EXECUTIVE SUMMARY

ENVIRONMENT IMPACT ASSESSMENT REPORT

FOR

JMAIRAPAT BAUXITE MINE

Proposed Production Capacity: 140673.89 TPA (ROM),
Mineral: 91438.03 TPA, Mineral Reject -49235.86 TPA,

Mining lease Area 114.009 ha.
At
Near Village-Jamirapat, Tehsil - Kusmi,
District- Balrampur, Chhattisgarh

By

M/s. Chhattisgarh Mineral Development Corporation Limited

Project Cost: Rs. 12.0 CRORE

Category-B1

PROJECT PROPONENT	EIA CONSULTANT
M/S CHHATTISGARH MINERAL DEVELOPMENT CORPORATION LIMITED Sector 24, Block no. 7A, Third Floor, Nava Raipur, Atal Nagar, (Chhattisgarh) pin- 492015 EMAIL ID: cmdcraipur@gmail.com Phone Number: 0771-4283557	OVERSEAS MIN-TECH CONSULTANTS ISO 9001:2015 Certified & NABET Accredited 501, Apex Tower, Tonk Road, Jaipur – 302015 Telefax: +91-141-2744509, Mobile: +91-9460221084 E-mail–arun.omtc@gmail.com, Website: www.overseasmintech.com

Project File ID: OMTC/EIA/2022/35

CONTENTS

LIST OF TABLE

LIST OF FIGURE

----@---@---@---

EXECUTIVE SUMMARY

1.1 INRODUCTION

Chhattisgarh Mineral Development Corporation (CMDC) limited was corporate in under Section-21 of the Company act 1986 by register of the Company 7-6-2001. The State's Chhattisgarh Mineral Development Corporation, singly or in joint venture, undertakes scientific exploration, commercial exploitation and viable trading of minerals in the State.

The main object of the company to search major and minor minerals and precious stone in the state of Chhattisgarh and to acquire mining rights for exploration and exploitation of minerals and for development of mines.

Project proponent Mission is to enhance the production of Minerals, exploration and exploitation of mineral resources, establishment and promotion of mineral based industries and explore the new areas of mining in Chhattisgarh and lead the mining sector of Chhattisgarh and turn it to be a safe and good position.

1.2 PROJECT DESCRIPTION

This is proposed Bauxite mine project. As per EIA Notification dated 14th September, 2006, as amended from time to time; the project falls under S. No. '1' (Mining of Minerals), Project or Activity 1(a), Category **"B1"**, hence Environment Clearance obtain from State Level Expert Appraisal Committee. It has been proposed to excavate approximately: 140673.89 TPA (ROM), of Bauxite from Jamirat Bauxite mine, by open - cast, semi - mechanized method. The lease area is 114.009 ha., This is Government and private Land. Total mineable reserve available is 2696597.418 T of Bauxite mineral. The expected life of mine is 19 years. Waste (mineral reject) generated during the five year plan period will be 170986.39T respectively. The Bauxite will be transported through dumpers.

At the end of life mine, Total excavated area will be 71.40 ha., area which will be used in backfilling and remains will be converted in to water reservoir and 42.609 Ha area will remains as virgin land within the statutory barriers and greenbelt plantation

The daily water demand during the operation phase will be 6 KLD. Water demand will be met from Tube well for domestic and drinking purpose. Other will be fulfilled from local supplier. However, rain water stored in the pit during the rainy season will be used for plantation and dust suppression.

1.3 NEED OF THE PROJECT

Bauxite is basically an aluminous rock containing hydrated aluminium oxide as the main constituent and iron oxide, silica and titania in varying proportions. Hydrated aluminium oxides present in the bauxite ore are diaspore and boehmite, Al_2O_3. H_2O (Al_2O_3- 85%; Al- 45%); gibbsite or hydrargillite, Al_2O_3. $3H_2O$ (Al_2O_3-65.4%; Al-34.6%), and bauxite (containing colloidal alumina hydrogel), Al_2O_3. $2H_2O$ (Al_2O_3- 73.9%; Al-39.1%). Bauxite is an essential ore of aluminium and is

one of the most important nonferrous metals used in the modern industry. The country has abundant resources of bauxite which can meet both domestic and export demands.

The production of mineral and its subsequent use in the Alumina Refinery will benefit by way of royalty and taxes to State Government and will also bring in large employment opportunities to the local populace thereby providing socio economic benefit to the backward region.

1.4 BRIEF DESCRIPTION OF NATURE, SIZE & LOCATION OF PROJECT

Table 1 Salient Features of the project site.

S.No.	Particulars	Details
A.	**Nature of the Project**	Proposed Jamirapat Bauxite Mine Project
B.	**Size of the Project**	
1.	Proposed Production capacity	Production capacity : 140673.89 TPA (ROM), Mineral: 91438.03 TPA, Mineral Reject -49235.86 TPA,
2.	Mine Area	114.009 ha
3.	Present Land Use	Agriculture and Barren
4.	Elevation above MSL	Highest MSL 1110 m and Lowest MSL 1094 m
5	Lease period validity	50 year from the registration
C	**Location Details**	
1.	Village	Jamirapat
2.	Tehsil	Kusmi
3.	District	Balrampur
4.	State	Chhattisgarh
5.	Latitude & Longitude	**Pillar No.** / **Pillar Latitude (*dd:mm:ss.ss*)** / **Pillar Longitude (*dd:mm:ss.ss*)** **A** 23°19'40.83"N 83°58'7.15"E **B** 23°19'38.78"N 83°58'12.35"E **C** 23°19'54.37"N 83°58'7.95"E **D** 23°20'5.72"N 83°58'9.79"E **E** 23°20'18.71"N 83°58'15.57"E **F** 23°20'25.58"N 83°57'49.81"E **G** 23°20'18.78"N 83°57'44.87"E **H** 23°20'20.14"N 83°57'26.61"E **I** 23°20'5.85"N 83°57'24.81"E **J** 23°19'56.35"N 83°57'38.41"E **K** 23°19'51.98"N 83°57'38.80"E
6.	Toposheet No.	Core Area : 64M/15 Buffer Area : : 64M/15, 64M/16, 73A/3, 73A/4
D	**Area Details**	
1.	Project Area	114.009 ha 107.315 ha. (Private Land) and 6.694 ha. (Govt. Land)
2.	Greenbelt / Plantation area	(33% of total project area)
E	**Environmental Settings of the Area (with approximate aerial distance and direction from the project site)**	
1.	Nearest Village	Jamirapat approximately 1.4 km North East Direction
2.	Nearest Town / City	Kusmi approximately 8 km South West Direction
3.	Nearest Railway Station	Ambikapur Railway station approximately 80 km West South West direction from mine site.
4.	Nearest Airport	Ambikapur Airport approximately 86 km West South West direction from Mining Lease area.

<table>
<tr><td>5.</td><td>Nearest National & State Highway</td><td>SH 12 approximately 8.6 Km in South West Direction</td></tr>
<tr><td>6.</td><td>State Boundary</td><td>Inter State boundaries Chhattisgarh- Jharkhand Sate Approximately 3.0 km in North East direction from the mining lease boundary.</td></tr>
<tr><td>7.</td><td>National Park, Wildlife Sanctuary, Biosphere Reserve, Ecological Sensitive Areas within 10 km radius.</td><td>No, National Park, Wildlife Sanctuary, Biosphere Reserve, Ecological Sensitive Areas etc. exists within 10 km radius of project site.</td></tr>
<tr><td>8.</td><td>Protected Forests (PF) / Reserved Forests (RF) within 10 Km radius</td><td>Protected forest is present within the 10 Km of the mining lease.
<table>
<tr><th>Name</th><th>Distance</th><th>Directions</th></tr>
<tr><td>Kamlapur Protect Forest</td><td>0.38 Km</td><td>E</td></tr>
<tr><td>Ghutradih Protect Forest</td><td>0.30 Km</td><td>WSW</td></tr>
<tr><td>Protect Forest</td><td>4.95 Km</td><td>SW</td></tr>
<tr><td>Protect Forest</td><td>5.0 Km</td><td>SSW</td></tr>
<tr><td>Khajri Protect Forest</td><td>5.32 Km</td><td>E</td></tr>
<tr><td>Gajadharpur Protect Forest</td><td>6.20 Km</td><td>W</td></tr>
<tr><td>Protect Forest</td><td>6.67 Km</td><td>SE</td></tr>
<tr><td>Turripani Protect Forest</td><td>7.70 Km</td><td>ENE</td></tr>
<tr><td>Orsa Protect Forest</td><td>7.70 Km</td><td>NNE</td></tr>
<tr><td>Merhari Protect Forest</td><td>7.70 Km</td><td>NE</td></tr>
<tr><td>Kabrapat Protect Forest</td><td>7.70 Km</td><td>NE</td></tr>
<tr><td>Goalkhar Protect Forest</td><td>7.70 Km</td><td>ENE</td></tr>
<tr><td>Champa Protect Forest</td><td>7.70 Km</td><td>ENE</td></tr>
<tr><td>Korundha Protect Forest</td><td>7.70 Km</td><td>E</td></tr>
<tr><td>Kusmi Protect Forest</td><td>7.17 Km</td><td>SW</td></tr>
<tr><td>Pakardih Protect Forest</td><td>8.0 Km</td><td>SE</td></tr>
<tr><td>Mohana Protect Forest</td><td>8.0 Km</td><td>SSE</td></tr>
<tr><td>Dhanespur Protect Forest</td><td>8.0 Km</td><td>SSE</td></tr>
<tr><td>Katima Protect Forest</td><td>8.85 Km</td><td>SSW</td></tr>
<tr><td>Rasdag Protect Forest</td><td>8.86 Km</td><td>N</td></tr>
</table></td></tr>
<tr><td>9.</td><td>River / Water Bodies within 10 km radius</td><td>Nil within ML
The main drainage of the area is through different seasonal water courses originating from the plateau. A main nala Mangadra is about 3 km on the northern side of the area, flowing towards northern direction and meets to Gungata Nala
Rivers:-
<table>
<tr><th>NAME</th><th>DISTANCE</th><th>DIRECTIONS</th></tr>
<tr><td>GALPHULA NADI</td><td>5.0 KM</td><td>S</td></tr>
</table>
Water Bodies:-
<table>
<tr><th>NAME</th><th>DISTANCE</th><th>DIRECTIONS</th></tr>
<tr><td>TIKONA NADI</td><td>4.8 KM</td><td>E</td></tr>
<tr><td>BURHA NADI</td><td>7.6</td><td>N</td></tr>
</table></td></tr>
<tr><td>10.</td><td>Defense Installations</td><td>Nil</td></tr>
<tr><td>11.</td><td>Seismic Zone</td><td>Seismically, this area is categorized under zone-II as per IS-1893 (Part-I)-2002.</td></tr>
<tr><td>D</td><td colspan="2">Cost Details</td></tr>
</table>

1.	Total Project Cost	Rs. 12.0 Crore
2.	Cost for Environmental Protection Measures	
3.	Cost for ESR	
E	**Requirements of The Project**	
1.	Water Requirement and Source of Water	6 KLD Will be fulfilled from local supplier.
2.	Power requirement	10 KW Capacity from Diesel Generator Set
3.	Man Power Requirement	83 (skilled, semi-skilled, unskilled & technical persons)

Source: Site Visit & Pre-feasibility Report

The map showing environmental settings within 10 km from the project site is given in Figure 1.

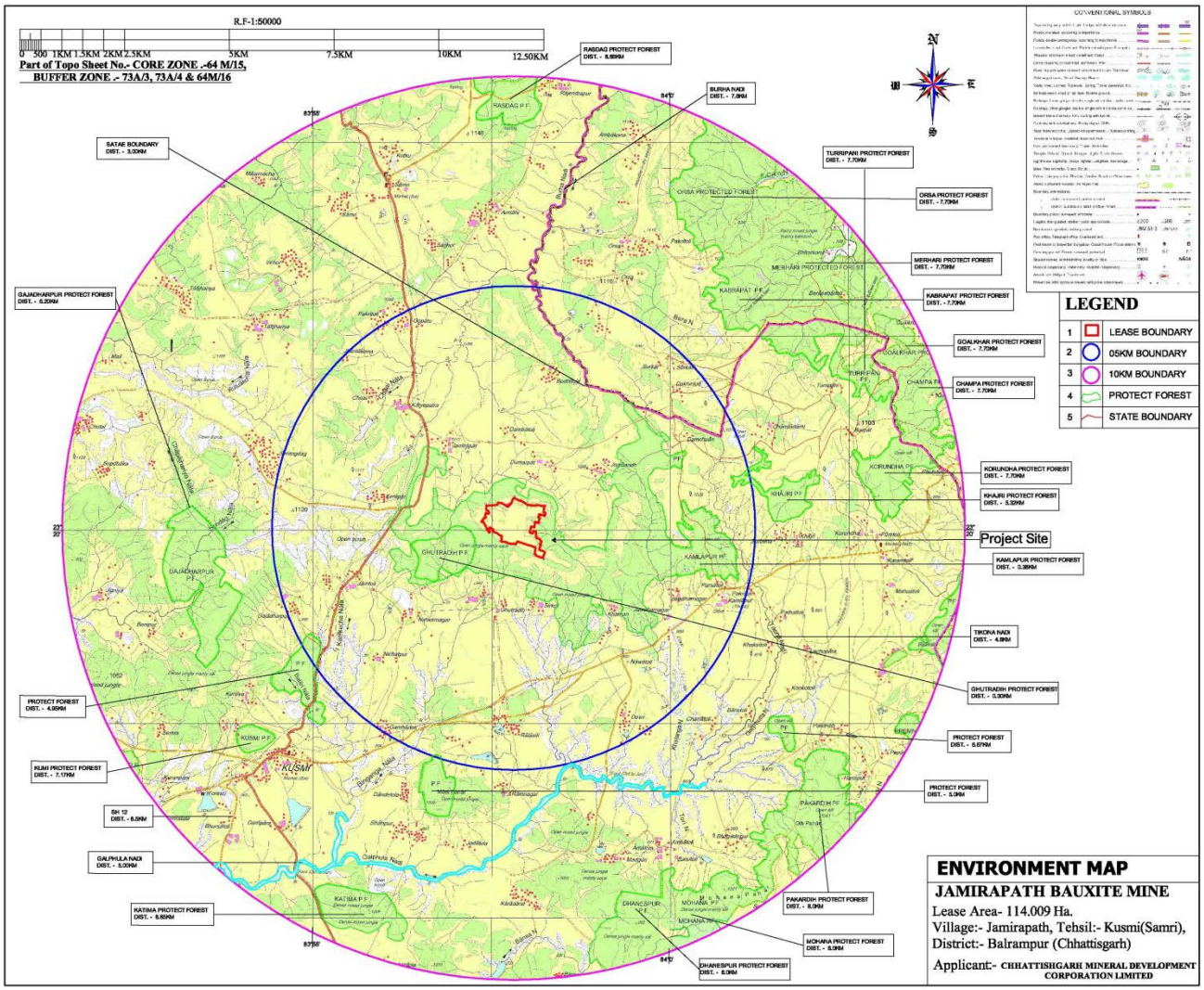

Figure 1 : Map Showing Environmental Setting of the Study Area of the Mining Lease Boundary

1.5 LOCATION OF THE PROJECT:

The project site covering area 114.009 ha is located at near Village-Jamirapat, Tehsil - Kusmi, District- Balrampur, Chhattisgarh. The Mining lease lies between Latitude 23°19'40.83"N to

23°19'51.98"N and Longitude 83°58'7.15"E to 83°57'38.80"E and falls on Survey of India Toposheet No 64M/15. Location map of project site is given in Figure 2.

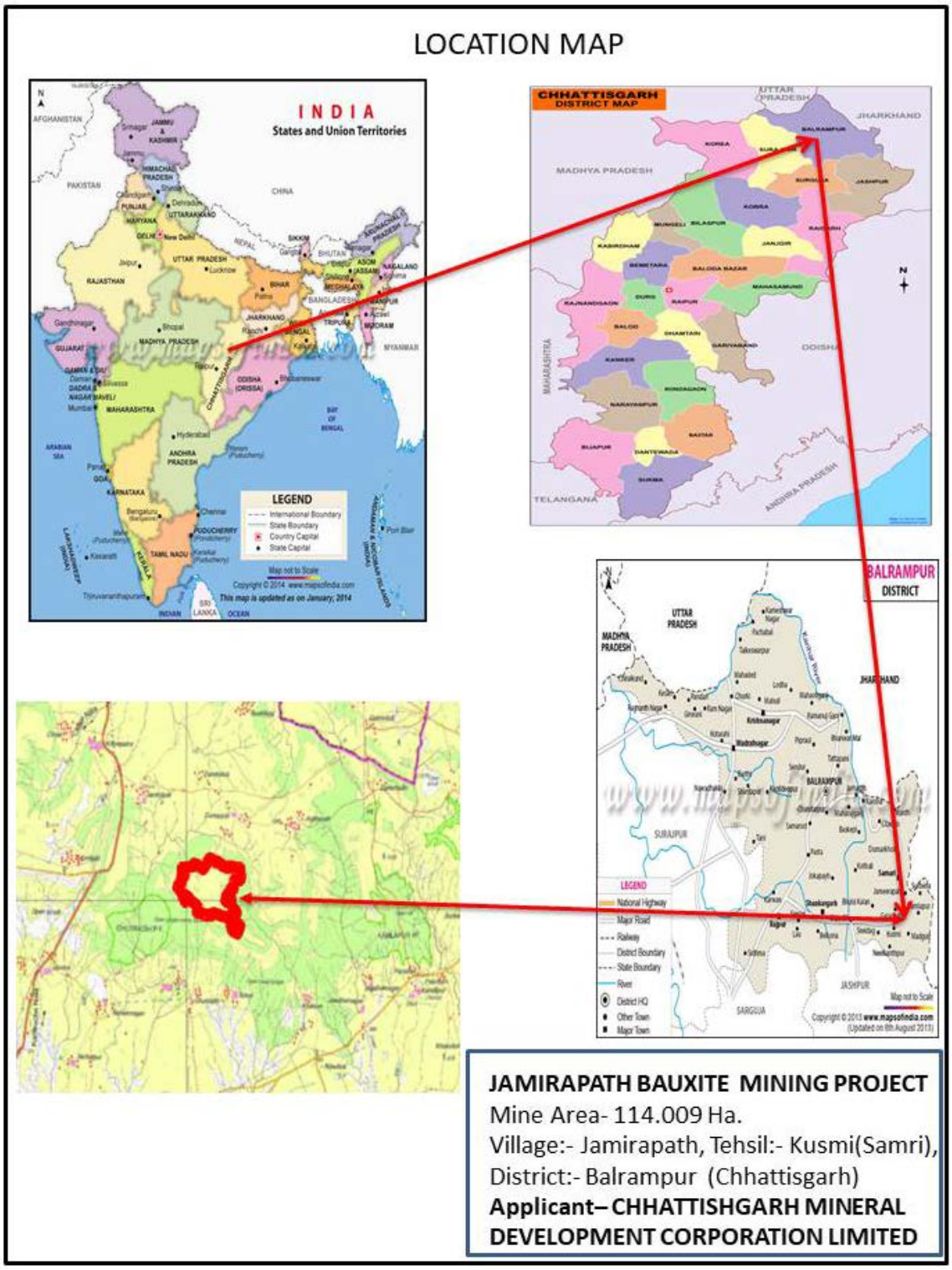

Figure 2 Map showing location of the proposed project Site

1.6 PROJECT SITE PHOTOGRAPHS

Figure 3 Project Site Photograph

2.0 MINE DESCRIPTION

2.1 MINING LEASE STATUS

Government of Chhattisgarh has given Letter of Intent for 114.009 ha vide letter no. F 3- 9/2021/12, dated 12.01.2022. Same has been enclosed as **Annexure 1** The mining lease area covers 114.009 ha consisting of 107.315 ha Private land and 6.694 ha Government land. The present land use is rain-fed agriculture and Government Barren Land. The Jamirapat Bauxite Mine of CMDC covers area of 114.009, near village Jamirapat, Tehsil – Kusmi, district – Balrampur, Chhattisgarh.

2.2 PROPOSED METHOD OF MINING

The method of mining will be open cast by Semi Mechanized Method. Bench height and width will be 3 m and ultimate pit limit will be 12 m. Process flow chart is given below:

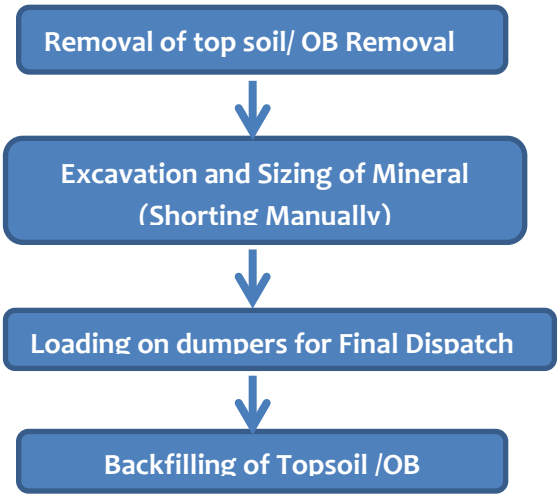

Table 2 Year wise production details

S. No.	Production Capacity (ROM) TPA	OB (TPA)	ROM quantity mineral reject (TPA)	Total waste (OB+ inter collected waste) TPA	Total excavation (TPA)	Sealable (TPA)
1st Year	First year bore hole proposal					
2nd Year	100916.8	502838.60	35320.87	538159.47	603755.38	65595.9
3rd Year	116232.1	566950.10	40681.24	607631.34	683182.21	75550.87
4th Year	130709.8	409336.20	45748.42	455084.62	540045.98	84961.36
5th Year	140673.89	775393.50	49235.86	824629.36	916067.39	91438.03

(Source: Mining Plan)

2.3 MINING DETAILS

Table 3 Details of Mine

S. No.	Particular	Details
1	Mining Method	Semi Mechanized open cast method
2	Project Production capacity	140673.89 TPA (ROM)
3	Total Sealable Capacity	91438.03 TPA
4	Total Geological Resources	2789732.79 T
5	Total Minable Reserves	2696597.418 T
6	Life of Mine	19
7	Depth of Mine	12 meter
8	Bench Height	3 m
9	Bench Width	3 m
10	Elevation Range	1110-1094 msl
11	General Ground Level	1102 msl
12	Water Table	22 m from the surface level
13	Limit of pit	12 m
14	Ultimate pit limit	12 m
16	Occupy Area around	71.40 ha
17	Number of Working Day per year	300
18	Number of Shifts per day	1
B. Calculation for requirement of mining machineries		
1	Requirement of Jack hammer drill machine	6
Requirement of Dumpers;		
1	No. of trips by 1 Dumper in one hour for lead up to 2 km	7
2	No. of trips by 1 Dumper in a shift	44
3	Total tonnage transported by one Dumper	720 T

	in a shift	
4	No. of Dumpers required	23
5	No of spare Dumpers	3
6	Total no. of Dumpers required	26
Number of Loaders required is as follows		
1	No. of effective working hours in a shift	6.3 Hour
3	Capacity of Dumper	18 Tonnes

Source: Approved Mining Plan with Progressive Mine Closure Plan

2.4 UTILITY & REQUIREMENT FOR THE MINING PROJECT

2.4.1 Extent of Mechanization

Table 4List of Machineries

S. No.	Machine	No's	Capacity
1	Air Compressor	5	256 CFM
2	Wagon Drill	5	100 mm dia
3	Jack Hammer	5	32 mm dia
4	Derrick Crane	5	30 tonne
5	Dumper	20	30 tonne
6	Excavator	5	1.2 m3
7	Wire Saw Cutter	25	30 HP
8	Tractor	5	35 HP
9	D. G. Set	1	10 KW

2.4.2 Water Requirement

Water requirement for proposed project is 6 KLD. Water demand will be met from Tube well for domestic and drinking purpose. Other will be fulfilled from local supplier.

2.4.3 Man Power Requirement

Man power requirement for mining is estimated to be 83 Nos. Most of the employees will be recruited from neighboring village depending upon the availability of skilled & unskilled people. Migration of highly educated and skilled person will take place but it will be on temporary basis. Proposed workers and staffs details given in Table 4.

Table 5 Details of Man Power

S. No.	Management and Supervisory Personnel	Nos. employed
1	Semi-skilled workers	70
2	Skilled workers	3
3	Excavator Operator	4
4	Supervisor	2
5	1st Class	1
6	Mining Engineer	1
7	Geologist	1
8	Others	1

2.4.4 Power Requirement

Mining activities will be carried out at day time. 10 KW Capacity from Diesel Generator Set will be proposed as per requirement.

3.0 DESCRIPTION OF ENVIRONMENT

Baseline study was conducted in post-monsoon period during 15 March 2022 to 15 Jun 2022. To assess the baseline environmental quality land environment, water environment, ambient air environment, noise quality, ecological status and sociological survey was conducted. NABL accredited laboratory was used for baseline data generation. The study area was divided in two zones, core zone was considered area within mine lease and buffer zone considered area outside 10 km radius from project site. Different environmental attributes were considered for baseline environmental data.

CLIMATE

The climate of the district can be divided into four seasons. Winter season starts from December and goes up to the end of February. From March to June is summer season. Month of May is the hottest month of the year when sometimes mercury touches 46°C. In the middle of June, south-west monsoon enters in the district and it remains till September. October and November are months of north monsoon or retreating monsoon. Winds generally blow slowly, but during midsummer and beginning of monsoon they become faster.

3.1 LAND ENVIRONMENT

3.1.1 Land Use in Core Zone

The mining lease area is 114.009ha which is Government and Private land.

3.1.2 Land Use in Buffer Zone

The study area mainly comprises of agriculture land (62.8892%). About 27.7498% of area is falling under Waste land, Built-up area (2.6597 %), Forest Area (6.1178 %) and Water bodies (0.5834 %) respectively.

3.2 AIR ENVIRONMENT

Ambient air quality of the study area was assessed through a network of 8 ambient air quality monitoring stations to represent whole study area including the ML area with at least one monitoring location in downwind and one in up wind direction.

The parameters monitored were PM_{10}, $PM_{2.5}$, Sulphur Dioxide (SO_2), Nitrogen Oxides (NO_x) and free silica. These parameters were selected based on the guidelines given by the MoEF&CC and the ToR issued by SEAC, Chhattisgarh.

Monitoring results of Ambient Air samples shows that the concentration of PM10 & PM2.5 for all the 8 AAQM station's ranges between 19.28 µg/m3 (Supdhaka) to 27.44 µg/m3 (Mine Site) and 26.42 µg/m3 to 33.58 µg/m3 (Near Khejri) respectively.

Similarly, NO_2 and SO_2 were in the range of 9.62 µg/m^3 (Dumarapat) to 11.58 µg/m^3 (Sirkot) and 9.16 µg/m^3 (Ramnagar and Amtahi) to 9.64 µg/m^3 (Sirkot) respectively; which were far below the promulgated CPCB limit of 80 µg/m^3 for residential and rural areas. And, free Silica was found below deductible limit.

The baseline ambient air quality was found to be within the permissible limits of NAAQS.

3.3 NOISE ENVIRONMENT

Ambient noise levels were measured at 8 locations around the proposed project site. Noise levels varies from 49.6 Leq dB(A) (Ramnagar) to 62.4 Leq dB(A) (Mine site near village Jamirapth) during day time and during night time noise levels ranges from 34.8 Leq dB(A) (Ramnagar) to 56.2 Leq dB(A) (Mine site Near village). Thus noise levels at all locations were observed to be within the prescribed limits.it concluded that noise levels in the study area are well within the prescribed limits as prescribed by the CPCB and State Pollution Control Board.

3.4 WATER ENVIRONMENT

3.4.1 Ground Water

Water quality was measured at 8 locations around the proposed project site. The ground water from all sources remains suitable for drinking purposes as all the constituents are within the limits prescribed by drinking water standards promulgated by Indian Standards IS: 10500. Analysis results of study area of ground water reveal the following: -

- pH varies from 7.32 (Mine Site) to 7.68 (Village Amtahi)
- Total Dissolved Solids varies from 260 mg/l (Mine Site) to 320 mg/l (Village Amtahi)
- Chloride varies from 48 mg/l (Mine site) to 68 mg/l (Ghutradih village).

All parameter values in ground water sources are well and within the permissible limits laid by Ministry of Health, Govt. of India, for portable water.

3.4.2 Surface water

The Surface water sample collected from one Nala and two river i.e. Galphula River South direction and Burha nadi North direction was found potable as per the drinking water standards IS – 10500: 2012. Ranges observed for some of the Surface water quality parameters are given as under:-

- The pH of collected water samples varied from 7.26 to 7.66

- Turbidity is <1.0 NTU at all locations.
- Total dissolved solids varied from 234 mg/l (to 410 mg/l
- Fluoride as F (0.38 mg/l to 0.58 mg/l),

3.5 SOIL ENVIRONMENT

Soil samples were collected at 8 locations around the proposed project site. . The analysis results of soil shows following:

- pH value ranged from 7.26 (at Nala) to 7.66 (**Galphula river south downstream)**
- Total Hardness is range between 126 mg/l (at Nala) to 310 mg/l (**Burha Nadi downstream)**
- Florida range between 0.38 mg/l (at Nala and **Galphula river south downstream) to 0**.58 mg/l (**Burha Nadi downstream)**
- Clorida range between 38 mg/l (at Nala) **to 68** mg/l (**Burha Nadi downstream)**

3.6 BIOLOGICAL ENVIRONMENT

Flora and fauna study was done at core and buffer zone of the study area. This was observed that no scheduled one species was found in buffer zone. There will be negligible effect on surrounding area due to mining activities. Mitigation measure will be adopted as per rules and regulation of concern authority.

3.7 SOCIO-ECONOMIC ENVIRONMENT

In the Buffer zone, total household is **42901**. Total population is **196490**. Out of this, 99392 are males and **97098** are females. A total literate person in the surrounding area is **94267** and total workers population is **97515**.

4.0 ANTICIPATED IMPACT AND MITIGATION MEASURE

4.1 Impact on Air Quality

The key air emissions from the mining activities (drilling, blasting, loading, haulage and transportation) are particulate matter, oxides of nitrogen (NO_2) and sulphur dioxide (SO_2). Gaseous emission will be generated from Mining activities and their transportation vehicles. Use of proper mitigation measures will be taken (like water sprinkling during transport activities) & green area will be developed along the road sides to control pollution.

4.2 Impact of Mining on Ground Water

There will be no outside discharge of liquid effluent from the mine site; therefore no significant impact on surface water bodies is anticipated due to mining operations.

The ultimate depth of the mine workings is estimated to reach up to 12 m from surface level. The highest elevation of the area is 1110 mRL to 1094 mRL. Hence, at any point of time quarry working will not intersect the groundwater table.

4.3 Impact of Noise Levels & Ground Vibration

Major noise generating sources of the mining activity will be drilling and trucks movement used for transportation of Bauxite. The instant noise level from drilling will be high for some instance but it will be within the prescribed limits due to application of improved technology and will be confined to working zones.

The proposed plantation will also check propagation of noise in the surrounding areas.

4.4 Impact on Soil and Land Use Pattern

Topsoil generated from the mine will be stacked separately & will be used for plantation purpose within the lease area. Opencast mining activities may alter the landscape of the lease area and will not have any effect on the surface features of the surrounding areas. At the end of life mine, Total excavated area will be 71.40 Ha area which will be used in backfilling and remains will be converted in to water reservoir and 42.609 Ha area will remains as virgin land within the statutory barriers and greenbelt plantation.

5.0 ENVIRONMENTAL MONITORING PROGRAMME

Table 6 Environmental Monitoring programme

S. No.	DESCRIPTION	FREQUENCY OF MONITORING
1	Ambient Air Quality at project site	Half yearly
2	Water Quality	Half yearly
3	Noise Level Monitoring	Half yearly
4	Soil Quality	Half yearly
5	Health Check-up	As per the guidelines

6.0 ADDITIONAL STUDIES

This is Draft EIA report; public hearing is yet to be conducted. Details of public hearing will be incorporated after conducting public hearing. Risk Assessment & Disaster Management Plan details has been incorporated in Chapter 7 of this Draft EIA/EMP Report.

7.0 PROJECT BENEFITS

The project activity and the management will provide assistance for the development of public amenities in the region.

The mine management will recruit semi-skilled & unskilled eligible workers from the nearby villages. The overall effect will improve the buying power of employees and thus a higher

standard of living viz. better education, improved health and sanitation facilities, housing and acquisition of consumer durables. Housing, transport, medical, educational and other civic amenities will get betterment in the future. This is envisaged as a major positive benefit.

8.0 ENVIRONMENT MANAGEMENT PLAN

8.1 Air Quality Management

- Dust generated due to excavation and vehicular movements will be suppressed by water spraying on haul road.
- To avoid the dust generation from the drilling operations Wet drilling method will be practiced.
- Drill machines will be fitted with dust collectors.
- Dust mask will be provided to the workers.
- Proper maintenance of vehicles & machineries will be done.
- Water sprinkling on the haul road and other road at regular intervals will be done.
- Speed of the vehicles will be kept within the prescribed limits.
- Trucks will not be over loaded.

8.2 Water Quality Management

- No waste water or any effluence as solid or gas there will be generated from mining operation
- Garland drains will be made at the top of the quarry to channelize surface run off into natural drainage pit so that it can be utilized for dust suppression.
- Mining operations will be at higher levels; therefore there will be no effect on ground water condition due to mining.

8.3 Noise Quality Management

- Adequate silencers in all the diesel engines will be used.
- Personal protective equipment will be provided to the workers.
- Proper maintenance of machines at regular intervals will be done.
- Green belt development and plantation.

8.4 Solid Waste Management

- Solid waste will be generated during mining activities and it will be utilized for filling of the mine voids and construction of internal roads.
- This is the Sand Stone mine so the runoff water does not contain harmful effect.
- Precaution will be taken for landslide control. The slope also maintained.
- Re-vegetation program will be followed to the boundary, waste land and roads.

8.5 Greenbelt Development & Plantation Programme

It is proposed to have plantation on both sides of the roads & to provide cover against dust dissemination plantation will also be carried out as social forestry programmed in villages school and the areas allocated by the Panchayat\ State authorities. A suitable combination of trees that can grow fast and also have good leaf cover shall be adopted to develop the greenbelt. It is proposed to native species along with trees, herbs, shrubs & grasses.

8.6 SOCIO-ECONOMIC ENVIRONMENT

Better education facilities, proper health care, road infrastructure and drinking water facilities are basic social amenities for better living standard of any human being. This Sandstone mining project will initiate the above amenities either by providing or by improving the facilities in the area, which will help in uplifting the living standards of local communities**.**

9.0 CONCLUSION

As discussed, it is safe to say that the project is not likely to cause any significant impact on the ecology of the area, as adequate preventive measures will be adopted to contain the various pollutants within permissible limits. Green belt development around the area will also be taken up as an effective pollution mitigative technique, as well as to control the pollutants released from the premises of Sandstone mining project.

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