise exposure measurements will be taken to determine the need for noise control strategies. ➢ The personal protective equipment will be provided for each mine workers. ➢ Supervisor will be instructed for reporting any problems with hearing protectors or noise control equipment. ➢ At noisy working activity, exposure time will be minimized. **Dust control** ➢ PPE like face mask etc. will be provided during mining activity. ➢ Periodic medical examinations will be provided for all workers.

S. No.	Particulars	Environment Management Plan
		➢ Awareness program will be organized for workers
6.	Biological Environment	➢ The lease area is devoid of any vegetation. Hence, it is proposed to develop social forestry in the approach villages at public places like School, PHC's, Panchayat Bhawan with due permission from Panchayat and in consultation with Forest Department/ local authorities. ➢ The green belt development will be carried out by Project Proponent and maintenance will be done by the villagers/ NGO with their active participations.
7.	Socio-Economic Aspect	➢ Direct employment to the local people which help to sustain their livelihood. ➢ During the operational phase by the implementation of certain CER activities indirect employment will also generate. Improved livelihood. ➢ Training will be provided to the local persons ➢ Awareness programme will be organized.

1.9 BUDGETS FOR ENVIRONMENTAL MANAGEMENT PLAN

The Capital cost of proposed EMP measures is **Rs. 4,55,600/-** for 3 mines & Recurring cost of the EMP measures, including the environmental monitoring activities is **Rs. 7,03,120/-** for 3 mines.

Table 1.5: EMP Cost Details for 3 mines

S. No.	Particulars	M/s Ganpati Metals & Minerals (4.17 Ha)		M/s Ganpati Metals & Minerals (2.95 Ha.)		M/s Rama Crusher (3.01 Ha.)	
		Capital Cost in Rs	Recurring Cost in Rs	Capital Cost in Rs	Recurring Cost in Rs	Capital Cost in Rs	Recurring Cost in Rs
1.	Air Pollution Control	-	1,44,000	-	1,44,000	-	1,44,000
2.	Green Belt Development	1,79,200	35,840	1,26,200	25,240	1,27,200	25,440
3.	Maintenance of Road		60,000		60,000		60,000
4.	Facilities for Mine workers	12,000	2,400	8,000	1,600	3000	600
	Total	**1,91,200**	**2,42,240**	**1,34,200**	**2,30,840**	**1,30,200**	**2,30,040**
Total Capital Cost in Rs		**4,55,600**					

S. No.	Particulars	M/s Ganpati Metals & Minerals (4.17 Ha)		M/s Ganpati Metals & Minerals (2.95 Ha.)		M/s Rama Crusher (3.01 Ha.)	
		Capital Cost in Rs	Recurring Cost in Rs	Capital Cost in Rs	Recurring Cost in Rs	Capital Cost in Rs	Recurring Cost in Rs
Total Recurring Cost in Rs		**7,03,120**					

1.10 CORPORATE ENVIRONMENTAL RESPONSIBILITY

The total cost of the project is **Rs. 2.22 Crore** for 3 mines. The project proponent proposes to spend **Rs. 4,44,580/-** for 3 mines towards the Corporate the CER activities. A break-up of expenditure proposed under the CER is as follows in Table: 1.6.

Table 1.6: Proposed CER for 3 mines

S. No.	Name of the Mine	M/s Ganpati Metals & Minerals (4.17 ha.)	M/s Ganpati Metals & Minerals (2.95 ha.)	M/s Rama Crushers (3.01 ha.)
1.	Project Cost	60 lakhs	79.55 lakhs	82.74 lakhs
Total Project Cost for 3 mines		**2.22 Crore**		
2.	CER (2% of Project Cost)	1,20,000 Lakhs	1,59,000 Lakhs	1,65,480 Lakhs
Total CER Cost for 3 mines		**4,44,580 Lakhs**		

1.11 CONCLUSION

EIA study was performed as per the approved ToR. Various environmental attributes were studied relating with aspects of mining activities. The related impacts were identified and evaluated. Considering all the possible ways to mitigate the environmental concerns Environmental Management Plan was prepared and accordingly fund was allocated. The EMP has been dynamic, flexible and subject to periodic review. CSR activities were identified and for its time bound implementation, fund has been allocated.

The project will increase the revenue of the State Govt. as well as it will help in the social upliftment of the local people. The greenbelt development programme will help in increasing the green cover in the nearby areas. Thus, proposed project is not likely to affect the environment or adjacent ecosystem adversely. The Senior Management will be responsible for the project review of EMP and its implementation to ensure

that the EMP remains effective and appropriate. Thus, the proper steps will be taken to accomplish all the goals mentioned in the EMP and the project will bring the positive impact in the study area.

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