Online proposal no SIA/CG/MIN/465932/2024

Executive Summary of Draft Environmental Impact Assessment/ Environmental Management Plan

For

Public Hearing

Of

Proposed Kandraja Bauxite Block

Over an area of 135.223 Ha; Maximum production of Bauxite ROM (80700 TPA)

At Village- Kandraja, Tehsil- Mainpat, District- Surguja, State- Chhattisgarh

Submitted By

M/s Maa Kudargarhi Steels Pvt Ltd

Proponent- Sunil Kumar Agarwal

Corporate Office: - Currency Tower, 5th Floor, VIP Road, Near Telibandha Chowk, Beside Ram Mandir, Raipur-492001 (C.G.)

(Category- 'B' under 1(a) (i) of EIA Notification Dated 14.09.2006 and its Subsequent Amendments)

Prepared By

PARIVESH ENVIRONMENTAL ENGINEERING SERVICES

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Parivesh Environmental Engineering Services

Accredited EIA Consultant Organization by NABET, QCI, New Delhi

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EXECUTIVE SUMMARY

1.0 INTRODUCTION

This is a greenfield mining project proposed by M/s. Maa Kudargarhi Steel Pvt. Ltd. The proposed project Kandraja Bauxite Block having maximum production of bauxite ROM (80700 TPA) over an area of 135.223 Ha is located at Village-Kandraja, Tehsil-Mainpat, District-Surguja, State- Chhattisgarh has been granted by Mineral Resource Department, Government of Chhattisgarh for period of 50 Years (LOI Vide Letter No. **F3-17/2022/12 Dated 12.07.2023**). The total area of the mine lease area is 135.223Ha.

As per the Ministry of Environment, Forests & Climate Change, New Delhi notification, dated 14th September, 2006 and its subsequent amendments, The proposed project falls in schedule 1 (a) (i) Mining of Minerals of Category 'B' requires Environmental Clearance (EC) to be obtained from SEIAA, Chhattisgarh.

The project proponents have submitted prescribed application along with Pre-Feasibility Report to the SEIAA, Chhattisgarh on dated 14.03.2024 vide proposal No: **SIA/CG/MIN/465932/2024** for seeking terms of references for conducting the EIA Study. The Project was considered for Terms of Reference (TOR) during 561th, SEAC-1 Meeting; Agenda Item no.- 2; Dated 04.02.2025. The Terms of Reference was issued by State Environment Impact Assessment Authority (SEIAA), Chhattisgarh, ToR Identification No.- **TO24B0000CG5301271N**, File No.- **OL/TOR/MIN/SURGUJA/3217**, dated- **29.04.2025**.

Parivesh Environmental Engineering Services, Lucknow, is QCI-NABET accredited in Category “A” environment consultant organization has been assigned to undertake an Environmental Impact Assessment (EIA) study and preparation of Environment Management Plan (EMP) for various environmental components, which may be affected due to the impacts arising out of the proposed project.

1.1 PLANT CONFIGURATION AND PRODUCTION CAPACITY

Table E-1: Proposed production during Plan Period

S. No.	Year	Pit ID	Total topsoil Volume (m^3)	Total Over Burden Volume (m^3)	Total Over Burden Quantity (t)	Total ROM Volume (m3)	Total ROM Quantity (t)	OB Ratio to Ore (Waste Quantity / ROM Quantity)
1.	Year-1	1	7788.85	5250.00	9975.00	7521.74	17300.00	1.43
2.	Year-2	1	6894.49	2312.49	4393.73	15521.74	35700.00	0.49
3.	Year-3	1	25510.62	17931.19	34069.25	21956.52	50500.00	1.63
4.	Year-4	1	31896.58	12804.35	24328.26	28478.26	65500.00	1.30
5.	Year-5	1	39251.50	9929.06	18865.21	35086.96	80700.00	1.16
Total			**111342.04**	**48227.09**	**91631.45**	**108565.22**	**249700.00**	

1.2 LOCATION AND ACCESSIBILITY

The proposed mine is situated at Village-Kandraja, Tehsil-Mainpat, District-Surguja, State- Chhattisgarh, State of Chhattisgarh. The project site along with its buffer zone falls on Survey of India Toposheet 64 N/06 and 64 N/05. The Geographical Position of the Mining Lease Boundary Pillars is given below:

Table.E-2: Pillar Co-ordinates

Pillars	Latitude (N)	Longitude (E)
1.	22° 44' 30.210" N	83° 20' 38.013" E
2.	22° 44' 31.461" N	83° 20' 39.679" E
3.	22° 44' 33.455" N	83° 20' 43.295" E
4.	22° 44' 34.841" N	83° 20' 45.280" E
5.	22° 44' 38.279" N	83° 20' 51.799" E
6.	22° 44' 39.047" N	83° 20' 53.867" E
7.	22° 44' 40.793" N	83° 20' 57.247" E
8.	22° 44' 41.748" N	83° 20' 58.618" E
9.	22° 44' 41.030" N	83° 21' 3.070" E
10.	22° 44' 40.540" N	83° 21' 5.530" E
11.	22° 44' 39.693" N	83° 21' 8.368" E
12.	22° 44' 38.085" N	83° 21' 16.036" E
13.	22° 44' 37.904" N	83° 21' 18.116" E
14.	22° 44' 36.379" N	83° 21' 18.576" E
15.	22° 44' 34.611" N	83° 21' 18.630" E
16.	22° 44' 34.021" N	83° 21' 18.571" E
17.	22° 44' 20.116" N	83° 21' 12.346" E
18.	22° 44' 18.298" N	83° 21' 11.254" E
19.	22° 44' 16.768" N	83° 21' 4.918" E
20.	22° 44' 15.962" N	83° 21' 2.658" E
21.	22° 44' 15.786" N	83° 21' 0.412" E
22.	22° 44' 15.643" N	83° 20' 56.550" E

Pillars	Latitude (N)	Longitude (E)
23.	22° 44' 15.679" N	83° 20' 54.174" E
24.	22° 44' 16.130" N	83° 20' 50.508" E
25.	22° 44' 16.799" N	83° 20' 48.463" E
26.	22° 44' 16.741" N	83° 20' 47.320" E
27.	22° 44' 16.076" N	83° 20' 46.408" E
28.	22° 44' 15.261" N	83° 20' 45.739" E
29.	22° 44' 14.592" N	83° 20' 45.737" E
30.	22° 44' 14.239" N	83° 20' 46.540" E
31.	22° 44' 13.974" N	83° 20' 48.195" E
32.	22° 44' 14.068" N	83° 20' 49.904" E
33.	22° 44' 13.926" N	83° 20' 51.726" E
34.	22° 44' 13.214" N	83° 20' 53.641" E
35.	22° 44' 9.024" N	83° 20' 59.139" E
36.	22° 44' 9.250" N	83° 21' 5.028" E
37.	22° 44' 8.316" N	83° 21' 7.930" E
38.	22° 44' 7.261" N	83° 21' 12.380" E
39.	22° 40' 6.960" N	83° 21' 14.790" E
40.	22° 44' 6.552" N	83° 21' 16.274" E
41.	22° 44' 4.029" N	83° 21' 17.730" E
42.	22° 44' 2.090" N	83° 21' 19.586" E
43.	22° 43' 59.846" N	83° 21' 22.043" E
44.	22° 43' 58.818" N	83° 21' 22.821" E
45.	22° 43' 56.800" N	83° 21' 23.118" E
46.	22° 43' 55.259" N	83° 21' 20.738" E
47.	22° 43' 53.152" N	83° 21' 17.989" E
48.	22° 43' 51.533" N	83° 21' 15.647" E
49.	22° 43' 49.882" N	83° 21' 12.892" E
50.	22° 43' 45.058" N	83° 21' 6.269" E
51.	22° 43' 46.175" N	83° 21' 4.337" E
52.	22° 43' 46.585" N	83° 21' 3.408" E
53.	22° 43' 47.574" N	83° 21' 2.596" E
54.	22° 43' 49.030" N	83° 21' 1.926" E
55.	22° 43' 50.443" N	83° 21' 0.797" E
56.	22° 43' 51.182" N	83° 20' 59.632" E
57.	22° 43' 51.833" N	83° 20' 58.535" E
58.	22° 43' 52.534" N	83° 20' 58.141" E
59.	22° 43' 53.258" N	83° 22' 57.369" E
60.	22° 43' 54.062" N	83° 20' 56.828" E
61.	22° 43' 55.413" N	83° 20' 56.060" E
62.	22° 43' 57.090" N	83° 20' 54.865" E
63.	22° 43' 58.461" N	83° 20' 53.221" E

Pillars	Latitude (N)	Longitude (E)
64.	22° 43' 59.548" N	83° 20' 51.663" E
65.	22° 44' 0.610" N	83° 20' 50.557" E
66.	22° 44' 1.390" N	83° 20' 48.692" E
67.	22° 44' 2.032" N	83° 20' 47.925" E
68.	22° 44' 4.438" N	83° 20' 45.499" E
69.	22° 44' 5.437" N	83° 20' 43.581" E
70.	22° 44' 5.790" N	83° 20' 42.087" E
71.	22° 44' 6.245" N	83° 20' 39.627" E
72.	22° 44' 6.140" N	83° 20' 38.114" E
73.	22° 44' 5.614" N	83° 20' 36.523" E
74.	22° 44' 5.689" N	83° 20' 35.831" E
75.	22° 44' 6.806" N	83° 20' 35.340" E
76.	22° 44' 7.600" N	83° 20' 34.640" E
77.	22° 44' 8.166" N	83° 20' 33.770" E
78.	22° 44' 8.575" N	83° 20' 32.699" E
79.	22° 44' 8.755" N	83° 20' 32.261" E
80.	22° 44' 10.437" N	83° 20' 32.857" E
81.	22° 44' 12.541" N	83° 20' 33.016" E
82.	22° 44' 13.657" N	83° 20' 33.249" E
83.	22° 44' 15.293" N	83° 20' 34.015" E
84.	22° 44' 17.802" N	83° 20' 34.654" E
85.	22° 44' 20.424" N	83° 20' 35.478" E
86.	22° 44' 22.455" N	83° 20' 36.031" E
87.	22° 44' 24.257" N	83° 20' 37.199" E
88.	22° 44' 26.178" N	83° 20' 37.945" E

The following is the environmental setting within the 10 Km. radius of the plant site:

Table E-3: Environmental settings within 10 Km. radius of the mine site

<table>
<tr><th>S. No.</th><th>Particulars</th><th colspan="3">Details</th></tr>
<tr><td rowspan="2">1.</td><td rowspan="2">Nearest Villages</td><td>Village</td><td colspan="2">Distance & Direction</td></tr>
<tr><td>Kandraja Village</td><td colspan="2">0.23, NNE</td></tr>
<tr><td>2.</td><td>Nearest City/ Town</td><td colspan="3">• Ambikapur City is about 43.4 km in NNW direction.
• Sitapur Town is about 14.7 km in E Direction.</td></tr>
<tr><td>3.</td><td>Nearest Road</td><td colspan="3">• Mainpat Road
• Ambikapur Marg is about 5.2 km in SE direction.</td></tr>
<tr><td rowspan="2">4.</td><td rowspan="2">Nearest Railway Station</td><td>Particulars</td><td>Distance (km)</td><td>Direction</td></tr>
<tr><td>Ambikapur railway</td><td>47.85</td><td>NW</td></tr>
<tr><td>5.</td><td>Nearest State Highway/ National Highway</td><td>NH- 43</td><td>12</td><td>E</td></tr>
</table>

S. No.	Particulars	Details		
6.	Nearest Airport	Veer Surendra Sai Airport, Jharsuguda	115	SE
		Ambikapur City Airport /Darima Hawai Patti	30.45	NW
7.	Archaeological Important Places	None within 10 km radius.		
8.	Reserved/ Protected Forest/ Notified Areas within 10 km radius	Kumatra RF	8.75	S
		Alola RF	5.6	S
		Barima RF	4.5	NNW
		Talgaon RF	10.7	S
		Susdega RF	10	SE
		Jagalmauha RF	11.8	SSW
9.	Nearest River / water body	Gungata Nala	9.2	NW
		Koerga river	13.5	SW
		Ghagi Nala	4.6	N
		Mahadev Munda River	14.17	NE
		Sangrul Nadi	5.1	SW
		Mand river	10.1	E
10.	Nearest Interstate Boundary	None within 10 km radius of study area.		
11.	Seismic Zone	III (Moderate Intensity Zone)		
12.	Health Services / Education Facilities	**Particulars**	**Distance (km)**	**Direction**
		Primary Health Sub Center Paiga	2	NW
		Community Health Center	4.35	N
		Government Naveen College	10	NW
		Sharda Public School Vijay	2.93	N
		PTS Training School	4.77	NW
		Deur temple	10.07	E
		Shiv Mandir	6	SW

2.0 PROJECT DESCRIPTION

As per Environmental Impact Assessment Notification dated 14th September, 2006 and subsequent amendment thereof, the proposed (Expansion) project falls under S. No. 1 (a) under category "B" and requires Environmental Clearance (EC) to be obtained from SEIAA, Chhattisgarh.

The Kandraja Bauxite block was explored by Directorate of Geology and Mining, Chhattisgarh (erstwhile Madhya Pradesh) ("DGM") between 1971 and 1974. In 2020-21, after short listing the Block for auctioning, DGM re-assessed the exploration results and produced this report in accordance with the guidelines provided in the Mineral (Evidence of Mineral Content) Rule, 2015 and subsequent amendments.
The block lies in Survey of India Toposheet 64 N/06 and 64 N/05.

The proposed greenfield mining project Kandraja Block Bauxite Ore Mining Lease is located over an area of 135.223 hectares in Village-Kandraja, Tehsil- Mainpat, District- Surguja, State- Chhattisgarh. The company M/s. Maa Kudargarhi Steels Pvt Ltd has been granted the aforesaid mining lease by the Govt. of Chhattisgarh, Department of Directorate of Geology and Mining for a period of 50 (Fifty) years in favour of M/s. Maa Kudargarhi Steels Pvt Ltd. The LOI has been issued by the Mineral Resource Department, Govt. of Chhattisgarh. The project cost for proposed project is Rs. 25 Cr.

2.1 RAW MATERIAL REQUIREMENT

No raw material is required for the mining.

2.2 METHOD OF MINING

The proposed mining operations will be carried out by conventional open cast fully mechanized method which includes drilling, blasting, loading, unloading and transportation: -

- Mining operations envisaged system of bench forming involving deep hole drilling & blasting. The quarry will be developed at different levels. The maximum height of the benches will be kept at 06 m and the width of the working benches will more than 6 m.
- Haulage roads at 1:16 gradient will be maintained for easy movement of machinery and transport vehicles.
- Hydraulic drills will be used for drilling. Diameter of the blast hole drill will be 110 mm.
- Controlled blasting will be in practice. Blasting will be done by using Aluminized Slurry Explosives. NONEL latest technology and delay detonators will be practiced.

➢ Mechanized mining with excavator Loader tipper combination, the waste and soil will be removed by excavator and will be dumped at designated place. The ROM will be excavated with due drilling and blasting and sorting sizing will be done within the pit head to segregate the Bauxite ore the mining will be done as per year wise development plans the entire temporary dump will be used in back filling and reclaiming.

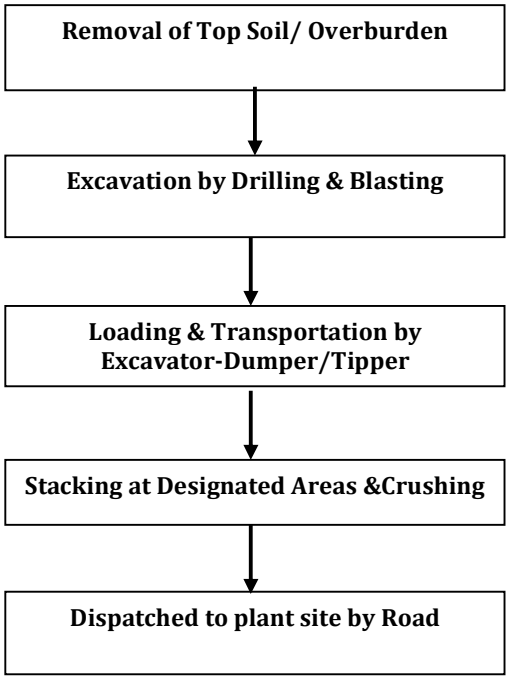

Figure E1: Flow Diagram showing the mining process

2.3 POWER REQUIREMENT & SUPPLY

The estimated peak power requirement is 0.5 MW. The power shall be sourced from nearest substation.

2.4 WATER REQUIREMENT

Total water requirement per day is 20 KLD (16.5 KLD will be used for dust suppression and 2.5 KLD will be used for plantation purpose and 1.0 KLD will be used for drinking purpose. Water requirement will be fulfilled from local sources and for drinking purposes ground water source will be used such as handpumps etc. Required permissions from government body will be taken for 20 KLD water.

Table-E-4: Water Consumption

Particulars	Water Requirement (KLD)	Source
Drinking water	**1.0**	Ground water
Water Sprinkling on Mine haulage Roads	16.5	Water required for mining activity will initially be met from ground water and once the mine pits will be developed, mine water will be used.
Greenbelt	2.5	
Total	20.0	-

2.5 PROJECT COST

The project cost of the project is estimated as Rs. 25.0 Crores.

2.6 LAND REQUIREMENT

The over an area of 135.223 Ha., Lease validity is for a period of 50 years from the date of issuance. Forest land is involved in the proposed ML area.

Table E -5: Land Details

KANDRAJA LAND DETAILS	
Land Type	**Area (Ha.)**
Forest Land	8.199
Government Land	34.818
Private Land	92.206
Total Area in ha.	**135.223**

The land use and breakup details are presented in **Table-E- 6.**

Table E-6: Land Area Breakup

S. No.	Particular	Present Land use in (Ha.)	End of 5th year Land use in(Ha.)	Conceptual/ lease period land use in (Ha.)
1.	Area under Mining	0.00	6.03	119.578 (119.578Ha. will be full reclaimed)
a.	Topsoil stacking	0.00	0.29	0.0
b.	Overburden/Waste Dumping	0.00	0.29	0.0
2	Mineral Storage	0.00	0.87	0.0
3	Infrastructure (Workshop, Administrative Building	0.00	0.04	0.0

S. No.	Particular	Present Land use in (Ha.)	End of 5th year Land use in(Ha.)	Conceptual/ lease period land use in (Ha.)
	etc.)			
4	Roads	0.00	0.30	0.0
5	Greenbelt	0.00	0.00	2.95 (From undisturbed area)
6	Railway	0.00	0.00	0.0
7	Tailing Pond	0.00	0.00	0.0
8	Effluent Treatment Plant	0.00	0.00	0.0
9.	Mineral Separation Plant	0.00	0.00	0.0
10.	Township Area	0.00	0.00	0.0
11.	Others to specify (Undisturbed land)	135.223	127.403	15.65
Total		**135.223**	**-**	**135.223**
**As Per Approved Mining Plan*				

*Out of the total back filled area of 119.58 Ha at the Conceptual stage, 119.58 ha will be reclaimed and rest i.e. 15.65Ha. will be undisturbed area. In first five, out of area total 6.03ha area will be under mining 127.403 ha will be undisturbed area.

2.7 EMPLOYMENT GENERATION (DIRECT & INDIRECT) DUE TO THE PROJECT.

The proposed project will generate direct employment for around 99 people. Preference will be given to suitable local people for employment. Apart from the direct employment, there will be many indirect employment opportunities after commencing of the proposed project in the nearby villages. Following staff is proposed to be employed for the proposed mine: -

2.8 KEY POLLUTION CONCERNS

S. No	Source	Mitigation measure
1.	Fugitive dust and SOx, NOx due to excavation, drilling, blasting loading, unloading, transportation	•Avoid blasting or drilling will be done in windy day. •Water sprinkling will be done on periodically to arrest the dust on haul road, mineral stack, overburden stack. Mineral will be transported by covering with tarpaulin. •Reduce the speed, check the load limit and force overwrite loading.

S. No	Source	Mitigation measure
		•Mask will be provided to workers as safety.
2.	Noise due to drilling, blasting, transportation, use of heavy machinery	•Delay blasting, sharp drill will be used. Earmuff will be provided to mine workers
3.	Water	No waste water will be discharged outside the mine area.
4.	Soil	Top soil will be stored at designated place and water sprinkling will be done to reduce the dust generation.

3.0 DESCRIPTION OF BASELINE ENVIRONMENT

Baseline data was generated during pre-monsoon season from 1st March 2024 to 31st May 2024. Baseline environmental studies were conducted at project site along with 10 km radial distance from the project site. Baseline environmental quality data for various environmental component like Air, Noise, Water, Land, Biological Environment and Socio-Economic.

A. AIR QUALITY

Ambient air quality was monitored for $PM_{2.5}$, PM_{10}, SO_2, NO_x & CO, at 12 stations including project site. The following are the concentrations of various parameters at the monitoring stations:

Table E-7: AAQ DATA SUMMARY

Parameter	Concentration
PM_{10}	20.6 µg/m³ to 48.6 µg/m³
$PM_{2.5}$	12.7 µg/m³ to 28.3 µg/m³
SO_2	5.1 µg/m³ to 11.5 µg/m³
NO_2	8.3 µg/m³ to 18.9 µg/m³
CO	112 µg/m³ to 320 µg/m³

B. SURFACE QUALITY

Water samples from 3 surface water bodies have been collected and analysed as per IS standards. Based on test result data comparison study, the analysis of samples shows that all the parameters are in accordance with BIS-2296 specifications.

- pH of the surface water samples collected was in the range of 7.2– 7.6
- The Total dissolved solids in the samples were in the range of 84-95mg/l.
- Total Hardness in the samples were in the range of 50.2-101mg/l.

- Chlorides concentration was found in the range of 24-26 mg/l.
- Total Coliforms Organism was found in the range of 50-60 MPN/100ml
- Dissolved oxygen (DO) refers to the amount of oxygen (O_2) dissolved in water. Because fish and other aquatic organisms cannot survive without oxygen, DO is one of the most important water quality parameters. The reported value of range of 6.8-8.3 mg/l
- Biochemical Oxygen Demand (3 days at 27°C) – 1.2-1.6 mg/l

C. GROUND WATER

8 Nos. of ground water samples from open wells / bore wells were collected from the nearby villages to assess ground water quality impacts and analyzed for various Physico-Chemical parameters. The analysis of samples shows that all the parameters are in accordance with BIS: 10500 specifications.

- pH of the ground water samples collected was in the range of 7.1– 8.2
- Total Dissolved Solids in the samples was in the range of 118-215mg/l
- Total hardness was found to be in the range of 60-174 mg/l.
- Chlorides concentration was found to vary between 14.5-48 mg/l.
- The fluoride concentration was found to be in the range of 0.3 – 0.5mg/l.
- Sulphate was found in the range of 13.1-37.6 mg/l.
- Heavy metal concentrations in all the samples were found to be well within the limits.

D. NOISE QUALITY

Noise levels were measured at 12 locations during day time & Night time. The Minimum Noise (day) value was observed 45.5 dB(A) and the maximum noise (day) value was observed 53.3 dB(A). The Minimum Noise (night) value was observed 36.0 dB(A) and the maximum noise (night) valve was observed 43.9 dB(A).

E. SOIL ENVIRONMENT

- pH is found 6.8 – 8.4. Based on the pH values, soil nature in the study area is found neutral to moderately alkaline.
- The bulk density of the soil in the study area ranged between 1.15-1.64 gm/cm which indicates favourable physical condition for plant growth.

- As based on result of available concentration of major nutrients fertility status of soil with respect to NPK value is found in the range of 16.09-46.0 kg/ha (less), 0.8-1.25 kg/ha (very less) and 20.52-60.35 kg/ha (very less) respectively.
- Organic matter was found in the range of 23.9% – 58.8%

F. BIOLOGICAL ENVIRONMENT

- Total 174 plant species were observed in the study area
- Following Schedule – I faunal species are found in the 10 km radial study area of the project site. **(1)** Indian Jackal (*Canis aureus*), **(2)** Indian fox (*Vulpes bengalensis*), **(3)** Common Mongoose (*Herpestes edwardsii*), **(4)** Indian Cobra (*Naja naja*), **(5)** Common Rat Snake (*Ptyas mucosa*), **(6)** Spiny Tailed Lizard (*Saara Hardwickii*), **(7)** Indian Porcupine (*Hystrix Indica*), **(8)** Jungle cate (*Felis Chaus*), **(9)** Python (*Python molurus*), **(10)** Indian Chameleon (*Chamaeleon Zeylanicus*), **(11)** Asian Elephant (*Elephas maximus*).
- No national park or wildlife sanctuary or biosphere reserve is present in the study area. No endangered species of flora and fauna is found in the study area.
- Lemru Elephant reserve is within the lease area. But as per The Forest (Conservation) Act, 1980 Lemru area not comes under definition of protected area.

G. SOCIO ECONOMY

- Total Population of the villages in the Study area (10 Km radius) is 63664.
- Sex Ratio (No. of females per 1000 Males) is 976.
- The percentage of schedule caste in the study area is 5.73% while the 57.45% only population is of Scheduled tribe.
- The literacy rate in study area is 46.71 %; Male literacy rate is 27.74 %; Female literacy rate is 18.97 %.

H. LAND USE LAND COVER CLASSIFICATION

The Land Cover classes and their coverage are summarized below:

Table E-8: Land Use Land Cover Classification

S. No.	LU/LC Class	Area (Ha.)	% of area
1.	Settlement	1372.23	6.973
2.	Forest	4554.93	1.199
3.	Open Mixed Jungle	7694.81	2.764

S. No.	LU/LC Class	Area (Ha.)	% of area
4.	Water Bodies	3337.95	14.873
5.	Stone Quarry/Waste	237.63	7.298
6.	Plantation	201.23	0.492
7.	Open Scrub	162.49	4.182
8.	Agricultural Land	16041.58	62.219
Total Study area		33602.85	**100**

4.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

A. PREDICTION OF IMPACTS ON AIR QUALITY

The likely emissions from the proposed project are PM_{10}, $PM_{2.5}$, SO_2 and NOx. In the present case, predictions of Ground level concentrations have been carried out using ISCST -3 model.

The incremental GLC values of PM_{10}, $PM_{2.5}$, SO_2 and NOx, CO around the project site is presented as isopleths in Chapter**-4.**

Table -E-9: Total expected ground level concentrations with EMP at different locations in the study area for study period

Item	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)
Maximum baseline conc. in the study area	48.6	28.3	18.9	11.5
Maximum predicted incremental rise in concentration due to proposed project (Area Sources)	6.98	3.07	4.18	1.67
Net resultant concentrations during operation of the proposed project	55.58	31.37	23.08	13.17
National Ambient Air Quality Standards	100	60	80	80
The net resultant Ground level concentrations during operation of the proposed project are within the NAAQS. Hence, there will not be any adverse impact on air environment due to the proposed project.				

Note: The predicted GLC's for CO at all locations were found to be <0.01and hence the expected resultant would be same as obtained in baseline data generation for the respective locations

It is seen from the above table, the GLC's obtained with EMP at various locations for the study period are well within the CPCB standards (dated 18th November, 2009).

B. PREDICTION OF IMPACTS ON NOISE QUALITY

The major sources of noise generation in the proposed project will be STG, Boilers, Compressors set, etc. Acoustic enclosures will be provided to the Turbines. All machinery will be manufactured keeping in view of the MOEF&CC/OSHA standards on Noise levels. The ambient noise levels will be within the standards prescribed by MoEF&CC i.e. the noise levels will be less than 75 dBA during day time and less than 70 dBA during night time. 2.95 ha of land is envisaged for greenbelt out of the total 135.223ha will be developed for green area. Hence, there will not be any adverse impact due to noise on population in surrounding areas due to the proposed project.

C. PREDICTION OF IMPACTS ON WATER ENVIRONMENT

No waste water will be generated from the mining activity. Sewage waste water will be diverted to Septic tank followed by soak pit. No adverse impact is envisaged.

D. PREDICTION OF IMPACTS SOCIO - ECONOMIC ENVIRONMENT

There will be certain upliftment in socio economic status of the people in the area & development of the area due to the proposed mine.

Due to this the economic conditions, the educational and medical standards of the people living in the study area will certainly move upwards which will result in overall economic development, improvement in general aesthetic environment and increase in business opportunities.

E. PREDICTION OF IMPACTS ON LAND ENVIRONMENT

The effluent will be treated to achieve SPCB standards. Zero effluent discharge will be adopted. All the required air pollution control systems will be provided to comply with CPCB / SPCB norms. All solid wastes will be disposed / utilized as per CPCB / SPCB norms. plantation will be developed as per guidelines. Hence, there will not be any adverse impact on land environment due to the proposed project.

F. BIOLOGICAL ENVIRONMENT

There is no ecological sensitive area like national park, sanctuary, biosphere reserve, within 10 km radial distance from the project site. Thus, no significant impact envisaged on biological environment. Mining lease is spread over an extent of

135.223 Ha. Approx 2.95 Ha area. will be developed with greenbelt and 7375 nos. sampling will be planted.

5.0 ENVIRONMENTAL MONITORING PROGRAM

Environmental Management Cell (EMC) will be set up to undertake routine environmental monitoring. Monitoring will be done to ensure compliance with the prescribed laws and standards. The Head of EMC will report to the Plant Head. Qualified staff will be recruited in EMC. Environmental monitoring of ambient air, stack emission, fugitive dust emission, noise levels, groundwater quality, surface water quality and soils will be carried out as per norms.

Table- E-10: Environmental Monitoring Programme

S. No.	Particulars	Frequency of monitoring	Duration	Parameters required to be monitored
1.	Ambient Air quality	24 hourly twice a week	Continuously 24 Hourly	PM10, PM2.5, SO2, NOX and CO etc. as per CPCB/ MoEF&CC Guidelines
2.	Noise	Once in a season (24 hours monitoring on hourly basis)	Once in a season 24 hours with 1-hour interval	Equivalent noise level- dB (A)
3.	Water quality	Once in a season	Grab sampling	pH, Temperature, Turbidity, Magnesium Hardness, Total Alkalinity, Chloride, Sulphate, Nitrate, Fluoride, Sodium, Potassium, Salinity, Total Nitrogen, Total Phosphorous, Total coli forms, faecal coli forms etc.
4.	Greenbelt	-	-	Number of plantation (Units), Number of Survived plants/ trees, Number of poor plants/ Trees
5.	Environmental Audit	Once in year	-	With Respect to Environment Clearance, Consent conditions and ISO 140001.
6.	Health	Occupational health	Initial Medical Examination (IME) and Periodic Medical Examination –	--

S. No.	Particulars	Frequency of monitoring	Duration	Parameters required to be monitored
			Once in a five year as per Mines Rules, 1955. For Silicosis – Once in five years.--	

6.0 ADDITIONAL STUDIES

No Rehabilitation and Resettlement is not involved in the proposed project. Hence, no R & R study has been carried out.

RISK ASSESSMENT:

Risk analysis is the systematic study of uncertainties and risks encountered in various areas. Risk analysts seek to identify the risks involved in mining operations, to understand how and when they arise, and estimate the impact (financial or otherwise) of adverse outcomes. It also defines and analyzes the dangers to individuals, businesses and government agencies posed by potential natural and human-caused adverse events.

The following types of hazards are identified during the Bauxite mining operations: -

- Fall of machinery/ person from benches
- Failure of transport machinery
- Heavy rainfall resulting in inundation of mine
- Accidents due to blasting/explosives
- Accidents due to fire
- From Electric line through the area
- Road accidents

Following procedure will be followed for effective management of any disaster in the mine.

Step 1: Identification of Disaster risk.

Step 2: Identification of persons at risk

Step 3: Removal of Hazard

Step 4: Evaluation of the risk

Step 5: Control measures to be taken

Step 6: Maintain Assessment records

Step 7: Review

The assessment of risk from the proposed mining project has been estimated and corresponding mitigation measures are suggested in the EIA/EMP report.

7.0 PROJECT BENEFITS

During operation 99 people will be employed in the proposed projects directly and additional many more indirect(100nos) get employments. All the labour/manpower will be hired from the local places. CSR activities will be done as per rules of Government of India. The Budgetary provision will be made as per norms.

8.0 ENVIRONMENTAL MANAGEMENT PLAN

A. AIR ENVIRONMENT

The following are air emission control systems proposed in the proposed project:

S. No	Source	Mitigation measure
1.	Fugitive dust and SOx, NOx due to excavation, drilling, blasting loading, unloading, transportation	• Avoid blasting or drilling will be done in windy day. • Water sprinkling will be done on periodically to arrest the dust on haul road, mineral stack, overburden stack. • Mineral will be transported by covering with tarpaulin. • Reduce the speed, check the load limit and force overwrite loading • Mask will be provided to workers as safety.

DUST SUPPRESSION SYSTEM

Water sprinklers will be provided at the unloading areas of the raw materials for dust suppression. Dust suppression system will be provided with plain water - comprising of piping network, valves, pumps, instrumentation & control, water tank etc.

INTERNAL ROADS

All internal roads will be graded to prevent the fugitive dust emission due to vehicular movement.

B. WATER ENVIRONMENT

No waste water will be generated from the mining activity. Sewage waste water will be diverted in septic tank followed by soak pit.

C. NOISE ENVIRONMENT

Major noise-generating source will be deployed HEMM machinery, drilling and blasting for mining and transportation of mineral. The proposed equipment of the proposed project would be designed for noise levels not exceeding 75 dB (A). In general, the following methods will be adopted to control the noise pollution.

- The noise levels will be confined to the working zones of the mining.
- Ear plugs will be provided to all workers who will enter into the noise prone areas.
- Community noise levels are not likely to be affected due to the proposed thick green belt and attenuation due to the physical barriers.
- The ambient noise levels will be in accordance with MoEF&CC norms i.e. ambient noise levels will be < 75 dBA during daytime and < 70 dBA during night time.

D. LAND ENVIRONMENT

Table-E 11 Proposed backfilling or Reclamation for plan period (Year - Wise)

S. No.	Year	Pit ID	Area in m^3	Top RL in m	Bottom RL in m
1.	2nd Year	Pit 1	16426.83	1016	1010
2.	3rd year	Pit 1	15161.84	1016	1011
3.	4th year	Pit 1	15537.63	1016	1009
4.	5th year	Pit 1	13270.00	1015	1008

Greenbelt will be developed in the safety barrier. Desirable beautification and landscaping practices will be followed. Hence there will not be any impact due to the proposed project.

Table E.12: Municipal Solid Waste Generation & Its Disposal

Type of Solid waste	Proposed (TPA)	Total (TPA)	Proposed method of disposal
Canteen waste (Biodegradable)	3.7125	3.7125	Used in composting / Vermiculture Used as manure for greenbelt development within the premises

E. GREEN BELT DEVELOPMENT

Mining lease is spread over an extent of 135.223 Ha. Approx 2.95Ha area. will be developed with greenbelt and 7375 nos. sampling will be planted. The following points will be considered for selection of plants species:

- Greenbelt absorbs both gaseous as well as particulate pollutants to a great extent. For absorbance of gases, the duration of the foliage should be longer.
- Characteristics of tree/plants including shapes of crowns considered necessary for effective removal of dust particles.
- Greenbelt/Plant species having good root system will be selected, so that soil erosion rates can be controlled significantly.

F. COST FOR ENVIRONMENT PROTECTION

Table E-13: Cost for Environment Protection

S. No	Particulars	Capital Cost (Rs. In Lacs)	Recurring Cost/ Annum (Rs. In Lacs)
I.	**Water Pollution Control, Management & Conservation**		
A	Roof Top Rain Water Harvesting	10	0.5
B	Oil and Grease trap at HEMM washing centre	5	0.5
C	Others (Garland Drain, retaining walls, Settling tank etc.)	10	2
II.	**Air Pollution Control & Management**		
A	One water tanker for water sprinkling on haul roads.	12	5
III.	**Ecological and Bio-diversity**		
A.	Green Belt (Phase wise greenbelt development during course of mine)	73.80	13.35
	Total	**110.8**	**21.35**

9.0 CONCLUSION

The operation of mine lease has significant positive impact on the socio-economic environment of the area which helps for development of this area including further development of physical infrastructure facilities. In the interest of improve the social

conditions of the local habitants this project should be allowed after considering all the environment aspects.

The region shall also be benefited from the project as there will be direct employment of people. Preference will be given to the people of the state possessing requisite skill and qualification criteria. Also, there will be lot of scope for indirect employment of the people of the state in and around the project site like in transportation sector.

In view of the above the proposed project of **M/s. Maa Kudargarhi Steel Pvt. Ltd.** is technically feasible and financially viable.

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