

**Executive Summary**  
**of**  
**Environmental Impact Assessment**  
*For*  
**Proposed Zendevar Iron Ore Mining Project having**  
**Mine Lease Area of 12.0 Ha.**  
**by**  
**M/s. Anoj Kumar Agarwala**  
*at*  
**Khasra No.: 82 Part (82/4) of Zendevar Village, Tahsil:**  
**Korchi, Dist.: Gadchiroli, Maharashtra**



**Project Proponent:**  
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**Consultant**



**Sri Sai Manasa Nature Tech Private**  
**Limited**

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## Executive Summary

### 1.0 Introduction:

**M/s. Anoj Kumar Agarwala** has been granted mine lease for Iron Ore over an extent of 12.00 hectares at Khasra No.: 82 Part (82/4) of Zendepar Village, Tahsil: Korchi, Dist.: Gadchiroli, Maharashtra State for a period of 30 years by Section Officer, Govt. of Industries, Energy and Labor Department, Govt. of Maharashtra vide ref. no.: MMN-1004/CR-684/IND-9 Dated: 10/03/2005. Accordingly, again we have applied for renewal of mine lease agreement to the concerned authority and Form K was signed in between Mine Lease Holder and The District Mining Officer on Dated: 11/07/2017. Mine Lease renewed for period of 11/01/2017 to 10/01/2047 for the period of 30 years. (As per new Amendment of "Law of the Land" is consider up to 10/01/2067 (50 Years) & the procedure for the extension of Lease period is in process.)

### 1.1 Statutory Clearances:

Proposed Zendepar Iron Ore Mine by Anoj Kumar Agarwala at Khasra No. 82 Part (82/4), Village Zendepar, Tahsil: Korchi, District: Gadchiroli, Maharashtra having mine lease area of 12.0 Ha. Proposed project site was granted mine lease to M/s. Anoj Kumar Agarwala by Section Officer, Govt. of Industries, Energy & Labor Dept., Mumbai vide Ref. No.: MMN-1004/CR-684/IND-9, Dated: 10/03/2005 for the period of 30-year subject to compliance of provisions of MM (D & R) Act, 1957, MCR – 1960 and MCDR -1988. Accordingly, after executing mine lease agreement with The District Mining Officer, Collector Office, Gadchiroli as per the applicable procedure, we have applied given the mining plan work to RQP for preparation of mining plan and its further needful approval. RQP prepared the mining plan of the proposed project and submitted to The Regional Controller of Mines, Indian Bureau of Mines, Nagpur. Submitted mining plan was approved by The Regional Controller of Mines, Indian Bureau of Mines, Nagpur vide ref. no.: GAD/FE/MPLN-902/NGP Dated: 30/12/2005. Demarcation of the mine lease area was carried out by Dy. S. L. R., Korchi by the order of The District Collector, Gadchiroli, Maharashtra in the year 2007. Accordingly, project proponent hired Environment Consultant for obtaining “Environmental Clearance” for the proposed project in the year 2010. Environment Consultant prepared the application and submitted to State Expert Appraisal Committee (SEAC), Maharashtra. Project was considered in the 40th SEAC meeting held on Dated: 15/02/2011 and issued Terms of Reference as per Item No. 12c. Baseline monitoring was carried out by the Environment Consultant for the Period: March to May 2011 (Summer Season). It was told to us to obtain Forest No Objection Certificate for further proceeding of the project for submission of Draft EIA report. We then

approached to Revenue Department, Collector Office, Gadchiroli for want of Forest NOC and further needful confirmation from their side to the Forest Department. Accordingly, Chief Conservator of Forest, (Head Forest Force), Government of Maharashtra, Nagpur issued Forest NOC to The Collector, Gadchiroli, Maharashtra vide ref. no.: Kaksha-17/RS/3321 Dated: 22/02/2012 confirming that there is no any forest land involved in the proposed project site. Then we also follow up with forest department for obtaining Forest NOC in the name of mine lease holder. Accordingly, Deputy Conservator of Forest, Wadsa Forest Department, Wadsa Forest Office, Wadsa issued Forest “No Objection Certificate” (NOC) vide ref. no.: Kaksha-4/Survey/Land/561, Wadsa Dated: 05/06/2014. Preparation and submission of Draft Environment Report was got delayed for the want of Forest NOC. Till the time validity of TOR was expired and again we have applied for extension of the TOR validity to the SEAC committee, Maharashtra. Proposal for extension of TOR validity was considered by the SEAC Committee and it was taken in the 128th Meeting held on Dated: 02/06/2016. SEAC committee considered our request for extension of TOR validity and extended it for the period of one year. Environment Consultant prepared the Draft EIA report and submitted to The Regional Officer, MPCB, Chandrapur for conducting Public Hearing. Accordingly, MPCB, Chandrapur published the paper advertisement in both Languages i.e.; Marathi & English on Dated: 30/06/2017. Public Hearing was organized by the MPCB at Conference Hall, District Collector Office, Gadchiroli on Dated: 03/08/2017. Peoples have attended the Public Hearing and demanded to cancel the arranged Public Hearing at Gadchiroli and requested the authority to reconduct at Tahsil Place Kochi, Gadchiroli District. Due to the huge demand of the public attended over there, The Additional District Magistrate, Collector Office, Gadchiroli postponed the public hearing on that date. As the validity of TOR extended for one year only and it was expired up to the period.

Due to non-commencement of mining activity as per the provisions of the mine lease agreement within the stipulated period for want of obtaining statutory clearances, notice was issued for cancellation of mine lease from the Director, Directorate of Geology & Mining, Govt. of Maharashtra, Nagpur. Accordingly, again we have applied for renewal of mine lease agreement to the concerned authority and Form K was signed in between Mine Lease Holder and The District Mining Officer on Dated: 11/07/2017. Mine Lease renewed for period of 11/01/2017 to 10/01/2047 for the period of 30 years.

Now, after renewal of mine lease agreement again we have started the process for obtaining applicable statutory clearances like Approved Mining Plan, Environmental Clearance, and Consent

to Operate. Due to pandemic of COVID19 in the year 2020 and 2021, requisite work got delayed. We have given the work of preparation of mining plan to Registered Qualified Person (RQP). Accordingly, RQP prepared mining plan and submitted to The Regional Controller of Mines, Indian Bureau of Mines, Nagpur. Mining plan was approved by The Regional Controller of Mines, Indian Bureau of Mines, Nagpur vide ref. no.: GAD/FE/MPLN-902/NGP Dated: 03/06/2021. As the mine lease area is having 12.00 Ha. & it is surrounded by other 4 Iron Ore mine leases in the same khasra no., it forms cluster with other four mine leases. Total cluster formation area of all 5 Iron Ore mine leases is 46.37 Ha. and accordingly, letter submitted to The District Mining Officer, Collector Office, Gadchiroli for obtaining "Cluster Certificate". Cluster certificate was issued by The District Mining Officer, Collector Office, Gadchiroli vide ref. no.: Desk-II/Sr. Cl. Mining/Anoj Kumar Agarwala/300/2021 Dated: 27/10/2021. As the cluster formation mine lease area is more than 25 Ha. & as per the published EIA Notification, 2006 & its subsequent amendment, the proposed project falls in Category B1 of Mining of Minerals 1(a). As per the B1 Category of the proposed project, it needs Terms of Reference (TOR), Draft EIA report submission to MPCB for public hearing and after completion of public hearing Final EIA report submission to SEAC-1 & SEIAA for obtaining "Environmental Clearance". Now, after obtaining approved mining plan for the proposed project for the period: 2021 to 2026, we have applied for obtaining Terms of Reference (TOR) as per the EIA Notification, 2006 and its subsequent amendment time to time. After obtaining TOR for the proposed project, we have carried out Baseline Monitoring for preparation of Draft Environmental Impact Assessment Report. After preparation of draft EIA report, we will submit it to Regional Office, MPCB, Chandrapur for public hearing. After completion of the public hearing, we will prepare Final EIA report and will submit it to the SEAC-1/SEIAA for obtaining Environmental Clearance for the proposed project.

Proposed project had already obtained "Consent to Establishment" (CTE) for the proposed project activity of Mining of Iron Ore from "Zendepar Iron Ore Mine" by M/s. A K Agarwala vide Consent No.: BO/Chandrapur/301-2005/E/CC-337 Dated: 12/09/2005. Now, project proponent will obtain "Consent to Operate" (CTO) after obtaining of "Environmental Clearance" (EC).

## **1.2 Terms of Reference:**

Project proponent applied for obtaining Terms of Reference (TOR) by submitting required documents like approved mining plan, Form 1 & Pre-Feasibility Report to SEIAA, MoEF&CC, Maharashtra as per EIA Notification, 2006 and its subsequent amendment. Project was uploaded on Parivesh portal vide Proposal No.: SIA/MH/MIN/68134/2021 Dated: 04/10/2021. It was

considered by SEAC-1 in their 209<sup>th</sup> meeting held on Dated: 10<sup>th</sup> to 12<sup>th</sup> November 2021 and recommended for issuing of TOR to SEIAA, Maharashtra.

SEIAA, MoEF&CC, Maharashtra considered the project in their 234<sup>th</sup> Meeting (Day 3) held on Dated: 17<sup>th</sup> December 2021 and asked to submit clarifications for regarding time lag from first mining lease approval to submission of current application for TOR & also asked to submit details of existing trees on proposed mining site and details of trees to be cut, if any along with its age. Accordingly, we have submitted compliance to 234<sup>th</sup> MOM of SEIAA, MoEF&CC, Maharashtra for grant of TOR to the proposed Iron Ore mining project. SEIAA, MoEF&CC, Maharashtra considered the project in their 248<sup>th</sup> Part-C meeting held on Dated: 18<sup>th</sup> August 2022 and asked to process NOC for tree cutting and also details of tree inventory with cumulative age of trees to be cut. Accordingly, we have submitted compliance to 248<sup>th</sup> MOM of SEIAA, MoEF&CC, Maharashtra for grant of TOR to the proposed Iron Ore mining project.

SEIAA, MoEF&CC, Maharashtra considered the project in their 256<sup>th</sup> Part-E meeting held on Dated: 25<sup>th</sup> January 2023 and grant a “Terms of Reference” (TOR) to the proposed Iron Ore mining project. “Terms of Reference” (TOR) grant to the proposed Iron Ore mining project vide ref. no.: SIA/MH/MIN/68134/2021 Dated: 22/02/2023.

Based on the documents submitted and presentations made, the committee prescribed the Terms of Reference (TOR) for preparing EIA/EMP report, by considering the project under the category ‘B1’ 1 (a) Mining of Minerals of the Schedule of EIA Notification 2006.

### **1.3 Project Proponent:**

M/s. Anoj Kumar Agarwala is a partnership firm whose partner is Mr. Anoj Kumar Agarwala. Company is in the business of Mining and Infrastructure Development. The Mining lease for Iron Ore has been granted to M/s. Anoj Kumar Agarwala, Nagpur (M.S.) over an area 12.00 Ha. at Zendepar Village in Korchi Tehsil of Gadchiroli District for the period of 30 years. The above said lease has been executed on 11/01/2017. Iron Ore is use in Steel Industry, Ferro-Alloys industries as main source of raw material, good quality of Iron Ore for steel making grade is available in and around Gadchiroli district of Maharashtra.

#### **M/s. Anoj Kumar Agarwala**

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Site Address:

Khasra No.: 82 Part (82/4), Village: Zendevar,

Tahsil: Korchi, Dist.: Gadchiroli, Maharashtra.

#### 1.4 Brief Description of Nature, Size & Location of the Project:

The proposed project is located in Zendevar Village, Tahsil: Korchi, Dist.: Gadchiroli, Maharashtra over an area of 12.00 Ha. The mining lease area falls in Survey of India Topo Sheet No. 64D5. The environmental settings of the 10 km study area are given in **Table 1**.

**Table 1: Environmental Settings of the Study Area**

S. N.	Particulars	Details																											
A.	Nature of the project	Iron Ore																											
B.	Size of the project																												
1.	Mining Lease area	12.00 Ha.																											
2.	Proposed Production capacity	Iron Ore: 70929.60 TPA (Maximum Production in five years); Float ore: 1038.24 TPA (Maximum Production in five years);																											
C.	Project location																												
1.	Village	Zendevar																											
2.	Tahsil	Korchi																											
3.	District	Gadchiroli																											
4.	State	Maharashtra																											
5.	Khasra Nos.	82 Part (82/4)																											
6.	Land	Non-forest, Govt. Revenue Land																											
7.	Toposheet No. Latitude & Longitude	64D5, 64D6, 64D9, 64D10. <table border="1"> <thead> <tr> <th>Boundary Pillars</th><th>Latitude</th><th>Longitude</th></tr> </thead> <tbody> <tr> <td>BP-1</td><td>20°46'21.578"</td><td>80°28'45.231"</td></tr> <tr> <td>BP-2</td><td>20°46'21.190"</td><td>80°28'49.290"</td></tr> <tr> <td>BP-3</td><td>20°46'20.449"</td><td>80°28'53.729"</td></tr> <tr> <td>BP-4</td><td>20°46'17.718"</td><td>80°28'58.690"</td></tr> <tr> <td>BP-5</td><td>20°46'17.965"</td><td>80°28'02.315"</td></tr> <tr> <td>BP-6</td><td>20°46'08.481"</td><td>80°28'01.597"</td></tr> <tr> <td>BP-7</td><td>20°46'08.694"</td><td>80°28'51.938"</td></tr> <tr> <td>BP-8</td><td>20°46'13.533"</td><td>80°28'50.721"</td></tr> </tbody> </table>	Boundary Pillars	Latitude	Longitude	BP-1	20°46'21.578"	80°28'45.231"	BP-2	20°46'21.190"	80°28'49.290"	BP-3	20°46'20.449"	80°28'53.729"	BP-4	20°46'17.718"	80°28'58.690"	BP-5	20°46'17.965"	80°28'02.315"	BP-6	20°46'08.481"	80°28'01.597"	BP-7	20°46'08.694"	80°28'51.938"	BP-8	20°46'13.533"	80°28'50.721"
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		BP-9	20°46'18.551"	80°28'47.742"
<b>D.</b>	<b>Environmental Settings Details (With approx. aerial distance and direction from the mining lease boundary)</b>			
1.	Nearest Village	Zendevar village – 3.0 km (SE)		
2.	Nearest Town, city, district Headquarters	Nearest Tahsil Place – Korchi – 6.0 km - SW Nearest Town – Korchi – 6.0 km -SW Nearest District HQ – Gadchiroli – 45 km - SW		
3.	Nearest National Highway  Nearest Motorable Road	NH 543 – Shahdol to Bramhapuri passes from Korchi – 3.5 km (W) from the proposed site. Shahdol-Mandla-Balaghat-Gondia-Deori-Korchi-Bramhapuri Nandali to Sohale – 1.5 km - E		
4.	Nearest Railway station, Airport & Sea port	Barabhati Railway Station – 45.0 Km, NW Dr. Babasaheb Ambedkar International Airport, Nagpur – 153.20 km, NW Visakhapatnam Sea Port – 450 km, SE		
5.	Interstate boundary	Nil within 5 km. Chhattisgarh state border is at 7.0 km on East direction.		
6.	Archeological Place	None within 10km from the mine site		
7.	National Park, Wild Life Sanctuary, Wildlife Corridors, Biosphere Reserves, Migratory routes for Birds. Protected Forest etc. within 10 Km radius study area	No National Park, Wild Life Sanctuary, Wildlife Corridors, Biosphere Reserves, Migratory routes for Birds falls in study area. Reserved Forest – Malewada RF – 16.5 km (W)		
8.	Reserve Forest and Protected Forest within 10 Km radius	None		
9.	Water bodies within 10 km radius	Unidentified Small Ponds/ Talav within 10 Km		
10.	List of Industries in 10 km Study Area	Anuj Mines Minerals & Chemicals Pvt. Ltd. – Adjacent to project site Manoj Kumar Ajitsaria – Adjacent to project site N. C. Jain – Adjacent to project site R. M. Rajurkar - Adjacent to project site		
11.	Seismic Zone	Seismically this area is categorized under Zone II,		

		which is moderate zone.
<b>E.</b>	<b>Employment Generation</b>	
1.	No. of Manpower	149 Nos.
<b>F.</b>	<b>Cost Details</b>	
1.	Total Project Cost	Rs. 10 Crore
2.	Cost for Environmental Management Plan	Capital Cost = Rs. 37 Lakhs Recurring Cost = Rs. 9.34 Lakhs Total Cost = Rs. 46.34 Lakhs
3.	CER Cost	Rs. 20 Lakhs

Map showing general and specific location of proposed mine site, 10 km topo map study area and Google imagery of the proposed project site are given in **Figure 1, Figure 2 and Figure 3.**

Executive Summary of Proposed Zendepar Iron Ore Mine by M/s. Anoj Kumar Agarwala having mine lease area of 12.00 Ha. at Khasra No.82 Part (82/4) of Village: Zendepar, Tahsil: Korchi, Dist.: Gadchiroli, Maharashtra

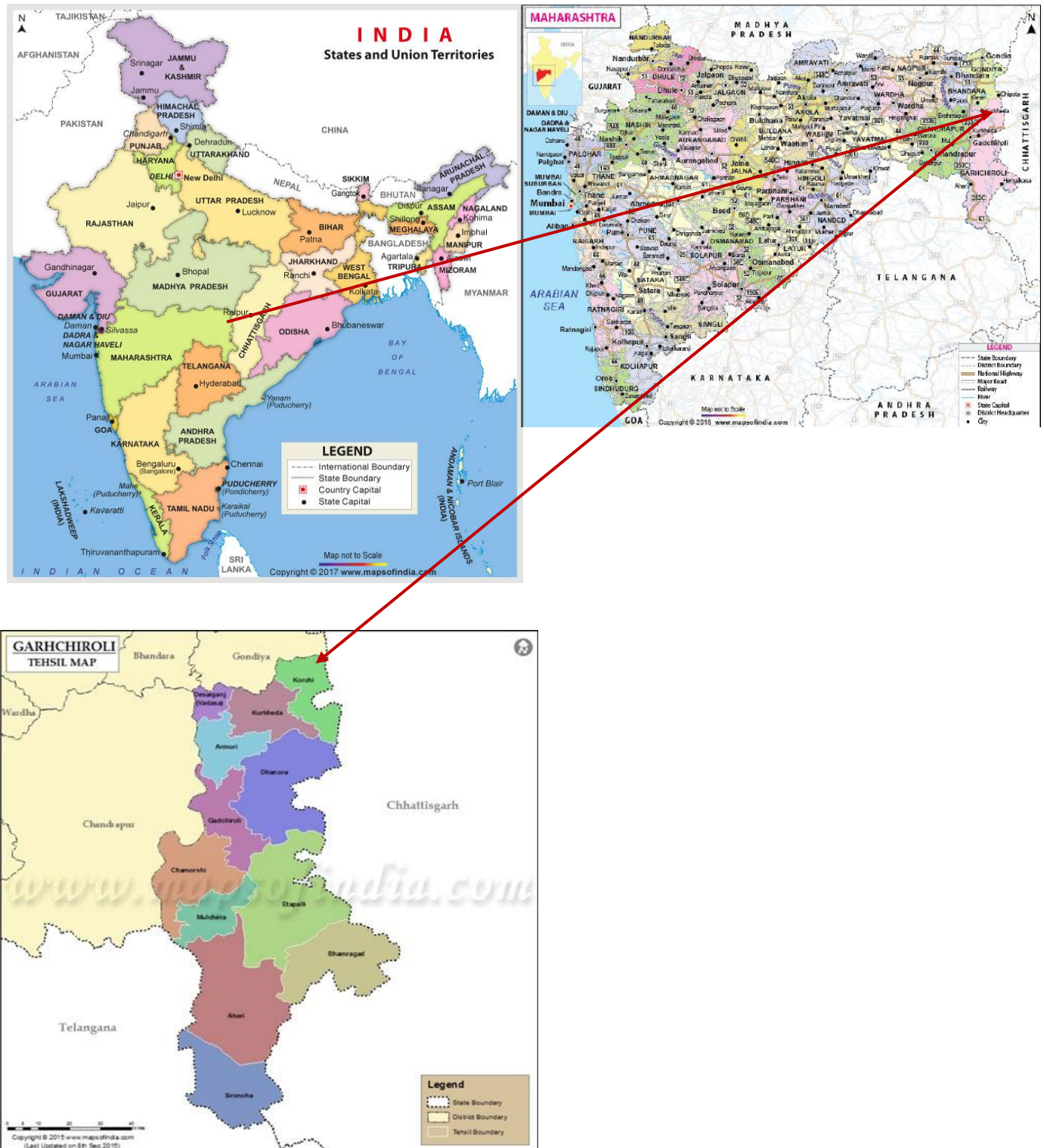


Fig. 1: Location Map of the Project Site



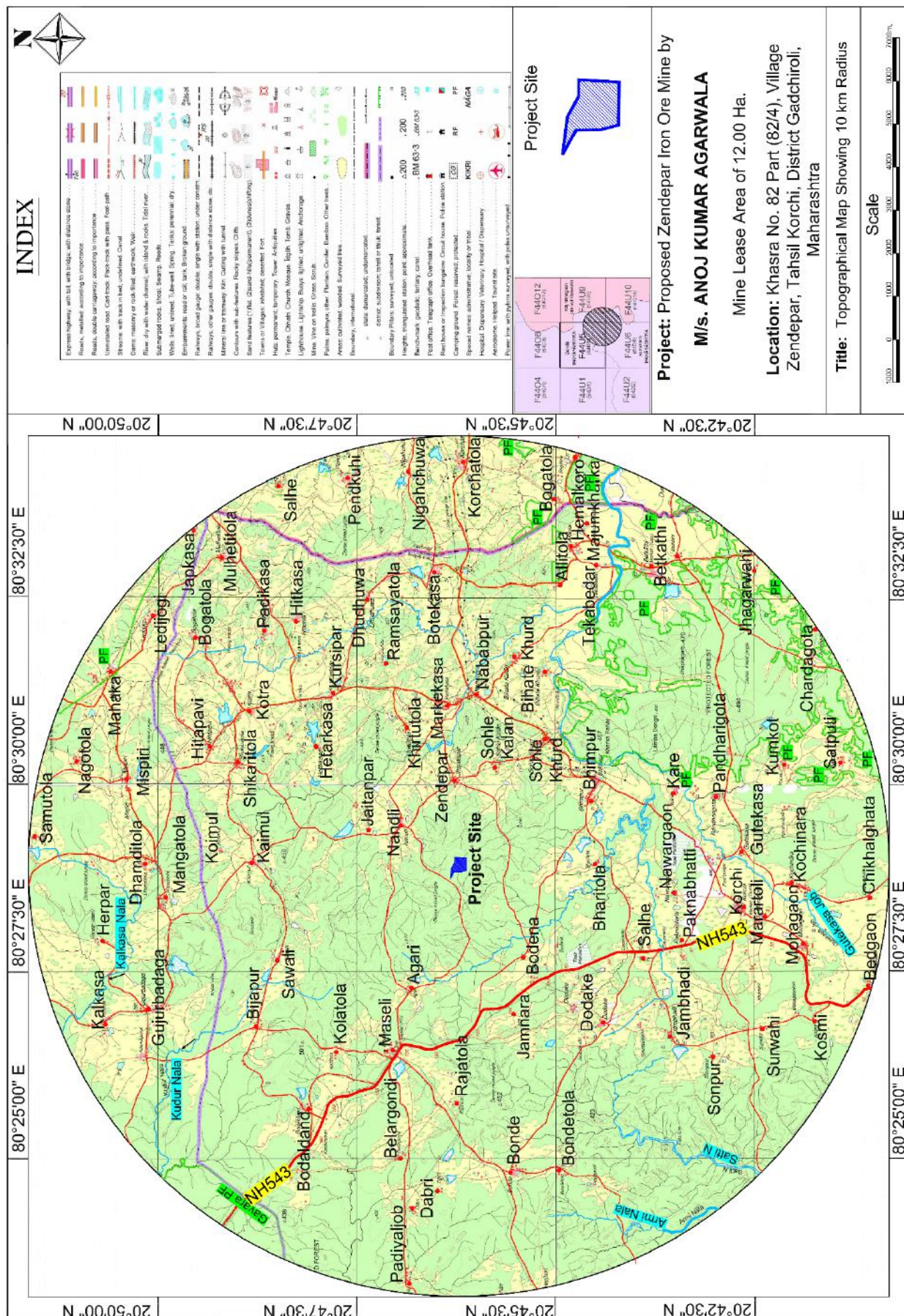


Fig. 2: 10 KM Study Area Map of the Project Site





**Fig. 3: Google Image of the Project Site**

## **1.5 Project Description:**

### **1.5.1 Type of Project Including Interlinked and Interdependent Projects, If Any:**

The project is of open cast Iron ore mine. The proposed Iron Ore mine 12.00 ha will be developed as open cast semi-mechanized mining with bench pattern for the production of Iron ore 70929.60 TPA and Float ore 1038.24 TPA (both Maximum Production in five years). Iron ore is use in Steel Industry, Ferro-Alloys Industries as main source of raw material, good quality of iron ore of Steel making grade is available in and around Gadchiroli district of Maharashtra State. No interlinked projects were associated with this project.

### **1.5.2 Details of Alternate Sites:**

It is a cluster project. Nearby mines are available. No alternate site was considered as the project is mineral specific and site specific.

### **1.5.3 Size or Magnitude of Operation:**

The mine lease area is of 12.00 Ha. and production of Iron Ore Mine is 70,929.60 TPA and Float ore is 1038.24 TPA (both Maximum Production in five years). The mine lease follows open cast semi-mechanized method of mining.

### **1.5.4 Topography:**

Topography of the Lease area & its surrounding Leases are of undulating nature and controlled by Highly Compact Hard Quartzite, Banded Hematite Quartzite and Steep dip. The area is drain by seasonal local drainage streams in all Corners of Lease. The lease hold area lies in the “Zendepar Iron Ore Mine”. Maximum elevation in the Lease area is 505 MRL & minimum is 460 MRL on the South & West direction.

### **1.5.5 Regional Geology:**

The area forms a part of the region covered predominately by the granite gneisses with its variants, basic rocks and some meta-sediments comprising with various types quartzite including banded hematite quartzite and schist with inter-stratified Amphibolite's layers all belonging to Achaean Precambrian age. The meta-sediments appear to have been folded into series of close parallel anticlines a syncline with generally low plunge. Major part of the Iron Ore area is covered with scree, talus, Soil & Laterite and has few good rocks exposure accepts in the trenches and near about. The rocks of the area comprise of Banded Hematite Quartzite (BHQ associated with thick Iron Ore/ Hematite band, platy quartzite & Massive grey quartzite, pegmatite a quartz veins of Precambrian age. In all possibility, granite gneiss appears to be present on the eastern and western flanks of the ridge.

#### **1.5.6 Local Geology:**

The entire area is "Government Revenue land". The Lease area shows two hillocks along with the highest contour is 505 MRL & the Lowest Contour 460 MRL & Slope shown all corners of the Lease area in North-East, North-West corner.

The main Geological formation found in this area are the oldest metamorphic i.e., granite gneisses & Dharwas i.e.; Banded Hematite Quartzite. The proposed area comprises a hillock with lateritic capping with Banded Hematite Quartzite body exposed at places. The local geological litho units observed in the lease area are Soil, Banded Hematite Quartzite (BHQ) & associated with Hematite Iron Ore rich band.

#### **Formations are given below:**

**Lateritic soil:** The major part of the area on the surface is covered with Laterite. Lateritic soil and Limonite. Laterite which is showing varying thickness of 1.5 m to 3.0 m.

**Hematite Iron Ore rich band:** The Ore body is covered with Laterite. The ore body is covered with the general strike of the Ore body is North-East & South —West and dip varying from 65° to 70° towards West. The trend of the Ore bodies appears to North-South.

**Rocks like Quartzite, Banded Hematite Quartzite:** The Banded Hematite Quartzite is mainly Laterite & Massive. The Outcrop of Banded Hematite Quartzite is weathered and fractured.

**Float Ore:** Float ore is also seen in the area with Laterite Soil. There is float Ore zone on ground & is evident of about 1.5 M thicknesses.

#### **1.5.7 Reserves:**

Parameters for resource estimation as per approved Mining Plan:

- Method of mineral resource- "By Surface Area Method".
- The depth considered for estimation of Reserves is 10.00 from the surface,
- Estimated Bulk density in 3.5 T/ m<sup>3</sup>.
- Maximum depth: Consider 6.00 m under 111,
- 6.00 M to 8.00 M under 121 &
- 8.00 M to 10.00 M under 122.
- Category: 'A'
- Area: 12.00 hectare
- Iron Ore existing at the top of the Hilly terrain sloping downward
- Waste Rock: Approx. 1.5 to 3 M Lateritic soil followed by Iron Ore.



- Surface MRL: Iron Ore existing at the top of the Hilly terrain sloping downward. Due to this reason not considered any one particular surface RL.
- Recovery: 90% for Iron ore
- Mining Losses: 10%.

Geological reserves as per UNFC classification are given in below **Table 2**.

**Table 2: Geological Reserves as per UNFC Classification**

Estimated Mineral Reserve/Resources in Different Categories of UNFC as reported are given below:						
A. Total Mineral Reserve	UNFC Code	Quantity in tons Reserves				
		Ore Body I	Ore Body II	Ore Body III	Float Ore	Total Tons
Proved Mineral Reserves	111	222600.00	63000.00	25200.00	37,800.00	348600.00
Probable mineral Reserves	121	74200.00	21000.00	8400.00	0.00	103600.00
Possible Mineral Resource	122	74200.00	21000.00	8400.00	0.00	103600.00
		371,000.00	105000.00	42000.0	37,800.00	558000.00
B. Total Remaining Resources						
Feasibility Mineral Resource	211	0.00	0.00	0.00	0.00	0.00
Prefeasibility mineral resource	222	0.00	0.00	0.00	0.00	0.00
Measured mineral resource	331	0.00	0.00	0.00	0.00	0.00
Indicated mineral resource	332	0.00	0.00	0.00	0.00	0.00
Inferred mineral resource	333	0.00	0.00	0.00	0.00	0.00
Reconnaissance mineral resource	334	0.00	0.00	0.00	0.00	0.00
Total "B"		0.00	0.00	0.00	0.00	0.00

<b>Total Reserves+ Resources (A+B)</b>		<b>371000.00</b>	<b>105000.00</b>	<b>42000.00</b>	<b>37,800.00</b>	<b>558000.00</b>
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(Source: Approved Mining plan)

## **1.6 Method of Mining:**

### **1.6.1 Salient description of the Mining Method:**

At the beginning of mining operations topography of the Lease area & its surrounding Leases are of undulating nature and controlled by Highly compact hard Quartzite, Banded Hematite Quartzite and steep dip. The area is drain by Seasonal Local drainage streams in all Corners of Lease. The lease hold area lies in the “Zendevar Iron Ore Mine” Maximum elevation in the Lease area is 505 MRL & minimum is 460 MRL on the South & West direction. The area in scheme of mining for the period of Year 2021 to 2026, it is stated that the mining operations would be done by Category A – semi-mechanized. The mining operations will be carried out in between the periods of 2020-21 to 2025-2026 after obtaining of environmental clearance.

### **1.6.2 Proposed Method of Mining:**

In view of the ore geometry including strike, dip, depth from the surface etc. it is proposed to go for open cast method of mining & mining operation start after getting EC, CTO & CTE. Open Cast Method of Mining -The following main activities are involved;

- Deep holes drilling and blasting for breaking ground.
- Removal of over burden from the mine to waste dumping yards with the use of Heavy Earth Moving Machineries (HRMMs)
- Mining out ore in the course of OB development.
- Processing of ROM.
- Dewatering of pits. Dust suppression.
- Routine and preventive maintenance of HEMMs
- Soil dump management
- Other activities.

In view of the average grade of 53% to 63% Fe content stripping ratio of 1:10 is considered i.e.; for every 1 (One) ton of “ROM” 10 (Ten) m<sup>3</sup> of waste Rock will be removed. The density of “ROM” is considered as 3.5 T/ m<sup>3</sup>.

### 1.7 Mining Program for next Five Years:

In- situ tentative excavation of Iron Ore and Float Ore indicates year-wise tentative excavation in cubic meters indicating development, ROM, pit wise as in below **Table 3 & 4.**

**Table 3: In- situ Tentative Excavation of Iron Ore**

S. N.	Year	Total Tentative Excavation (m <sup>3</sup> )	Soil m <sup>3</sup>	O/B m <sup>3</sup>	ROM m <sup>3</sup>		BD kg/T	Ore in Tons
					Ore m <sup>3</sup>	ML m <sup>3</sup>		
1	2021-22	38966.12	3215.60	11600.88	19335.60	1933.56	3.5	67674.60
2	2022-23	37676.32	3224.80	12158.88	20265.60	2026.56	3.5	70929.60
3	2023-24	36686.24	3216.80	11623.20	19372.80	1937.28	3.5	67804.80
4	2024-25	36764.60	3280.40	11923.44	19873.20	1987.32	3.5	69556.20
5	2025-26	37315.40	3296.00	12052.32	20086.80	2008.68	3.5	70303.80
<b>Total</b>		<b>187408.68</b>	<b>16233.60</b>	<b>59358.72</b>	<b>98934.00</b>	<b>9893.40</b>		<b>346269.00</b>
<b>Avg. Prod. per year</b>					<b>19786.80</b>			<b>69,253.80</b>
Steeping ratio		1:1.10						
M.L 10%		Mining Loss						

(Source: Approved Mining plan)

**Table 4: In- situ Tentative Excavation of Float Ore**

S. N.	Years	Soil/Top Soil m <sup>3</sup>	Area Con. 40% for Float Ore	Thick of Float Ore 1.5 M	Recovery of Float Ore 15%	B.D kg/T	Total Ton
1	2021-22	3215.60	1286.24	1929.36	289.40	3.5	1012.91
2	2022-23	3224.80	1289.92	1934.88	290.23	3.5	1015.81
3	2023-24	3216.80	1286.72	1930.08	289.51	3.5	1013.29
4	2024-25	3280.40	1312.16	1968.24	295.24	3.5	1033.33
5	2025-26	3296.00	1318.40	1977.60	296.64	3.5	1038.24
	<b>Total</b>	<b>16233.60</b>	<b>6493.44</b>	<b>9740.16</b>	<b>1461.02</b>		<b>5113.58</b>

(Source: Approved Mining plan)

**1.8 Raw Material Required Along with Estimated Quantity, Likely Source, Marketing Area of Final Product/S, Mode of Transport of Raw Material and Finished Product:**

No raw material will be required in the proposed project. The operation involves the extraction of iron ore and it will be transported to the Local market through tippers. New approach road will be developed for transportation.

**1.9 Use of Mineral:**

The Iron Ore will be mined out during the mining operation & consumed by the various steel industries in the surroundings. The firm does not have any captive unit.

**1.10 Availability of Water, Energy/ Power Requirement and its Sources:**

**1.10.1 Water Requirement:**

Water required for the proposed mining project will be sourced from water tankers from the nearby villages. The total water requirement will be around 21 KLD. Water requirement details are given in below **Table 5**.

**Table 5: Water Requirement Details**

S. N.	Details of Usage	Quantity (KLD)
1	Dust Suppression	4.5
2	Domestic Usage	6.71
3	Green Belt Development	9.6
	<b>Total Requirement</b>	<b>20.81</b>
	<b>Total Requirement (Rounded Off)</b>	<b>21</b>

**1.10.2 Power:**

Proposed project site location is undulating and remote from the nearby villages & obtaining electricity supply is difficult and is become costly affair. As the proposed project is only for mining activity which includes excavation of iron ore from the mine & no further process is required on it for selling in the market, requirement of electricity supply is not essential and it can be met from DG set. DG set power can be used for lighting purpose in addition to proposed solar lights.

- Estimated Power: 10 KVA
- Source: 1 X 10 KVA DG Set
- DG set is proposed.

### **1.11 Quantity of wastes to be generated (liquid and solid) and scheme for their management/disposal:**

#### **1.11.1 Solid Waste Generation & its Disposal:**

Laterite Soil: The major part of the area on the surface is covered with Laterite, Lateritic Soil & Limonite. At place outcrop of Iron Ore is exposed on surface. The Ore body is covered with Laterite which is showing varying thickness of 1.5 m to 3.0 m. and as such will be stored in 'Dumps'. The Laterite Soil is used for Road construction within Mining lease area.

O.B: The area is having undulating topography and Iron is mostly outcropping. The Waste rock/Side burden will consist of mainly Banded Hematite Quartzite.

Dumps: The waste will be collected/ stacked in the main dump only. The waste material is proposed to dump along the boundaries. No surface water bodies in the lease area and the adjoining area. The drainage of the area will not be disturbed to cause any adverse impact on water regime either surface or groundwater & for seasonal rain fall a garland & retaining wall terrace will be provided at an interval of 6.0 m.

Prior to the disposal of waste, dumping site will be prepared as per the following manner: Dumping site will be surveyed and earmarked as per the proposal. Roads will be developed from Quarry to the dumping site at suitable gradient of 1:16. Shrubs and bushes wherever found will be cut and removed. Soil if any shall be scrapped off and disposed over the existing dumps. Grass will be sown over the waste dump to control erosion and dust generation.

Protective measures for O.B /Soil Dumps & ROM Yard: by using Garland drainage & retaining wall.

#### **1.11.2 Liquid Effluent:**

No liquid effluent will be generated in proposed mining project except domestic waste. Domestic wastewater from the mine will be treated in septic tank followed by soak pit.

### **1.12 Site Analysis:**

#### **1.12.1 Accessibility:**

The site for the proposed mine is located at Sy. No. Part of 82 (82/4) near Zendevar village in Korchi tehsil of Gadchiroli district in the state of Maharashtra. Proposed project site is at a distance of 3.5 km (W) from NH 543 – Shahdol to Bramhapuri passes from Korchi. NH 543 is starts at Shahdol (Madhya Pradesh) and ends at Bramhapuri (Maharashtra) and it passes through Shahdol-Mandla-Balaghat-Gondia-Deori-Korchi-Bramhapuri. Project site is approachable from Nandali to Sohale village road at a distance of 1.5 km (E). Proposed project site is at a distance of 45 km from District Headquarter, Gadchiroli. Barabhati railway station is the nearest railhead at a

distance of 45 km (NW) from the proposed project site. Barabhati railway station is on the Gondia to Balharshah railway line which is connecting Chhattisgarh to south part of the India. Dr. Babasaheb Ambedkar International Airport, Nagpur is the nearest airport at a distance of 153.0 km (NW) from the proposed project site. Visakhapatnam Sea Port is the nearest sea port at a distance of 450 km (SE) from the proposed project site.

### **1.13 Planning Brief:**

#### **1.13.1 Land Use Planning:**

The project is located in 12.00 Ha. of Govt. non forests revenue land. Land use indicating the area likely to be degraded due to quarrying, dumping, roads, workshops, processing, plant tailing ponds/dam etc. There will be change in land use as the Iron ore will be excavated from the mine lease area.

#### **1.13.2 Assessment of Infrastructure Demand (Physical & Social):**

On the basis of the preliminary site visit, the infrastructure demand in the villages was assessed on the basis of need and priority.

#### **1.13.3 Amenities/Facilities:**

First aid box and drinking water facility will be made available at the project site. Rest shelter will be provided at the project site. Mines office and other statutory constructions like rest shelter, first aid, work shed and drinking water as required in the mine lease area will be provided. Drinking water will be supplied to the workers by the water tankers from the surrounding villages.

### **1.14 Proposed Infrastructure & Environment Management Plan:**

#### **1.14.1 Residential Area (Non-Processing Area):**

As the local persons of surrounding villages will be given employment, no residential area/ housing is proposed within the mining lease area.

#### **1.14.2 Water Management:**

The total water requirement is 21 KLD. There are no chances for changes in quality of surface water or ground water. The mining operations will be carried out on slopes of the rocky terrain. Hence, neither the ground water table nor the general surface drainage pattern will be affected. No water will be discharged from the mine.

Following measures shall be taken:

- PP will ensure that good quality potable water is provided for drinking purposes. Good sanitation facilities (toilets with septic tank followed by soak pits) will be provided and maintained for good hygienic conditions.

- The spillages from fueling of machinery shall be avoided and in case of any spillage the same shall be handled properly. Likewise, the spent lubricating oils etc., shall be safely collected and properly disposed off.

#### **1.15 Sewerage System:**

Domestic waste will be disposed in to septic tank followed by soak pit.

#### **1.16 Solid Waste Management:**

No waste generation is envisaged from the mine.

#### **1.17 Baseline Environmental Studies:**

Baseline environmental studies were conducted in the area within 10 km radius of the proposed project site to assess the existing environmental scenario in the area. Baseline environmental studies were carried out in the months October to December 2022 i.e.; post monsoon season. The baseline environmental quality data for various components of environment, viz. Air, Noise, Water, Land were monitored during October to December 2022 in the study area covering 10 km radius around the project site.

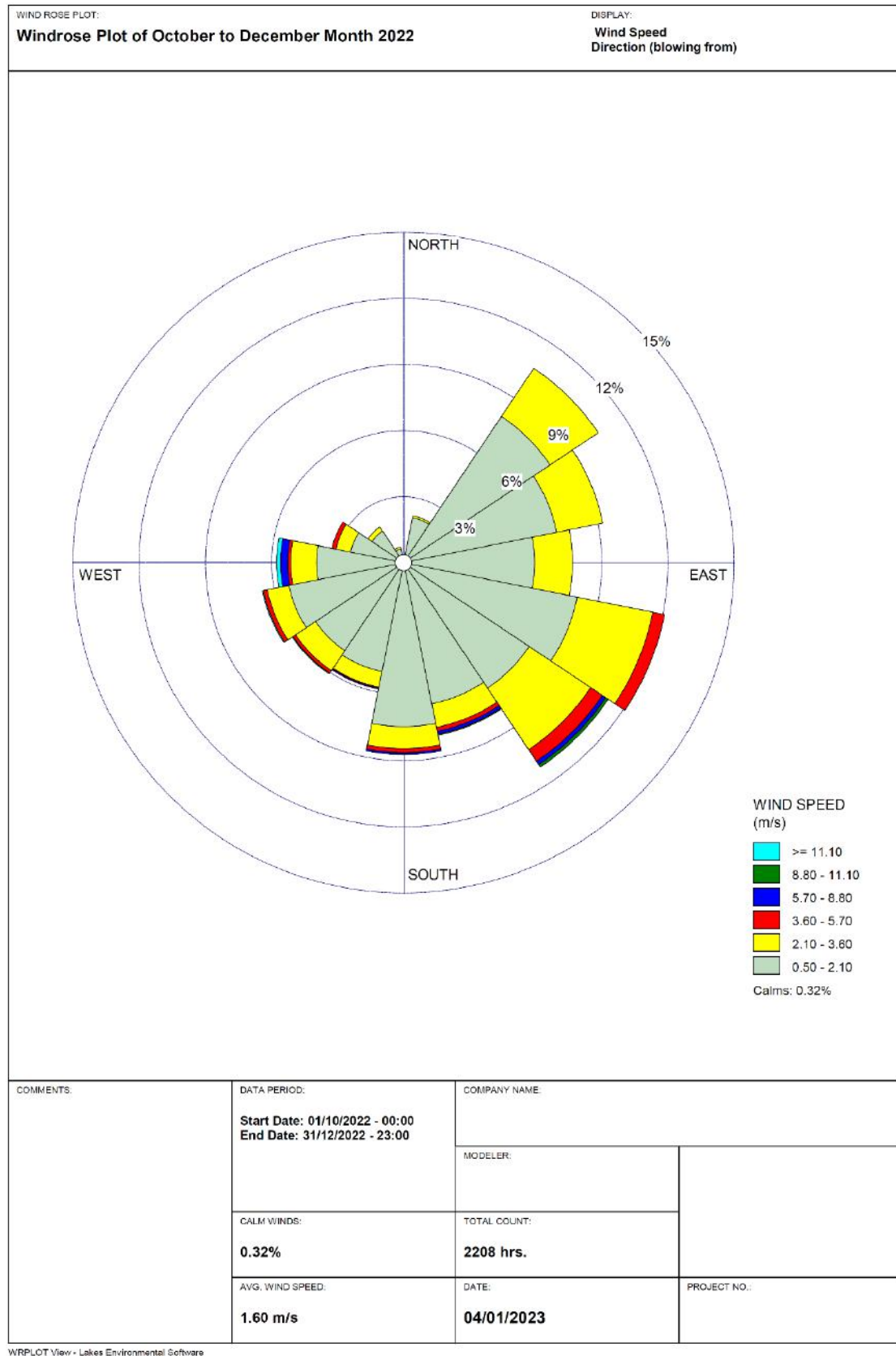
##### **1.17.1 Meteorology:**

##### **Summary of the Meteorological Data Generated at Site**

The site-Specific meteorological data is given in **Table 6** and wind rose diagram is given in **Figure 4**.

**Table 6: Site Specific Climatological Data**

S. N.	Month	Temperature (°C)		Relative Humidity (%)		Rainfall (mm)
		Min.	Max.	Min.	Max.	
1	October 2022	19	34	30	98	39
2	November 2022	21	32	78	95	8
3	December 2022	11	30	20	95	7
	<b>Total</b>					<b>54</b>



**Fig. 4: Wind Rose Diagram – October to December 2022 (IMD Specific)**



### 1.17.2 Ambient Air Quality Status:

The status of ambient air quality within the study area was monitored for the period of during October to December 2022 at 8 locations including the project site and in 10 km study area villages. Total 8 sampling locations were selected based on the meteorological conditions considering upwind and downwind directions. The levels of Respirable Particulate Matter (PM<sub>10</sub>), Fine Particulates (PM<sub>2.5</sub>), Sulphur Dioxide (SO<sub>2</sub>) and Oxides of Nitrogen (NO<sub>x</sub>) were monitored. Based on the above, the AAQ stations have been identified and locations of ambient air quality stations are presented in **Table 7**. The minimum and maximum values of monitoring results are summarized in **Table 8 A, 8 B, 8 C, & 8 D**.

**Table 7: Ambient Air Quality Monitoring Stations**

S. N.	Code	Sampling Location	Distance w.r.t Project Site	Direction w.r.t Project Site
1	A1	Project Site	--	-
2	A2	Zendevar Village	3.3 km	E
3	A3	Bharitola Village	2.5 km	S
4	A4	Bondena Village	1.5 km	SW
5	A5	Jamnara Village	3.5 km	SW
6	A6	Rajatola Village	4.5 km	W
7	A7	Maseli Village	2.5 km	NW
8	A8	Kaimul Village	4.5 km	N

**Table 8: Summary of Ambient Air Quality Results**

**Table 8 A: Particulate Matter – PM<sub>10</sub>**

Location Name	A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8
Minimum	46.20	45.20	46.20	45.10	45.20	48.20	47.20	48.10
Maximum	50.70	51.80	51.30	51.90	51.90	51.40	53.40	52.90
Average	48.73	48.89	48.70	48.27	47.84	50.05	50.53	50.67
98 <sup>th</sup> Percentile	50.52	51.62	51.26	51.58	51.58	51.40	53.26	52.81
<b>CPCB Standards</b>	<b>100</b>							

All Values are in µg/m<sup>3</sup>

**Table 8 B: Particulate Matter – PM<sub>2.5</sub>**

Location Name	A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8
Minimum	12.60	11.70	12.30	15.30	10.60	13.30	12.60	12.30
Maximum	16.90	17.80	16.60	21.30	16.80	17.40	18.30	17.90
Average	14.85	14.97	14.99	18.23	13.36	15.59	15.60	15.08
98 <sup>th</sup> Percentile	16.81	17.57	16.55	21.21	16.71	17.31	18.21	17.81
<b>CPCB Standards</b>	<b>60</b>							

All Values are in µg/m<sup>3</sup>

**Table 8 C: Sulphur Dioxide - SO<sub>2</sub>**

Location Name	A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8
Minimum	2.20	2.70	2.30	2.60	2.80	2.50	2.60	2.40
Maximum	6.50	6.30	5.80	6.00	5.90	6.40	6.60	6.20
Average	5.19	4.60	4.31	4.32	4.49	4.63	4.65	4.34
98 <sup>th</sup> Percentile	6.50	6.30	5.80	5.91	5.85	6.35	6.51	6.15
<b>CPCB Standards</b>	<b>80</b>							

All Values are in µg/m<sup>3</sup>

**Table 8 D: Oxides of Nitrogen – NO<sub>x</sub>**

Location Name	A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8
Minimum	4.80	5.20	4.90	5.10	4.90	4.90	5.00	5.30
Maximum	8.60	9.30	8.90	9.00	8.90	9.40	9.50	9.00
Average	7.50	7.76	7.52	7.45	7.37	7.70	7.75	7.50
98 <sup>th</sup> Percentile	8.55	9.30	8.85	9.00	8.81	9.40	9.41	8.95
<b>CPCB Standards</b>	<b>80</b>							

All Values are in µg/m<sup>3</sup>

**Table 8 E: Carbon Monoxide – CO**

Location Name	A1	A2	A3	A4	A5	A6	A7	A8
Minimum	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Maximum	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Average	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
98 <sup>th</sup> Percentile	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1

All Values are in µg/m<sup>3</sup>

The analysis of ambient air quality data for three months consequently indicates good ambient air quality conditions at site as well as around the site upwind as well as downwind. Particulate matter PM<sub>10</sub> as well as PM<sub>2.5</sub> is within prescribed limits. SO<sub>2</sub> and NO<sub>x</sub> levels are well below the limits prescribed, hence overall picture as far as ambient air quality concerned is positive. As per the baseline data collection, the maximum value of the PM<sub>10</sub> was recorded at Maseli Village – 53.40 µg/m<sup>3</sup> and minimum value at Bondena village – 45.10 µg/m<sup>3</sup>. As per the baseline data collection, the maximum value of the PM<sub>2.5</sub> was recorded at Bondena Village – 21.30 µg/m<sup>3</sup> and minimum value at Jamnara village – 10.6 µg/m<sup>3</sup>. As per the baseline data collection, the maximum value of the SO<sub>2</sub> was recorded at Maseli village – 6.60 µg/m<sup>3</sup> and minimum value at Project Site – 2.20 µg/m<sup>3</sup>. As per the baseline data collection, the maximum value of the NO<sub>x</sub> was recorded at Maseli Village – 9.50 µg/m<sup>3</sup> and minimum value at Project Site – 4.80 µg/m<sup>3</sup>.

### 1.17.3 Ambient Noise Levels:

Ambient noise level monitoring was carried out at the 8 monitoring locations; those were selected for ambient air quality monitoring. The noise recording stations are shown in **Table 9**. The monitoring results are summarized in **Table 10**.

**Table 9: Ambient Noise Quality Monitoring Stations**

S. N.	Code	Sampling Location	Distance w.r.t Project Site	Direction w.r.t Project Site
1	N-1	Project Site	--	-
2	N-2	Zendepar Village	3.0 km	E
3	N-3	Bharitola Village	2.5 km	S
4	N-4	Bondena Village	1.5 km	SW
5	N-5	Jamnara Village	3.5 km	SW
6	N-6	Rajatola Village	4.5 km	W
7	N-7	Maseli Village	2.5 km	NW
8	N-8	Kaimul Village	4.5 km	N

**Table 10: Summary of Ambient Noise Level Monitoring Results**

Equivalent Noise levels	N-1	N-2	N-3	N-4	N-5	N-6	N-7	N-8
Ld (Max)	57.9	52.4	52.9	54.8	48.9	53.8	57.6	57.9
Ld (Min)	43.7	44.6	42.2	43.2	36.8	43.2	44.6	44.9
LN (Max)	53.5	48.5	48.2	50.2	43.8	48.1	54.1	50.8

LN (Min)		38.5	40.8	38.6	40.2	34.6	40.2	41.7	42.1
Leq (Day)		52.9	48.6	48.2	49.9	43.8	50.3	54.6	52.7
Leq (Night)		41.6	42.4	40.9	43.5	36.4	42.7	43	44.2
CPCB	Ld	75 dB(A)	55 dB(A)	55 dB(A)	55 dB(A)	55 dB(A)	55 dB(A)	55 dB(A)	55 dB(A)
	Ln	70 dB(A)	45 dB(A)	45 dB(A)	45 dB(A)	45 dB(A)	45 dB(A)	45 dB(A)	45 dB(A)

$L_{min}$  : Minimum Noise Level Recorded  
 $L_{max}$  : Maximum Noise Level Recorded  
 $L_d$  : Day Equivalent  
 $L_n$  : Night Equivalents  
 $L_{dn}$  : Day-Night Equivalents

### Conclusion:

The Maximum Noise (day) value was observed 57.9 dB (A) at Project site N-1 & Kaimul Village (N-8) and the Minimum Noise (day) value was observed 36.8 dB (A) at Jamnara Village (N-5). The Maximum Noise (night) value was observed 54.1 dB (A) at Maseli Village (N-7) and the Minimum Noise (night) value was observed 34.6 dB (A) at Jamnara Village (N 5).

The maximum and minimum day time equivalent noise levels were found in the range of 46.88 to 49.71 dB (A) and the maximum and minimum night time equivalent noise levels were found in the range of 35.30 to 37.97 dB (A).

### 1.17.4 Surface and Ground Water Quality:

#### Ground Water Sampling Locations:

Ground water sampling locations were selected surrounding the mine site within 10 km study area. Total eight ground water samples were collected and analyzed from the study area. The locations of ground water sampling with its distance and direction w.r.to the project site are given in **Table 11**.

**Table 11: Ground Water Sampling Locations**

S. N.	Code	Location	Distance (km) w.r.t Project	Direction w.r.t Project
1	GW-1	Project Site	--	-
2	GW-2	Zendepar Village	3.0 km	E
3	GW-3	Bharitola Village	2.5 km	S
4	GW-4	Bondena Village	1.5 km	SW
5	GW-5	Jamnara Village	3.5 km	SW
6	GW-6	Rajatola Village	4.5 km	W

7	GW-7	Maseli Village	2.5 km	NW
8	GW-8	Kaimul Village	4.5 km	N

#### Conclusion:

##### Ground Water Samples within 10 km Study Area:

- pH of the ground water samples collected was in the range of 7.02 – 7.97
- Total Dissolved Solids in the samples was in the range of 260.0 – 505.0mg/l.
- Hardness was found to vary between 120.0 – 280.0 mg/l.
- Chlorides concentration was found to vary between 25.16 – 78.02 mg/l.
- Sulphates concentration was found to vary between 15.97 – 57.95mg/l.
- Heavy metal concentrations in all the samples were found to be well within the limits.

##### Surface Water Sampling Locations:

Surface water sampling locations were selected surrounding the mine site within 10 km study area. Three surface water samples were collected from the study area. Two surface water samples were from downstream and one from upstream of the project site. The locations of surface water sampling with its distance and directions w.r.to the project site given in **Table 12**.

**Table 12: Surface Water Sampling Locations**

S. N.	Code	Location	Distance w.r. to Project site	Direction w.r.t Project
1	SW1	Khursipar Village Talav, Khursipar Village	6.0 km	Upstream – North-East
2	SW2	Jambhali Waterfall, Jambhali Village	8.0 km	Downstream - South

#### Conclusion:

##### Surface Water Samples within 10 km Study Area:

Sampling was carried out at 2 locations during the study period. Sampling and analysis were carried out, as per standard methods and frequency of the sampling was thrice/stations. The summary of the results is presented below:

- pH of the surface water samples collected was in the range of 7.20 - 7.49.
- Total dissolved solids in the samples were in the range of 210.0 – 280.0 mg/l.
- Chlorides concentration were in the range of 17.61 – 98.16mg/l.

- Sulphates concentration were in the range of 11.30 – 48.07 mg/l.

#### 1.17.5 Soil Quality:

##### Location of Soil Sampling Sites:

The soil samples were collected from 8 sampling locations within an area of 10 km radius around the proposed project for analysis of the physico-chemical characteristics of the soil quality. Soil samples were collected from three different types of land i.e.; agriculture, waste (mine site) and barren land. The locations of soil sampling are given with its distance and direction w.r.to project site in **Table 13**.

**Table 13: Soil Sampling Locations**

S. N.	Code	Location	Distance w.r. to Project	Direction w.r. to Project
1	S-1	Project Site	--	-
2	S-2	Zendepar Village	3.0 km	E
3	S-3	Bharitola Village	2.5 km	S
4	S-4	Bondena Village	1.5 km	SW
5	S-5	Jamnara Village	3.5 km	SW
6	S-6	Rajatola Village	4.5 km	W
7	S-7	Maseli Village	2.5 km	NW
8	S-8	Kaimul Village	4.5 km	N

##### Conclusion:

Sampling was carried out at 8 locations during the study period. The summary of the results is presented below:

The summary of the results is presented below:

- pH in soil sample was observed to be in the range 6.69 to 7.54.
- Organic Carbon was observed in the range of 0.47 – 1.21 %.
- Available Nitrogen as N was observed in the range of 139.48 – 189.72 Kg/ Hac.
- Available Phosphates as P was observed in the range of 30.39 – 46.19 Kg/ Hac.
- Available Potassium as K was observed in the range of 172.32-391.47. Kg/ Hac.

#### 1.17.6 Land Use Land Cover Classification:

The Land Cover classes and their coverage are summarized in **Table 14**.

**Table 14: Land Use Pattern of the Study Area**

S. N.	Land Use Class (Level-I)	Land use/Land cover Classes (Level – II)	Area (Sq. km)	Area (%)
1	Forest	Forest	137.63	43.83
2	Water bodies	Waterbody	2.07	0.66
3	Agricultural Land	Crop Land	21.61	6.88
		Fallow Land	149.10	47.48
4	Built-up Land	Built-up Land	1.89	0.60
5	Waste Land	Waste Land	1.69	0.54
		<b>Total</b>	<b>314.00</b>	<b>100</b>

#### 1.17.7 Ecology & Biodiversity in 10 km Study Area:

##### Rare and Endangered Flora in the Study Area:

On the basis of literature survey, from red data books of Indian plants, detailed list rare and Endangered plant genera of Chhattisgarh particularly with reference to Rajnandgaon district reveals that there are no endangered, threatened, rare plant species or endangered, threatened, most threatened, vulnerable plant species observed or recorded during study period and this plant species are commonly present in the Chhattisgarh state.

Flora and fauna studies have been carried out in 10 km radius study area and no any endangered species were found out in the study area.

##### Presence of Protected Areas as per Wildlife Protection Act, 1972 in Study Area:

As per MoEF&CC and Forest department of Government of Chhattisgarh state notifications reveals that there are no biospheres, tiger reserves, elephant reserves, national parks, wildlife sanctuaries, conservation reserves and community reserves in 10-km radius from mine lease boundary.

#### 1.18 Socio-Economic Environment:

Information on socio-demographic status and the trends of the communities in the 10 km radius was collected through primary social survey and secondary data from census 2011 & village directory 2011. Summary of the socio-economic status of the study area is given in **Table 15**.

**Table 15: Distribution of Population in the Study Area as per 2011 Census**

S. N.	Particulars	0-3 km	3-7 km	7-10 km	0 – 10 km
1	No. of Households	649	3400	7487	11536
2	Male Population	1439	7601	17170	26210
3	Female Population	1464	8083	17758	27305
4	Total Population	2903	15684	34928	53515
5	% of Males to Total Population	49.56	48.46	46.94	49.0
6	% of Females to Total Population	50.43	51.54	53.06	51.0
7	Average Household Size	4.47	4.61	4.66	4.63
8	Sex Ratio	1017	1063	1034	1041

### 1.19 Anticipated Environmental Impacts and Mitigation Measures:

#### 1.19.1 Air Environment:

The air borne particulate matter is the main air pollutant contributed by opencast mining. Predictions have been carried out for the worst-case scenario considering all the operations of the mine will be under simultaneous continuous operation of 12 hours for the proposed emissions.

The air quality modeling has been done and the details of incremental emission load due to Iron Ore mining activity contributing in existing baseline values is given in **Table 16**.

**Table 16: Incremental Emission Load due to Mining Activity Contributing in Existing Baseline Values**

Pollutants	Baseline Concentration ( $\mu\text{g}/\text{m}^3$ )	Incremental ( $\mu\text{g}/\text{m}^3$ )	Resultant ( $\mu\text{g}/\text{m}^3$ )	CPCB Norms
PM <sub>10</sub>	53.40	--	53.40	100 (24 hourly)
SO <sub>2</sub>	6.60	0.25	6.85	80 (24 hourly)
NO <sub>x</sub>	4.80	0.19	4.99	80 (24 hourly)
CO ( $\text{mg}/\text{m}^3$ )	< 0.1	--	< 0.1	4 (1 hour)

#### 1.19.2 Air Pollution Control Measures:

The following air pollution control measures will be implemented in the mine to control the impact of air pollution.

- In order to minimize the dust emanating from the mining operations water sprinkling is



proposed at the mine pit, waste dump and also on the haulage roads to suppress the dust.

- Dust masks will be given to the mineworkers.
- Regular grading of haul roads will be done to clear the accumulation of loose materials on the roads.
- Transport vehicles are maintained regularly in order to minimize the emissions from them.
- Overloading of tippers will be avoided to prevent the material spillage on the roads.
- Loaded tippers will be covered with tarpaulin before they are allowed on to the main roads.

The air pollution impacts on the nearby villages will be negligible with this small-scale mining after adoption of the above air pollution control measures.

#### **1.19.3 Noise Environment:**

Noise levels in the proposed mine will be produced due to movement of vehicles by transportation of Iron Ore and mining operations like blasting and drilling. But the pronounced effect of noise is felt only near the active working area.

Since the proposed mine will adopt open cast semi mechanized method for mining, there will not be much impact on the surrounding villages due to the mining operations. Also, habitations are away from the proposed project activity and the area is surrounded by thick and dense forest which will reduce the impacts of generated noise due to the proposed project activity. Hence, there will be no any noise impact on surrounding habitations of the proposed project site.

#### **1.19.4 Noise Pollution Control Measures:**

The following are the noise pollution control measures proposed in the mine.

- Ear plugs will be provided to the mine workers whenever needed.
- Vehicles used for transportation will be regularly maintained.
- Greenbelt will be provided all along the mine in 7.5 m barrier zone to reduce the noise levels.
- Speed of the vehicles entering or leaving the mine will be limited to 25 kmph to avoid undue noise from empty trucks.

#### **1.19.5 Impact due to Ground Vibrations:**

The proposed mine will adopt opencast semi mechanized with Category A method for mining with drilling and blasting. Hence, the impact on ground vibrations due to mining will be negligible.

#### **1.19.6 Water Environment:**

The total water requirement for the above operations will be 21 KLD and domestic water requirement will be met by water tankers at the mine site. Waste water generation from the above consumption is from domestic consumption i.e., 6.7 KLD. Wastewater generated from the Domestic front will be mainly from toilets. This waste water will be treated in septic tank followed by soak pit.

There are no natural drainage channels within the site. There are no chances for changes in quality of surface water or ground water. The mining operations will be carried out on slopes of the rocky terrain. Hence, neither the ground water table nor the general surface drainage pattern will be affected. No water will be discharged from the quarry. It is proposed to construct garland drains with sedimentation pits all along the mine pits to avoid erosion and sedimentation due to storm water. Only fresh water will be left into the nearby seasonal streams as after de-siltation.

#### **1.20 Greenbelt Development:**

Greenbelt will be developed for protection and improvement in the surrounding environment and to minimize the dust impact due to proposed mining activity. Planted saplings will be fruit bearing and native species having thick and broad leaves with canopy nature. Total mine lease area is 12 Ha. and 33% of the total mine lease area i.e.; 3.96 Ha. need to develop as a greenbelt. As the proposed project site is surrounded by thick and dense forest and there are already trees are available in the mine lease area. Almost, 3 Ha. area is available with good no. of trees which can be maintained as it is & vacant spaces in between these trees will be covered by planting trees. We need to develop 0.96 Ha. area as a greenbelt which is in the form pockets in between already available trees in the mine lease area. To improve the greenbelt coverage at the mine site, plantation is proposed on 7.5 m safety zone. Also, greenbelt will be developed in other areas of mine lease such as administration office, beside of haulage roads etc.

The plantation work for green belt development will be carried in consultation with a horticulturist. By considering 2000 saplings per hectare, total no. of saplings with consideration of 75% rate of survival to be planted every year and balance assume mortality of 25% will be covered every year with applicable rate of saplings to be planted.

Details of Plantation area are as given below:

Total Mine Lease Area = 12.00 Ha.

Applicable 33% Greenbelt Area = 3.96 Ha.

Already Developed Greenbelt Area as of now = 3.00 Ha.

Area to be covered by Greenbelt in future = 0.96 Ha.

Plants proposed per Hectare as per MoEF&CC recommendation = 2000 Nos.

Total no. of plants to be planted in Greenbelt Development (For 0.96 Ha.) = 1920 Nos.

#### **1.21 Occupational Health & Safety Management:**

- Periodical Medical Examination (PME) of all workers before recruitment and during mining operations is carried out.
- Total workers in the mine – 80 immediate workers after 5 years it will be 149 Nos.
- First aid facility will be provided at the project site.
- Mine operators will be provided with personal protective equipment (PPEs) includes safety helmets and footwear, in addition to ear, eye, and hand protection devices.
- Dust masks will be provided for workers.
- Potable drinking water & shelter for mine workers will be provided.

#### **1.22 Environment Management Plan (EMP):**

In order to implement an effective environmental management plan for mitigating the adverse impacts on the environment, regular monitoring of various environmental components is necessary. Mine manager with the support of Safety and Env. Officer and other workers will monitor the environment management plan of this area.

#### **Budget for Implementation Environment Management Plan:**

Environment management plan is for the proposed project activity divided into two parts i.e.; one is capital cost & one is recurring cost. Total fund earmarked for EMP is Rs. 46.34 Lakhs (Rs. 0.46 Crores) in which capital cost is Rs. 37 Lakhs and recurring cost is Rs. 9.34 Lakhs. Detail budget for Environmental Management Plan is given in below **Table 17**.

**Table 17: EMP Budget**

S. N.	Item	Capital Cost (Rs. In Lakhs)	Recurring Cost (Rs. In Lakhs)
1	Air Pollution Control	5.0	1.0
2	Rain Water Harvesting System	5.0	1.0
3	Water Pollution Control	5.0	0.5
4	Noise Pollution Control	1.0	0.5
5	Environment Monitoring and Management	5.0	2.34
6	Occupational Health	2.0	1.0
7	Greenbelt Development	12.0	2.0

8	Safety Management	1.0	0.5
9	Renewable Energy System	1.0	0.5
	<b>Total Amount</b>	<b>37.0</b>	<b>9.34</b>
	<b>Total Amount (Capital Cost &amp; Recurring Cost)</b>	<b>46.34</b>	
	<b>Total Amount (Capital Cost &amp; Recurring Cost)</b>	<b>0.4634 Crores</b>	

### 1.23 Corporate Environment Responsibility:

The proposed project would proactively promote the public interest through provision of basic amenities such as roads, transportation, electricity, education, sanitation and healthcare facilities. Proposed project is a greenfield project and CER budget is calculated based on its category as prescribed in office Memorandum of MoEF&CC Dated: 01/05/2018. The CER budget allotted based on the capital cost of the proposed project shall be Rs. 20.0 Lakhs (2% of the Project Cost of Rs. 10 Crores). The details break up and activities considered under CER activities are given in below **Table 18**.

**Table 18: Proposed CER Activities and its Budget**

S. N.	Planned Activities under CER as per specific needs	Amount in Rs.
1	<b>Community Health Improvement</b> • Sanitary facilities for project surrounding villages	3,00,000.00
2	<b>Community Education Facilities</b> • Providing desktop computers to schools	3,00,000.00
3	<b>Infrastructural Development</b> • Maintenance/ Repair of Hand Pumps/ Bore wells	10,00,000.00
4	<b>Afforestation Programs</b> • Plantation of trees in villages road side/ Panchayat House/ Public Health Center/ schools	2,00,000.00
5	<b>Community Welfare Activities</b> • Solar Street Lights for common community area and village main approach roads as per the instruction of respective Gram Panchayat	2,00,000.00
<b>Total Amount in Rs.</b>		<b>20,00,000.00</b>
<b>Total Amount (Rupees in Lakhs)</b>		<b>20.00</b>

#### **1.24 Project Benefits:**

It is proposed to employ about 149 persons for carrying out mining operations and the lessee proposed to give preference to the local people in employment. In addition, there will be indirect employment to many people in the form of contractual jobs, business opportunities, service facilities etc. this will enhance the economic status of the local people. Local peoples may have a choice to purchase a vehicle and engage their vehicle for transportation activity of Iron Ore. This will generate new source of income to local peoples as it is remote area which is surrounded by forest and there are very less alternatives are available with them to enhance their life style.

The impact of mining activity in the area will be positive on the socio- economic environment of the region. The employment directly and indirectly will be increased and better infrastructure and communication facilities will be provided.

M/s. Anoj Kumar Agarwala would be required to initiate the following measures to minimize the possible negative impacts:

- Implemetation of adquate dust control measures to check air pollution.
- Organize six monthly health camps in the area to check the incidence of any respiratory and other related disorders.
- Conduct Entrepreneurship Development Camps to nurture entrepreneurial talents among the local youth.

#### **1.25 Conclusion:**

Based on the EIA study, it is observed that there will be a marginal increase in the dust pollution, which will be controlled by sprinkling of water and transportation of Iron Ore in trucks by covering the material with Tarpaulin.

There will be negligible impact on ambient environment & ecology due to mining activities, more over the mining operations will lead to direct and indirect employment generation in the area.

Hence, it can be summarized that the mining of minerals from the proposed Iron Ore mine of M/s. Anoj Kumar Agarwala Mine will have a positive impact on the socio-economic environment of the area.

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**Executive Summary**  
**of**  
**Environmental Impact Assessment**  
*For*  
**Proposed Zendepar Iron Ore Mining Project having**  
**Mine Lease Area of 12.0 Ha.**  
**by**  
**M/s. Anuj Mines Minerals & Chemicals Pvt. Ltd.**  
*at*  
**Khasra No.: 82 Part (82/2) of Zendepar Village, Tahsil:**  
**Korchi, Dist.: Gadchiroli, Maharashtra**



**Project Proponent:**  
**M/s. Anuj Mines Minerals & Chemicals Pvt. Ltd.,**  
Plot No.: 50 & 51, Baji Prabhu Nagar,  
Near South Indian Temple, Ramnagar,  
Nagpur, Maharashtra - 440033

**Consultant**



**Sri Sai Manasa Nature Tech Private**  
**Limited**

(Certificate No. NABET/EIA/2124/RA 0260, Validity: 21-11-2024)

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## Executive Summary

### 1.0 Introduction

**M/s. Anuj Mines Minerals & Chemicals Pvt. Ltd.** has been granted mine lease for Iron Ore over an Extent of 12.00 hectares at Khasra Nos.: 82 Part (82/2) of Zendevar Village, Tahsil: Korchi, Dist.: Gadchiroli, Maharashtra State for a period of 30 years by Industries, Energy and Labour Department, Govt. of Maharashtra vide ref. no.: MMN-1004/CR684/IND-9 Dated: 10/03/2005. Accordingly, again we have applied for renewal of mine lease agreement to the concerned authority and Form K was signed in between Mine Lease Holder and The District Mining Officer on Dated: 11/07/2017. Mine Lease renewed for period of valid from 11/01/2017 to 10/01/2047 for the period of 30 years. (As per new Amendment of "Law of the Land" is consider up to 10/01/2067 (50 Years) & the procedure for the extension of Lease period is in process.)

### 1.1 Statutory Clearances:

Proposed Zendevar Iron Ore Mine by **M/s. Anuj Mines Minerals & Chemicals Pvt. Ltd.** at Khasra No. 82 Part (82/2), Village Zendevar, Tahsil Korchi, District Gadchiroli, Maharashtra having mine lease area of 12.0 Ha. Proposed project site was granted mine lease to M/s. Anuj Mines Minerals & Chemicals Pvt. Ltd. by Section Officer, Govt. of Industries, Energy & Labor Dept., Mumbai vide Ref. No.: MMN-1004/CR-684/IND-9, Dated: 10/03/2005 for the period of 30 year's subject to compliance of provisions of MM (D & R) Act, 1957, MCR – 1960 and MCDR -1988. Accordingly, after executing mine lease agreement with The District Mining Officer, Collector Office, Gadchiroli as per the applicable procedure, we have applied given the mining plan work to RQP for preparation of mining plan and its further needful approval. RQP prepared the mining plan of the proposed project and submitted to The Regional Controller of Mines, Indian Bureau of Mines, Nagpur. Submitted mining plan was approved by The Regional Controller of Mines, Indian Bureau of Mines, Nagpur vide ref. no.: GAD/FE/MPLN-897/NGP Dated: 02/01/2006. Demarcation of the mine lease area was carried out by Dy. S. L. R., Korchi by the order of The District Collector, Gadchiroli, Maharashtra in the year 2007. Accordingly, project proponent hired Environment Consultant for obtaining "Environmental Clearance" for the proposed project in the year 2010. Environment Consultant prepared the application and submitted to State Expert Appraisal Committee (SEAC), Maharashtra. Project was considered in 40<sup>th</sup> SEAC meeting held on Dated: 15/02/2011 and issued Terms of Reference as per Item No. 12a. Baseline monitoring was carried out by the Environment Consultant for the Period: March to May 2011 (Summer Season). It was told to us to obtain Forest No Objection Certificate for further proceeding of the project for

submission of Draft EIA report. We then approached to Revenue Department, Collector Office, Gadchiroli for want of Forest NOC and further needful confirmation from their side to the Forest Department. Accordingly, Chief Conservator of Forest, (Head Forest Force), Government of Maharashtra, Nagpur issued Forest NOC to The Collector, Gadchiroli, Maharashtra vide ref. no.: Kaksha-17/RS/3321 Dated: 22/02/2012 confirming that there is no any forest land involved in the proposed project site. Then we also follow up with forest department for obtaining Forest NOC in the name of mine lease holder. Accordingly, Deputy Conservator of Forest, Wadsa Forest Department, Wadsa Forest Office, Wadsa issued Forest “No Objection Certificate” (NOC) vide ref. no.: Kaksha-4/Survey/Land/561, Wadsa Dated: 05/06/2014. Preparation and submission of Draft Environment Report was got delayed for the want of Forest NOC. Till the time validity of TOR was expired and again we have applied for extension for the TOR validity to the SEAC committee, Maharashtra. Proposal for extension of TOR validity was considered by the SEAC Committee and it was taken in the 128<sup>th</sup> Meeting held on Dated: 02/06/2016. SEAC committee considered our request for extension of TOR validity and extended it for the period of one year. Environment Consultant prepared the Draft EIA report and submitted to The Regional Officer, MPCB, Chandrapur for conducting Public Hearing. Accordingly, MPCB, Chandrapur published the paper advertisement in both Languages i.e.; Marathi & English on Dated: 30/06/2017. Public Hearing was organized by the MPCB at Conference Hall, District Collector Office, Gadchiroli on Dated: 03/08/2017. Peoples have attended the Public Hearing and demanded to cancel the arranged Public Hearing at Gadchiroli and requested the authority to reconduct at Tahsil Place Kochi, Gadchiroli District. Due to the huge demand of the public attended over there, The Additional District Magistrate, Collector Office, Gadchiroli postponed the public hearing on that date. As the validity of TOR extended for one year only and it was expired up to the period.

Due to non-commencement of mining activity as per the provisions of the mine lease agreement within the stipulated period for want of obtaining statutory clearances, notice was issued for cancellation of mine lease from the Director, Directorate of Geology & Mining, Govt. of Maharashtra, Nagpur. Accordingly, again we have applied for renewal of mine lease agreement to the concerned authority and Form K was signed in between Mine Lease Holder and The District Mining Officer on Dated: 11/07/2017. Mine Lease renewed for period of 11/01/2017 to 10/01/2047 for the period of 30 years.

Now, after renewal of mine lease agreement again we have started the process for obtaining applicable statutory clearances like Approved Mining Plan, Environmental Clearance, Consent to Establish and Consent to Operate. Due to pandemic of COVID19 in the year 2020 and 2021,

requisite work got delayed. We have given the work of preparation of mining plan to RQP. Accordingly, RQP prepared mining plan and submitted to The Regional Controller of Mines, Indian Bureau of Mines, Nagpur. Mining plan was approved by The Regional Controller of Mines, Indian Bureau of Mines, Nagpur vide ref. no.: GAD/FE/MPLN-897/NGP-2021 Dated: 19/07/2021. As the mine lease area is having 12.00 Ha. & it is surrounded by other 4 Iron Ore mine leases in the same khasra no., it forms cluster with other four mine leases. Total cluster formation area of all 5 Iron Ore mine leases is 46.37 Ha. and accordingly, letter submitted to The District Mining Officer, Collector Office, Gadchiroli for obtaining "Cluster Certificate". Cluster certificate was issued by The District Mining Officer, Collector Office, Gadchiroli vide ref. no.: Desk-II/Sr. Cl. Mining/Anuj Mines/301/2021 Dated: 27/10/2021. As the cluster formation mine lease area is more than 25 Ha. & as per the published EIA Notification, 2006 & its subsequent amendment, the proposed project falls in Category B1 of Mining of Minerals 1(a). As per the B1 Category of the proposed project, it needs Terms of Reference (TOR), Draft EIA report submission to MPCB for public hearing and after completion of public hearing Final EIA report submission to SEAC-1 & SEIAA for obtaining "Environmental Clearance". Now, after obtaining approved mining plan for the proposed project for the period: 2021 to 2026, we have applied for obtaining Terms of Reference (TOR) as per the EIA Notification, 2006 and its subsequent amendment time to time. After obtaining TOR for the proposed project, we will carry out Baseline Monitoring for preparation of Draft Environmental Impact Assessment Report. After preparation of draft EIA report, we will submit it to Regional Office, MPCB, Chandrapur for public hearing. After completion of the public hearing, we will prepare Final EIA report and will submit it to the SEAC-1 for obtaining Environmental Clearance for the proposed project.

Proposed project had already obtained "Consent to Establishment" (CTE) for the proposed project activity of Mining of Iron Ore from "Zendevar Iron Ore Mine" by M/s. Anuj Mines Minerals & Chemicals Pvt. Ltd. vide Consent No.: BO/Chandrapur/299-2005/E/CC-336 Dated: 12/09/2005. Now, project proponent will obtain "Consent to Operate" (CTO) after obtaining of Environmental Clearance" (EC).

### **1.2 Terms of Reference**

Project proponent applied for obtaining Terms of Reference (TOR) by submitting required documents like approved mining plan, Form 1 & Pre-Feasibility Report to SEIAA, MoEF&CC, Maharashtra as per EIA Notification, 2006 and its subsequent amendment. Project was uploaded on Parivesh portal vide Proposal No.: SIA/MH/MIN/68157/2021 Dated: 06/10/2021. It was

considered by SEAC-1 in their 209<sup>th</sup> meeting held on Dated: 10<sup>th</sup> to 12<sup>th</sup> November 2021 and recommended for issuing of TOR to SEIAA, Maharashtra.

SEIAA, MoEF&CC, Maharashtra considered the project in their 234<sup>th</sup> Meeting (Day 3) held on Dated: 17<sup>th</sup> December 2021 and asked to submit clarifications for regarding time lag from first mining lease approval to submission of current application for TOR & also asked to submit details of existing trees on proposed mining site and details of trees to be cut, if any along with its age. Accordingly, we have submitted compliance to 234<sup>th</sup> MOM of SEIAA, MoEF&CC, Maharashtra for grant of TOR to the proposed Iron Ore mining project. SEIAA, MoEF&CC, Maharashtra considered the project in their 248<sup>th</sup> Part-C meeting held on Dated: 18<sup>th</sup> August 2022 and asked to process NOC for tree cutting and also details of tree inventory with cumulative age of trees to be cut. Accordingly, we have submitted compliance to 248<sup>th</sup> MOM of SEIAA, MoEF&CC, Maharashtra for grant of TOR to the proposed Iron Ore mining project.

SEIAA, MoEF&CC, Maharashtra considered the project in their 256<sup>th</sup> Part-E meeting held on Dated: 25<sup>th</sup> January 2023 and grant a "Terms of Reference" (TOR) to the proposed Iron Ore mining project. "Terms of Reference" (TOR) grant to the proposed Iron Ore mining project vide ref. no.: SIA/MH/MIN/68157/2021 Dated: 22/02/2023.

Based on the documents submitted and presentations made, the committee prescribed the Terms of Reference (TOR) for preparing EIA/EMP report, by considering the project under the category 'B1' 1 (a) Mining of Minerals of the Schedule of EIA Notification 2006.

### **1.3 Project Proponent**

M/s. Anuj Mines Minerals & Chemicals Pvt. Ltd. is a Private Company and in the business of Mining and Chemicals. Mr. Subhash Ramprasad Sharma is the Director of M/s. Anuj Mines Minerals & Chemicals Pvt. Ltd. The Mining lease for Iron Ore has been granted to M/s. Anuj Mines Minerals Chemical Pvt. Ltd. over an area 12.00 Ha. at Zendevar Village in Korchi Tehsil of Gadchiroli District for the period of 30 years. The above said lease has been executed on 11/01/2017. Iron Ore is used in Steel Industry, Ferro-Alloys industries as main source of raw material, good quality of Iron Ore for steel making grade is available in and around Gadchiroli district of Maharashtra.

#### **M/s. Anuj Mines Minerals & Chemicals Pvt. Ltd.**

Office Address:

Plot No. 50 & 51, Baji Prabhu Nagar,  
Near South Indian Temple, Ramnagar,  
Nagpur, Maharashtra - 440033

Phone No.: 2231279/2241979, Mobile: +91-9822579935

Email ID: anujmines@alplyug.com

Site Address:

Khasra Nos.: 82 Part (82/2), Village: Zendevar,

Tahsil: Korchi, Dist.: Gadchiroli, Maharashtra.

#### 1.4 Brief Description of Nature, Size & Location of the Project

The proposed project is located in Zendevar Village, Tahsil: Korchi, Dist.: Gadchiroli, Maharashtra over an area of 12.00 Ha. The mining lease area falls in Survey of India Topo Sheet No. 64D5. The environmental settings of the 10 km study area are given in **Table 1.1**.

**Table 1.1: Environmental Settings of the Study Area**

S. N.	Particulars	Details																		
A.	Nature of project	Iron Ore																		
B.	Size of project																			
1.	Mining Lease area	12.00 Ha.																		
2.	Proposed Production capacity	Iron Ore: 94500.00 TPA (Maximum Production in five years); Float ore: 1701.00 TPA (Maximum Production in five years);																		
C.	Project location																			
1.	Village	Zendevar																		
2.	Tahsil	Korchi																		
3.	District	Gadchiroli																		
4.	State	Maharashtra																		
5.	Khasra Nos.	82 Part (82/2)																		
6.	Land	Non-forest, Govt. Revenue Land																		
7.	Toposheet No. Latitude & Longitude	64D5, 64D6, 64D9, 64D10. <table border="1"> <thead> <tr> <th>Boundary Pillars</th><th>Latitude</th><th>Longitude</th></tr> </thead> <tbody> <tr> <td>BP-1</td><td>20°46'17.965"</td><td>80°29'02.315"</td></tr> <tr> <td>BP-2</td><td>20°46'18.062"</td><td>80°29'03.738"</td></tr> <tr> <td>BP-3</td><td>20°46'18.229"</td><td>80°29'10.916"</td></tr> <tr> <td>BP-4</td><td>20°46'17.880"</td><td>80°29'12.682"</td></tr> <tr> <td>BP-5</td><td>20°46'07.201"</td><td>80°29'12.634"</td></tr> </tbody> </table>	Boundary Pillars	Latitude	Longitude	BP-1	20°46'17.965"	80°29'02.315"	BP-2	20°46'18.062"	80°29'03.738"	BP-3	20°46'18.229"	80°29'10.916"	BP-4	20°46'17.880"	80°29'12.682"	BP-5	20°46'07.201"	80°29'12.634"
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		BP-6	20°46'07.380"	80°29'09.199"	
		BP-7	20°46'04.021"	80°29'09.219"	
		BP-8	20°46'04.283"	80°29'05.922"	
		BP-9	20°46'06.687"	80°29'01.461"	
		BP-10	20°46'08.481"	80°29'01.597"	
<b>D.</b>	<b>Environmental Settings Details (With approx. aerial distance and direction from the mining lease boundary)</b>				
1.	Nearest Village	Zendevar village – 3.3 km (SE)			
2.	Nearest Town, city, district Headquarters	Nearest Tahsil Place – Korchi – 6.0 km - SW Nearest Town – Korchi – 6.0 km -SW Nearest District HQ – Gadchiroli – 45 km - SW			
3.	Nearest National Highway,  Nearest Motorable Road	NH 543 – Shahdol to Bramhapuri passes from Korchi – 3.5 km (W) from the proposed site. Shahdol-Mandla-Balaghat-Gondia-Deori-Korchi-Bramhapuri Nandali to Sohale – 1.5 km - E			
4.	Nearest Railway station, Airport & Sea port	Barabhati Railway Station – 45.0 Km, NW Dr. Babasaheb Ambedkar International Airport, Nagpur – 153.20 km, NW Visakhapatnam Sea Port – 450 km, SE			
5.	Interstate boundary	Nil within 5 km. Chhattisgarh state border is at 7.0 km on East direction.			
6.	Archeological Place	None within 10km from the mine site			
7.	National Park, Wild Life Sanctuary, Wildlife Corridors, Biosphere Reserves, Migratory routes for Birds. Protected Forest etc. within 10 Km radius study area	No any National Park, Wild Life Sanctuary, Wildlife Corridors, Biosphere Reserves, Migratory routes for Birds falls in study area. Reserved Forest – Malewada RF – 16.5 km (W)			
8.	Reserve Forest and Protected Forest within 10 Km radius	None			
9.	Water bodies within 10 km radius	Unidentified Small Ponds/ Talav within 10 Km			
10.	List of Industries in 10 km Study	Anoj Kumar Agarwala – Adjacent to project site			

	Area	Manoj Kumar Ajitsaria – Adjacent to project site N. C. Jain – Adjacent to project site R. M. Rajurkar - Adjacent to project site
11.	Seismic Zone	Seismically this area is categorized under Zone II, which is moderate zone.
<b>E.</b>	<b>Employment Generation</b>	
1.	No. of Manpower	149 Nos.
<b>F.</b>	<b>Cost Details</b>	
1.	Total Project Cost	Rs. 10 Crores
2.	Cost for Environmental Management Plan	Capital Cost = Rs. 37.0 Lakhs Recurring Cost = Rs. 9.34 Lakhs Total Cost = Rs. 46.34 Lakhs
3.	CER Cost	Rs. 20 Lakhs

Map showing general and specific location of proposed mine site, 10 km topo map study area and Google imagery of the proposed project site are given in **Figure 1, Figure 2 and Figure 3.**



Executive Summary of Proposed Zendepar Iron Ore Mine by M/s. Anuj Mines Minerals & Chemicals Pvt. Ltd. having mine lease area of 12.0 Ha. at Khasra No. 82 Part (82/2) of Village: Zendepar, Tahsil: Korchi, Dist.: Gadchiroli, Maharashtra.

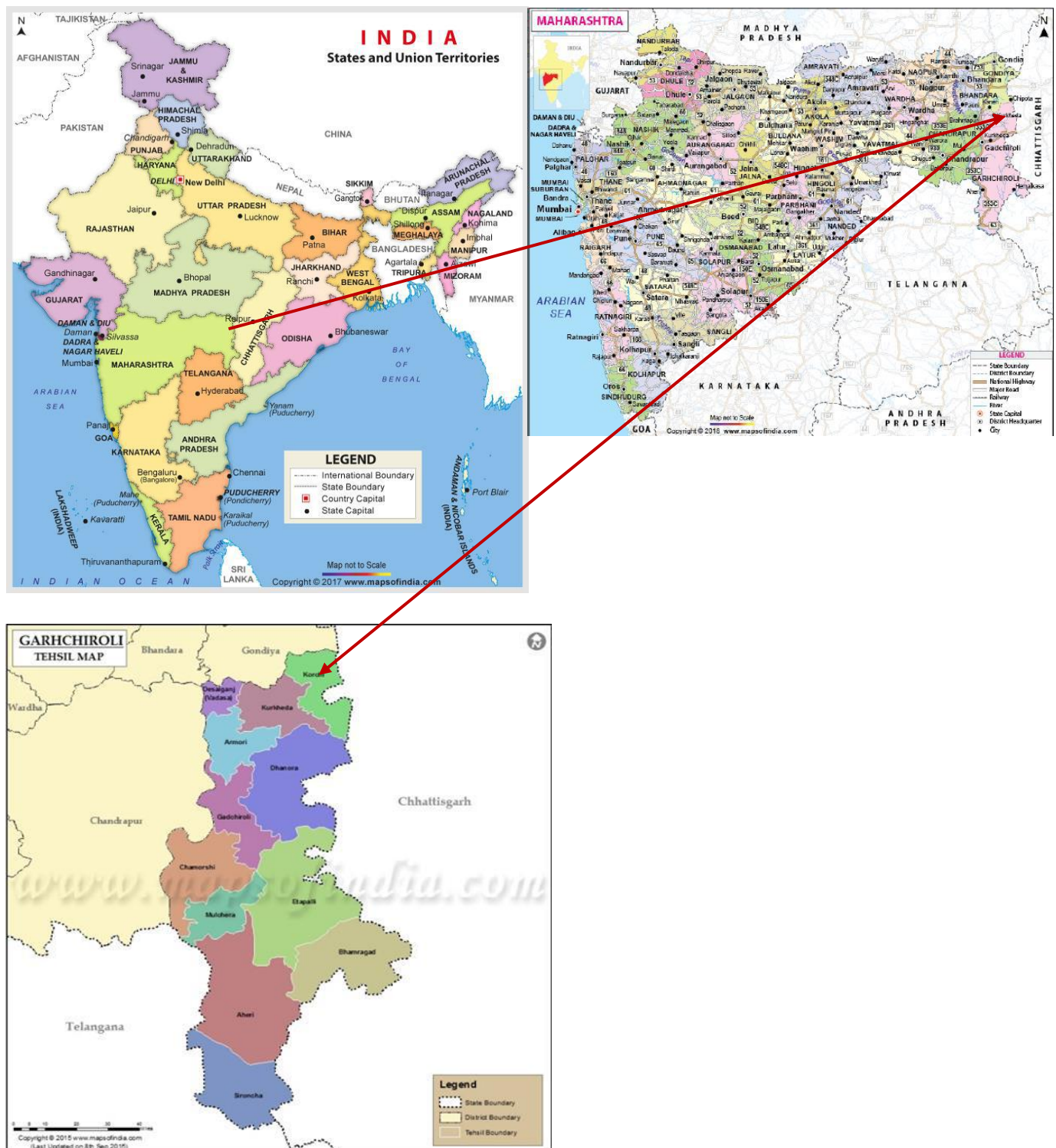


Figure 1: Location Map of the Project Site



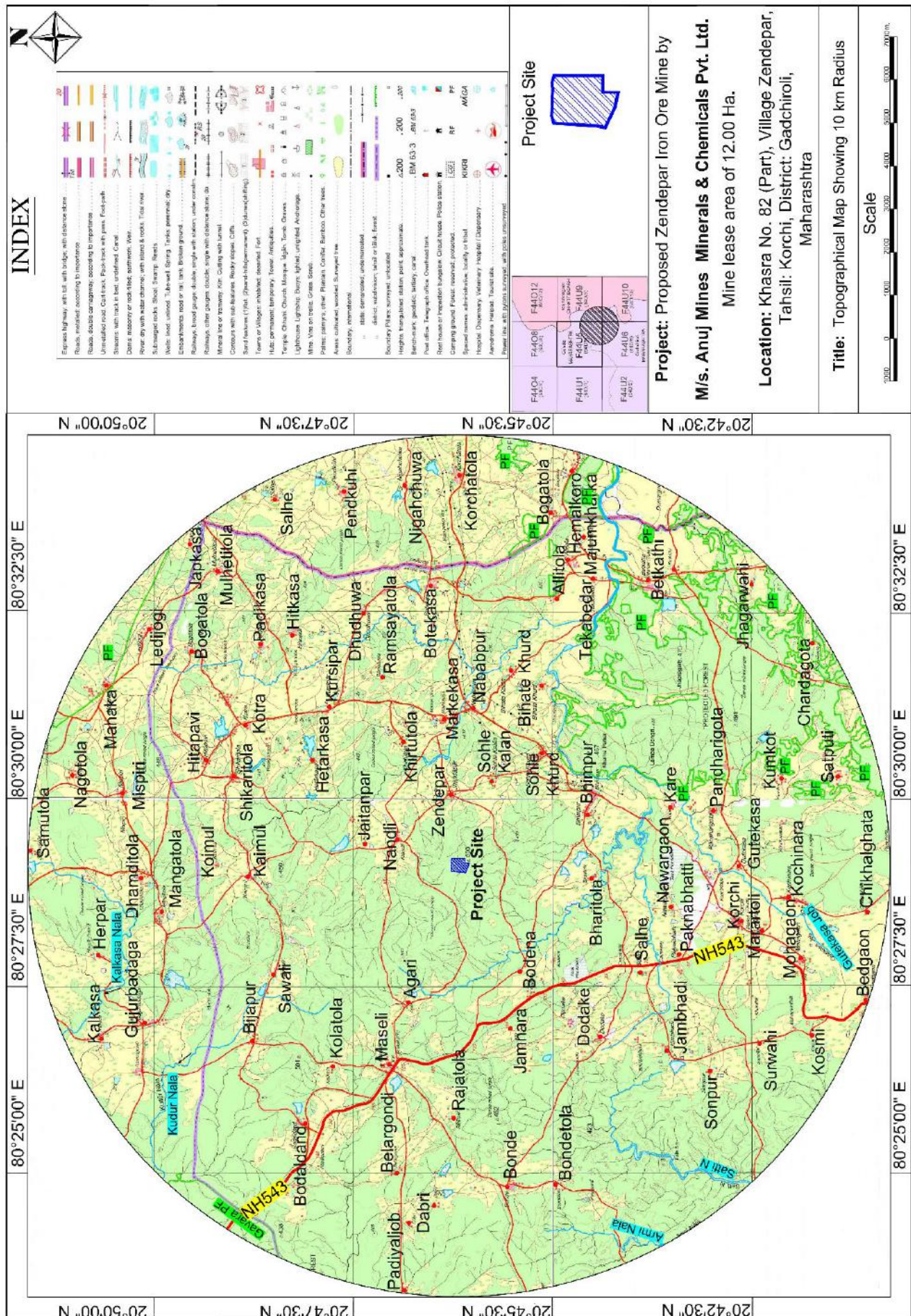


Figure 2: 10 KM Study Area Map of the Project Site





Figure 3: Google Image of the Project Site

## **1.5 Project Description:**

### **1.5.1 Type of Project Including Interlinked and Interdependent Projects, If Any:**

The project is of open cast Iron ore mine. The proposed Iron Ore mine 12.00 ha will be developed as open cast semi-mechanized mining with bench pattern for the production of Iron ore 94,500.00 TPA and Float ore 1701.00 TPA (both Maximum Production in five years). Iron ore is used in Steel Industry, Ferro-Alloys Industries as main source of raw material, good quality of iron ore of Steel making grade is available in and around Gadchiroli district of Maharashtra State. No interlinked projects were associated with this project.

### **1.5.2 Details of Alternate Sites:**

It is a cluster project. Nearby mines are available. No alternate site was considered as the project is mineral specific and site specific.

### **1.5.3 Size or Magnitude of Operation:**

The mine lease area is of 12.00 Ha. and production of Iron Ore Mine is 94,500.00 TPA and Float ore is 1701.00 TPA (both Maximum Production in five years). The mine lease follows open cast semi-mechanized method of mining.

### **1.5.4 Topography:**

Topography of the Lease area & its surrounding Leases are of undulating nature and controlled by Highly Compact Hard Quartzite, Banded Hematite Quartzite and Steep dip. The area is drained by seasonal local drainage streams in all Corners of Lease. The lease hold area lies in the "Zendevar Iron Ore Mine". Maximum elevation in the Lease area is 505 MRL & minimum is 460 MRL on the South & West direction.

### **1.5.5 Regional Geology:**

The area forms a part of the region covered predominately by the granite gneisses with its variants, basic rocks and some meta-sediments comprising with various types quartzite including banded hematite quartzite and schist with inter-stratified Amphibolite's layers all belonging to Achaean Precambrian age. The meta-sediments appear to have been folded into series of close parallel anticlines a syncline with generally low plunge. Major part of the Iron Ore area is covered with scree, talus, Soil & Laterite and has few good rocks exposure excepts in the trenches and near about. The rocks of the area comprise of Banded Hematite Quartzite (BHQ associated with thick Iron Ore/ Hematite band, platy quartzite & Massive grey quartzite, pegmatite & quartz veins of Precambrian age. In all possibility, granite gneiss appears to be present on the eastern and western flanks of the ridge.

#### **1.5.6 Local Geology:**

The entire area is "Government Revenue land". The Lease area shows two hillocks along with the highest contour is 505 MRL & the Lowest Contour 460 MRL & Slope shown all corners of the Lease area in North-East, North-West corner.

The main Geological formation found in this area are the oldest metamorphic i.e., granite gneisses & Dharwas i.e.; Banded Hematite Quartzite. The proposed area comprises a hillock with lateritic capping with Banded Hematite Quartzite body exposed at places. The local geological litho units observed in the lease area are Soil, Banded Hematite Quartzite (BHQ) & associated with Hematite Iron Ore rich band.

#### **Formations are given below:**

**Lateritic soil:** The major part of the area on the surface is covered with Laterite. Lateritic soil and Limonite. Laterite which is showing varying thickness of 1.5 m to 3.0 m.

**Hematite Iron Ore rich band:** The Ore body is covered with Laterite. The ore body is covered with the general strike of the Ore body is North-East & South —West and dip varying from 65° to 70° towards West. The trend of the Ore bodies appears to North-South.

**Rocks like Quartzite, Banded Hematite Quartzite:** The Banded Hematite Quartzite is mainly Laterite & Massive. The Outcrop of Banded Hematite Quartzite is weathered and fractured.

**Float Ore:** Float ore is also seen in the area with Laterite Soil. There is float Ore zone on ground & is evident of about 1.5 M thicknesses.

#### **1.5.7 Reserves:**

Parameters for resource estimation as per approved Mining Plan:

- Method of mineral resource- "By Surface Area Method".
- The depth considered for estimation of Reserves is 10.00 from the surface,
- Estimated Bulk density in 3.5 T/ m<sup>3</sup>
- Maximum depth: Consider 6.00 m under 111,
- 6.00 M to 8.00 M under 121 &
- 8.00 M to 10.00 M under 122.
- Category: 'A'
- Area: 12.00 hectare
- Iron Ore existing at the top of the Hilly terrain sloping downward
- Waste Rock: Approx. 1.5 to 3 M Lateritic soil followed by Iron Ore.

- Surface MRL: Iron Ore existing at the top of the Hilly terrain sloping downward. Due to this reason not considered any one particular surface RL.
- Recovery: 90% for Iron ore
- Mining Losses: 10%.

Geological reserves as per UNFC classification are given in below **Table 2**.

**Table 2: Geological Reserves as per UNFC Classification**

Estimated Mineral Reserve/Resources in Different Categories of UNFC as reported are given below:					
A. Total Mineral Reserve	UNFC Code	Quantity in tons Reserves			
		Ore Body I	Ore Body II	Float Ore	Total Tons
Proved Mineral Reserves	111	189000	<b>138600</b>	37800	365400
Probable mineral Reserves	121	63000	46200	0	109200
Possible Mineral Resource	122	63000	46200	0	109200
<b>Total A</b>		315000	231000	37800	583800
B. Total Remaining Resources					
Feasibility Mineral Resource	211	0	0	0	0
Prefeasibility mineral resource	222	0	0	0	0
Measured mineral resource	331	0	0	0	0
Indicated mineral resource	332	0	0	0	0
Inferred mineral resource	333	0	0	0	0
Reconnaissance mineral resource	334	0	0	0	0
<b>Total "B"</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Total Reserves + Resources (A+B)		<b>315000</b>	<b>231000</b>	<b>37800</b>	<b>583800</b>

(Source: Approved Mining plan)

## **1.6 Method of Mining:**

### **1.6.1 Salient description of the Mining Method:**

At the beginning of mining operations topography of the Lease area & its surrounding Leases are of undulating nature and controlled by Highly compact hard Quartzite, Banded Hematite Quartzite and steep dip. The area is drain by Seasonal Local drainage streams in all Corners of Lease. The lease hold area lies in the “Zendepar Iron Ore Mine” Maximum elevation in the Lease area is 505 MRL & minimum is 460 MRL on the South & West direction. The area in scheme of mining for the period of Year 2021 to 2026, it is stated that the mining operations would be done by Category A – semi-mechanized. The mining operations will be carried out in between the periods of 2020-21 to 2025-2026 after obtaining of environmental clearance.

### **1.6.2 Proposed Method of Mining:**

In view of the ore geometry including strike, dip, depth from the surface etc. it is proposed to go for open cast method of mining & mining operation start after getting EC, CTO & CTE. Open Cast Method of Mining -The following main activities are involved;

- Deep holes drilling and blasting for breaking ground.
- Removal of over burden from the mine to waste dumping yards with the use of Heavy Earth Moving Machineries (HRMMs)
- Mining out ore in the course of OB development.
- Processing of ROM.
- Dewatering of pits. Dust suppression.
- Routine and preventive maintenance of HEMMs
- Soil dump management
- Other activities.

In view of the average grade of 53% to 63% Fe content stripping ratio of 1:10 is considered i.e.; for every 1 (One) ton of “ROM” 10 (Ten) m<sup>3</sup> of waste Rock will be removed. The density of “ROM” is considered as 3.5 T/ m<sup>3</sup>.

### **1.7 Mining Program for next Five Years:**

In- situ tentative excavation of Iron Ore and Float Ore indicates year-wise tentative excavation in cubic meters indicating development, ROM, pit wise as in below **Table 3 & 4.**



**Table 3: In- situ Tentative Excavation of Iron Ore**

S. N.	Year	Total Tentative Excavation (m <sup>3</sup> )	Soil m <sup>3</sup>	O/B m <sup>3</sup>	ROM m <sup>3</sup>		BD kg/T	Ore in Tons
					Ore m <sup>3</sup>	ML m <sup>3</sup> (10%)		
1	2021-22	51300.00	5400.00	16200.00	27000.00	2700.00	3.5	94500.00
2	2022-23	51300.00	5400.00	16200.00	27000.00	2700.00	3.5	94500.00
3	2023-24	37620.00	3960.00	11880.00	19800.00	1980.00	3.5	69300.00
4	2024-25	37620.00	360.00	11880.00	19800.00	19800.00	3.5	69300.00
5	2025-26	30600.00	0.00	10800.00	18000.00	1800.00	3.5	63000.00
<b>Total</b>		<b>208440.00</b>	<b>18720.00</b>	<b>66960.00</b>	<b>111600.00</b>	<b>11160.00</b>		<b>390600.00</b>
<b>Avg. Prod. Per year</b>				<b>13392.00</b>	<b>22320.00</b>	<b>2232.00</b>		<b>78120.00</b>
Steeping ratio 1:0.8								
M.L 10%: Mining Loss								

(Source: Approved Mining plan)

**Table 4: In- situ Tentative Excavation of Float Ore**

S. N.	Years	Soil/Top Soil m <sup>3</sup>	Area Con. 40% for Float Ore	Thick of Float Ore 1.5 M	Recovery of Float Ore 15%	B.D T/m <sup>3</sup>	Total Ton
1	2021-22	5400.00	2160.00	3240.00	486.00	3.5	1701.00
2	2022-23	5400.00	2160.00	3240.00	486.00	3.5	1701.00
3	2023-24	3960.00	1584.00	2376.00	356.40	3.5	1247.40
4	2024-25	3960.00	1584.00	2376.00	356.40	3.5	1247.40
5	2025-26	0.00	0.00	0.00	0.00	3.5	0.00
	<b>Total</b>	<b>18720.00</b>	<b>7488.00</b>	<b>11232.00</b>	<b>1684.80</b>		<b>5896.80</b>

(Source: Approved Mining plan)



## **1.8 Raw Material Required Along with Estimated Quantity, Likely Source, Marketing Area of**

### **Final Product/S, Mode of Transport of Raw Material and Finished Product:**

No raw material will be required in the proposed project. The operation involves the extraction of iron ore and it will be transported to the Local market through tippers. New approach road will be developed for transportation.

### **1.9 Use of Mineral:**

The Iron Ore will be mined out during the mining operation & consumed by the various steel industries in the surroundings. The firm does not have any captive unit.

## **1.10 Availability of Water, Energy/ Power Requirement and its Sources:**

### **1.10.1 Water Requirement:**

Water required for the proposed mining project will be sourced from water tankers from the nearby villages. The total water requirement will be around 21 KLD. Water requirement details are given in below **Table 5**.

**Table 5: Water Requirement Details**

<b>S. N.</b>	<b>Details of Usage</b>	<b>Quantity (KLD)</b>
1	Dust Suppression	4.5
2	Domestic Usage	6.71
3	Green Belt Development	9.6
	<b>Total Requirement</b>	<b>20.81</b>
	<b>Total Requirement (Rounded Off)</b>	<b>21</b>

### **1.10.2 Power:**

Proposed project site location is undulating and remote from the nearby villages & obtaining electricity supply is difficult and is become costly affair. As the proposed project is only for mining activity which includes excavation of iron ore from the mine & no further process is required on it for selling in the market, requirement of electricity supply is not essential and it can be met from DG set. DG set power can be used for lighting purpose in addition to proposed solar lights.

- Estimated Power: 10 KVA
- Source: 1 X 10 KVA DG Set
- DG set is proposed.

## **1.11 Quantity of wastes to be generated (liquid and solid) and scheme for their management/ disposal:**

### **1.11.1 Solid Waste Generation& its Disposal:**

**Laterite Soil:** The major part of the area on the surface is covered with Laterite, Lateritic Soil & Limonite. At place outcrop of Iron Ore is exposed on surface. The Ore body is covered with Laterite which is showing varying thickness of 1.5 m to 3.0 m. and as such will be stored in 'Dumps'. The Laterite Soil is used for Road construction within Mining lease area.

**O.B:** The area is having undulating topography and Iron is mostly outcropping. The Waste rock/Side burden will consist of mainly Banded Hematite Quartzite.

**Dumps:** The waste will be collected/ stacked in the main dump only. The waste material is proposed to dump along the boundaries. No surface water bodies in the lease area and the adjoining area. The drainage of the area will not be disturbed to cause any adverse impact on water regime either surface or groundwater & for seasonal rain fall a garland & retaining wall terrace will be provided at an interval of 6.0 m.

Prior to the disposal of waste, dumping site will be prepared as per the following manner: Dumping site will be surveyed and earmarked as per the proposal. Roads will be developed from Quarry to the dumping site at suitable gradient of 1:16. Shrubs and bushes wherever found will be cut and removed. Soil if any shall be scrapped off and disposed over the existing dumps. Grass will be sown over the waste dump to control erosion and dust generation.

Protective measures for O.B /Soil Dumps & ROM Yard: by using Garland drainage & retaining wall.

#### **1.11.2 Liquid Effluent:**

No liquid effluent will be generated in proposed mining project except domestic waste. Domestic wastewater from the mine will be treated in septic tank followed by soak pit.

#### **1.12 Site Analysis:**

##### **1.12.1 Accessibility:**

The site for the proposed mine is located at Sy. No. Part of 82 (82/2) near Zendevar village in Korchi tehsil of Gadchiroli district in the state of Maharashtra. Proposed project site is at a distance of 3.5 km (W) from NH 543 – Shahdol to Bramhapuri passes from Korchi. NH 543 is starts at Shahdol (Madhya Pradesh) and ends at Bramhapuri (Maharashtra) and it passes through Shahdol-Mandla-Balaghat-Gondia-Deori-Korchi-Bramhapuri. Project site is approachable from Nandali to Sohale village road at a distance of 1.5 km (E). Proposed project site is at a distance of 45 km from District Headquarter, Gadchiroli. Barabhati railway station is the nearest railhead at a distance of 45 km (NW) from the proposed project site. Barabhati railway station is on the Gondia to Balharshah railway line which is connecting Chhattisgarh to south part of the India. Dr. Babasaheb Ambedkar International Airport, Nagpur is the nearest airport at a distance of 153.0 km

(NW) from the proposed project site. Visakhapatnam Sea Port is the nearest sea port at a distance of 450 km (SE) from the proposed project site.

### **1.13 Planning Brief:**

#### **1.13.1 Land Use Planning:**

The project is located in 12.00 Ha. of Govt. non forests revenue land. Land use indicating the area likely to be degraded due to quarrying, dumping, roads, workshops, processing, plant tailing ponds/dam etc. There will be change in land use as the Iron ore will be excavated from the mine lease area.

#### **1.13.2 Assessment of Infrastructure Demand (Physical & Social):**

On the basis of the preliminary site visit, the infrastructure demand in the villages was assessed on the basis of need and priority.

#### **1.13.3 Amenities/Facilities:**

First aid box and drinking water facility will be made available at the project site. Rest shelter will be provided at the project site. Mines office and other statutory constructions like rest shelter, first aid, work shed and drinking water as required in the mine lease area will be provided. Drinking water will be supplied to the workers by the water tankers from the surrounding villages.

### **1.14 Proposed Infrastructure & Environment Management Plan:**

#### **1.14.1 Residential Area (Non-Processing Area):**

As the local persons of surrounding villages will be given employment, no residential area/ housing is proposed within the mining lease area.

#### **1.14.2 Water Management:**

The total water requirement is 21 KLD. There are no chances for changes in quality of surface water or ground water. The mining operations will be carried out on slopes of the rocky terrain. Hence, neither the ground water table nor the general surface drainage pattern will be affected. No water will be discharged from the mine.

Following measures shall be taken:

- PP will ensure that good quality potable water is provided for drinking purposes. Good sanitation facilities (toilets with septic tank followed by soak pits) will be provided and maintained for good hygienic conditions.
- The spillages from fueling of machinery shall be avoided and in case of any spillage the same shall be handled properly. Likewise, the spent lubricating oils etc., shall be safely collected and properly disposed off.

#### **1.15 Sewerage System:**

Domestic waste will be disposed in to septic tank followed by soak pit.

#### **1.16 Solid Waste Management:**

No waste generation is envisaged from the mine.

#### **1.17 Baseline Environmental Studies:**

Baseline environmental studies were conducted in the area within 10 km radius of the proposed project site to assess the existing environmental scenario in the area. Baseline environmental studies were carried out in the months October to December 2022 i.e.; post monsoon season. The baseline environmental quality data for various components of environment, viz. Air, Noise, Water, Land were monitored during October to December 2022 in the study area covering 10 km radius around the project site.

##### **1.17.1 Meteorology:**

##### **Summary of the Meteorological Data Generated at Site**

The site-Specific meteorological data is given in **Table 6** and wind rose diagram is given in **Figure 4**.

**Table 6: Site Specific Climatological Data**

S. N.	Month	Temperature (°C)		Relative Humidity (%)		Rainfall (mm)
		Min.	Max.	Min.	Max.	
1	October 2022	19	34	30	98	39
2	November 2022	21	32	78	95	8
3	December 2022	11	30	20	95	7
	<b>Total</b>					<b>54</b>

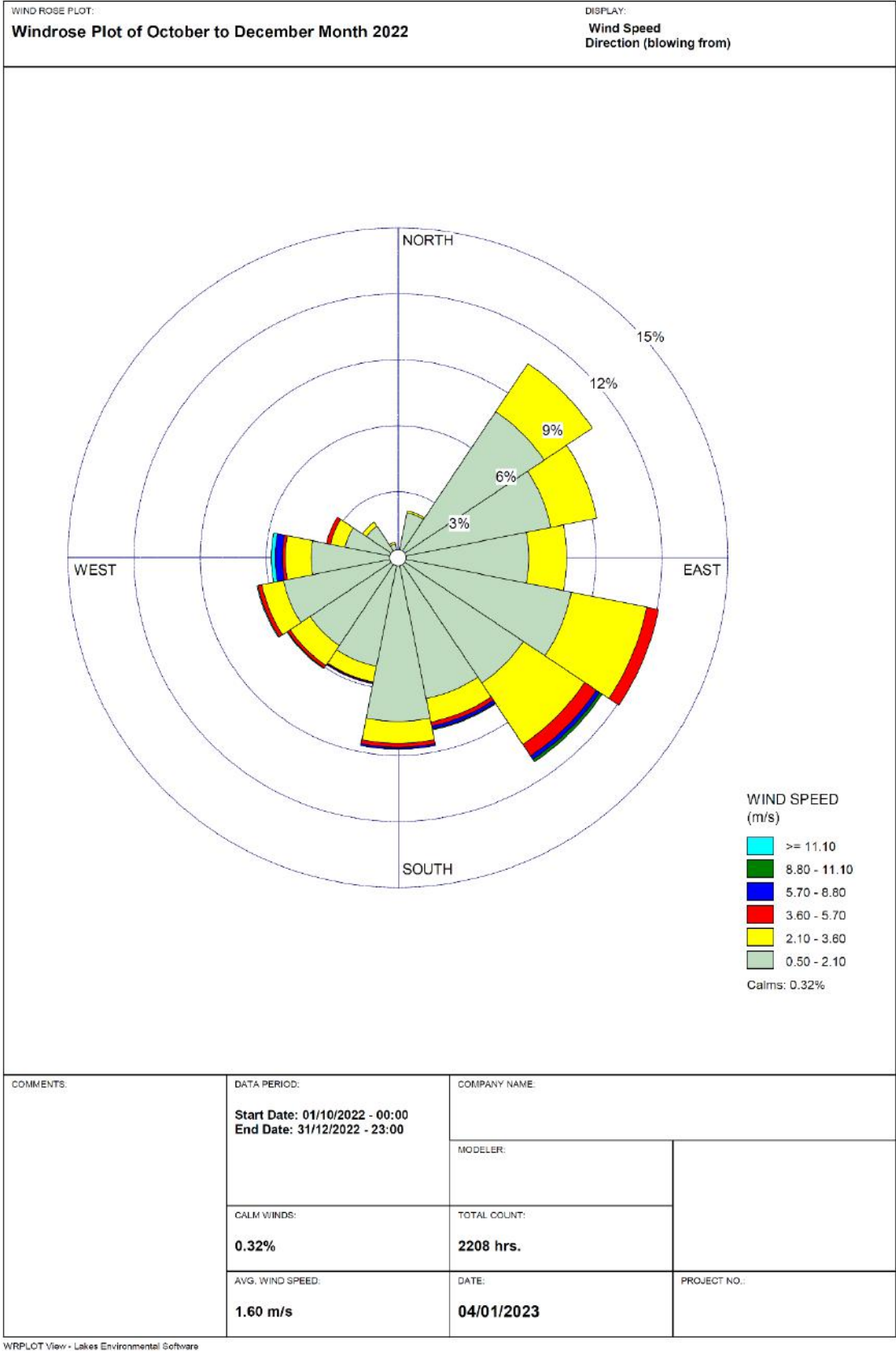


Figure 4: Wind Rose Diagram – October to December 2022 (IMD Specific)

### 1.17.2 Ambient Air Quality Status:

The status of ambient air quality within the study area was monitored for the period of during October to December 2022 at 8 locations including the project site and in 10 km study area villages. Total 8 sampling locations were selected based on the meteorological conditions considering upwind and downwind directions. The levels of Respirable Particulate Matter (PM<sub>10</sub>), Fine Particulates (PM<sub>2.5</sub>), Sulphur Dioxide (SO<sub>2</sub>), and Oxides of Nitrogen (NO<sub>x</sub>) were monitored. Based on the above, the AAQ stations have been identified and locations of ambient air quality stations are presented in **Table 7**. The minimum and maximum values of monitoring results are summarized in **Table 8 A, 8 B, 8 C, & 8 D**.

**Table 7: Ambient Air Quality Monitoring Stations**

Code	Sampling Location	Distance (km) w.r.t Project	Direction w.r.t Project
A1	Project Site	--	-
A2	Zendevar Village	3.5 km	E
A3	Bharitola Village	2.5 km	S
A4	Bondena Village	1.5 km	SW
A5	Jamnara Village	3.5 km	SW
A6	Rajatola Village	4.5 km	W
A7	Maseli Village	2.5 km	NW
A8	Kaimul Village	4.5 km	N

**Table 8: Summary of Ambient Air Quality Results**

**Table 8 A: Particulate Matter – PM<sub>10</sub>**

Location Name	A1	A2	A3	A4	A5	A6	A7	A8
Minimum	46.30	45.20	46.20	45.10	45.20	48.20	47.20	48.10
Maximum	51.60	51.80	51.30	51.90	51.90	51.40	53.40	52.90
Average	49.31	48.89	48.70	48.27	47.84	50.05	50.53	50.67
98 <sup>th</sup> Percentile	51.60	51.62	51.26	51.58	51.58	51.40	53.26	52.81
<b>CPCB Standards</b>	<b>100</b>							

All Values are in µg/m<sup>3</sup>

**Table 8 B: Particulate Matter – PM<sub>2.5</sub>**

Location Name	A1	A2	A3	A4	A5	A6	A7	A8
Minimum	14.20	11.70	12.30	15.30	10.60	13.30	12.60	12.30
Maximum	19.60	17.80	16.60	21.30	16.80	17.40	18.30	17.90
Average	17.23	14.97	14.99	18.23	13.36	15.59	15.60	15.08
98 <sup>th</sup> Percentile	19.55	17.57	16.55	21.21	16.71	17.31	18.21	17.81
<b>CPCB Standards</b>	<b>60</b>							

All Values are in µg/m<sup>3</sup>

**Table 8 C: Sulphur Dioxide - SO<sub>2</sub>**

Location Name	A1	A2	A3	A4	A5	A6	A7	A8
Minimum	2.20	2.70	2.30	2.60	2.80	2.50	2.60	2.40
Maximum	6.10	6.30	5.80	6.00	5.90	6.40	6.60	6.20
Average	4.74	4.60	4.31	4.32	4.49	4.63	4.65	4.34
98 <sup>th</sup> Percentile	6.10	6.30	5.80	5.91	5.85	6.35	6.51	6.15
<b>CPCB Standards</b>	<b>80</b>							

All Values are in µg/m<sup>3</sup>

**Table 8 D: Oxides of Nitrogen – NO<sub>x</sub>**

Location Name	A1	A2	A3	A4	A5	A6	A7	A8
Minimum	4.80	5.20	4.90	5.10	4.90	4.90	5.00	5.30
Maximum	8.30	9.30	8.90	9.00	8.90	9.40	9.50	9.00
Average	6.83	7.76	7.52	7.45	7.37	7.70	7.75	7.50
98 <sup>th</sup> Percentile	8.30	9.30	8.85	9.00	8.81	9.40	9.41	8.95
<b>CPCB Standards</b>	<b>80</b>							

All Values are in µg/m<sup>3</sup>

**Table 8 E: Carbon Monoxide – CO**

Location Name	A1	A2	A3	A4	A5	A6	A7	A8
Minimum	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Maximum	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Average	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
98 <sup>th</sup> Percentile	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1

All Values are in µg/m<sup>3</sup>

The analysis of ambient air quality data for three months consequently indicates good ambient air quality conditions at site as well as around the site upwind as well as downwind. Particulate matter PM<sub>10</sub> as well as PM<sub>2.5</sub> is within prescribed limits. SO<sub>2</sub> and NO<sub>x</sub> levels are well below the limits prescribed hence overall picture as far as ambient air quality concerned is positive. As per the baseline data collection, the maximum value of the PM<sub>10</sub> was recorded at Bharitola Village – 53.40 µg/m<sup>3</sup> and minimum value at Rajatola village – 45.10 µg/m<sup>3</sup>. As per the baseline data collection, the maximum value of the PM<sub>2.5</sub> was recorded at Mine site – 19.60 µg/m<sup>3</sup> and minimum value at Rajatola village – 10.60 µg/m<sup>3</sup>. As per the baseline data collection, the maximum value of the SO<sub>2</sub> was recorded at Maseli village – 6.60 µg/m<sup>3</sup> and minimum value at Project Site – 2.20 µg/m<sup>3</sup>. As per the baseline data collection, the maximum value of the NO<sub>x</sub> was recorded at Maseli Village – 9.50 µg/m<sup>3</sup> and minimum value at Project Site – 4.80 µg/m<sup>3</sup>.

### 1.17.3 Ambient Noise Levels:

Ambient noise level monitoring was carried out at the 8 monitoring locations; those were selected for ambient air quality monitoring. The noise recording stations are shown in **Table 9**. The monitoring results are summarized in **Table 10**.

**Table 9: Ambient Noise Quality Monitoring Stations**

Code	Location	Distance w.r.to Project	Direction w.r.to Project
N1	Project Site	--	-
N2	Zendevar Village	3.5 km	E
N3	Bharitola Village	2.5 km	S
N4	Bondena Village	1.5 km	SW
N5	Jamnara Village	3.5 km	SW
N6	Rajatola Village	4.5 km	W
N7	Maseli Village	2.5 km	NW
N8	Kaimul Village	4.5 km	N

**Table 10: Summary of Ambient Noise Level Monitoring Results**

Equivalent Noise Levels	N1	N2	N3	N4	N5	N6	N7	N8
(Day) L <sub>Max</sub>	57.8	52.4	52.9	54.8	48.9	53.8	57.6	57.9
(Day) L <sub>Min</sub>	43.5	44.6	42.2	43.2	36.8	43.2	44.6	44.9
(Night) L <sub>Max</sub>	49.3	48.5	48.2	50.2	43.8	48.1	54.1	50.8



<b>(Night) L<sub>Min</sub></b>	41.6	40.8	38.6	40.2	34.6	40.2	41.7	42.1
<b>L<sub>d</sub></b>	51.9	48.6	48.2	49.9	43.8	50.3	54.6	52.7
<b>L<sub>n</sub></b>	42.3	42.4	40.9	43.5	36.4	42.7	43	44.2
<b>CPCB</b>	<b>75</b>	<b>55</b>	<b>55</b>	<b>55</b>	<b>55</b>	<b>55</b>	<b>55</b>	<b>55</b>
<b>L</b>	<b>70</b>	<b>45</b>	<b>45</b>	<b>45</b>	<b>45</b>	<b>45</b>	<b>45</b>	<b>45</b>

**\*All values in dB(A)**

L<sub>min</sub> : Minimum Noise Level Recorded

L<sub>max</sub> : Maximum Noise Level Recorded

L<sub>d</sub> : Day Equivalent

L<sub>n</sub> : Night Equivalents

L<sub>dn</sub> : Day-Night Equivalents

## Conclusion

The Maximum Noise (day) value was observed 57.9 dB (A) at Kaimul Village (N8) and the Minimum Noise (day) value was observed 36.8 dB (A) at Jamnara Village (N5). The Maximum Noise (night) value was observed 54.1 dB (A) at Maseli Village (N7) and the Minimum Noise (night) value was observed 34.6 dB (A) at Jamnara Village (N5).

The maximum and minimum day time equivalent noise levels were found in the range of 43.8 to 54.6 dB (A) and the maximum and minimum night time equivalent noise levels were found in the range of 36.4 to 44.2 dB (A).

### 1.17.4 Surface and Ground Water Quality:

#### Ground Water Sampling Locations:

Ground water sampling locations were selected surrounding the mine site within 10 km study area. Total eight ground water samples were collected and analyzed from the study area. The locations of ground water sampling with its distance and direction w.r.to the project site are given in **Table 11**.

**Table 11: Ground Water Sampling Locations**

<b>Code</b>	<b>Location</b>	<b>Distance w.r.to Project</b>	<b>Direction w.r.to Project</b>
GW1	Project Site	--	-
GW2	Zendevar Village	3.5 km	E
GW3	Bharitola Village	2.5 km	S

GW4	Bondena Village	1.5 km	SW
GW5	Jamnara Village	3.5 km	SW
GW6	Rajatola Village	4.5 km	W
GW7	Maseli Village	2.5 km	NW
GW8	Kaimul Village	4.5 km	N

## Conclusion:

### Ground Water Samples within 10 km Study Area:

- pH of the ground water samples collected was in the range of 7.02 – 7.97.
- Total Dissolved Solids in the samples was in the range of 260.0 – 505.0mg/l.
- Hardness was found to vary between 120.0 – 225 mg/l.
- Chlorides concentration was found to vary between 25.16 – 78.02 mg/l.
- Sulphates concentration was found to vary between 15.97 – 57.95 mg/l.
- Heavy metal concentrations in all the samples were found to be well within the limits.

### Surface Water Sampling Locations:

Surface water sampling locations were selected surrounding the mine site within 10 km study area. Three surface water samples were collected from the study area. Two surface water samples were from downstream and one from upstream of the project site. The locations of surface water sampling with its distance and directions w.r.to the project site given in **Table 12**.

• **Table 12: Surface Water Sampling Locations**

S. N.	Code	Location	Distance w.r. to Project site	Direction w.r.t Project
1	SW1	Khursipar Village Talav, Khursipar Village	6.0 km	Upstream – North-East
2	SW2	Jambhali Waterfall, Jambhali Village	8.0 km	Downstream - South

## Conclusion:

### Surface Water Samples within 10 km Study Area:

Sampling was carried out at 2 locations during the study period. Sampling and analysis were carried out, as per standard methods and frequency of the sampling was thrice/stations. The summary of the results is presented below:

- pH of the surface water samples collected was in the range of 7.20 - 7.49.

- Total dissolved solids in the samples were in the range of 160.0 – 455.0 mg/l.
- Chlorides concentration was found to vary between 17.61 – 98.16 mg/l.
- Sulphates concentration was found to vary between 11.03 – 48.07 mg/l.

#### **1.17.5 Soil Quality:**

##### **Location of Soil Sampling Sites:**

The soil samples were collected from 8 sampling locations within an area of 10 km radius around the proposed project for analysis of the physico-chemical characteristics of the soil quality. Soil samples were collected from three different types of land i.e.; agriculture, waste (mine site) and barren land. The locations of soil sampling are given with its distance and direction w.r.to project site in **Table 13**.

**Table 13: Soil Sampling Locations**

<b>S. N.</b>	<b>Code</b>	<b>Location</b>	<b>Distance w.r.to Project</b>	<b>Direction w.r.to Project</b>
1	S1	Project Site	--	-
2	S2	Zendevar Village	3.5 km	E
3	S3	Bharitola Village	2.5 km	S
4	S4	Bondena Village	1.5 km	SW
5	S5	Jamnara Village	3.5 km	SW
6	S6	Rajatola Village	4.5 km	W
7	S7	Maseli Village	2.5 km	NW
8	S8	Kaimul Village	4.5 km	N

##### **Conclusion:**

Sampling was carried out at 8 locations during the study period. The summary of the results is presented below:

The summary of the results is presented below:

- pH in soil sample was observed to be in the range 6.69 to 7.54.
- Organic Carbon was observed in the range of 0.47 – 1.21 %.
- Available Nitrogen as N was observed in the range of 139.48 – 204.71 Kg/ Hac.
- Available Phosphates as P was observed in the range of 30.39 - 46.19 Kg/ Hac.
- Available Potassium as K was observed in the range of 183.44 – 391.47. Kg/ Hac.

#### 1.17.6 Land Use Land Cover Classification:

The Land Cover classes and their coverage are summarized in **Table 14**.

**Table 14: Land Use Pattern of the Study Area**

Sr. No.	Land Use Class (Level-I)	Land use/Land cover Classes (Level – II)	Area in (Sq. Km) 314	Area in (%) 100
1	Forest	Forest	137.63	43.83
2	Water bodies	Waterbody	2.07	0.66
3	Agricultural Land	Crop Land	21.61	6.88
		Fallow Land	149.10	47.48
4	Built-up Land	Built-up Land	1.89	0.60
5	Waste Land	Waste Land	1.69	0.54
		<b>Total</b>	<b>314.00</b>	<b>100.00</b>

#### 1.17.7 Ecology & Biodiversity in 10 km Study Area:

##### Rare and Endangered Flora in the Study Area:

On the basis of literature survey, from red data books of Indian plants, detailed list rare and Endangered plant genera of Chhattisgarh particularly with reference to Rajnandgaon district reveals that there are no endangered, threatened, rare plant species or endangered, threatened, most threatened, vulnerable plant species observed or recorded during study period and this plant species are commonly present in the Chhattisgarh state.

Flora and fauna studies have been carried out in 10 km radius study area and no any endangered species were found out in the study area.

##### Presence of Protected Areas as per Wildlife Protection Act, 1972 in Study Area:

As per MoEF&CC and Forest department of Government of Chhattisgarh state notifications reveals that there are no biospheres, tiger reserves, elephant reserves, national parks, wildlife sanctuaries, conservation reserves and community reserves in 10-km radius from mine lease boundary.

#### 1.18 Socio-Economic Environment:

Information on socio-demographic status and the trends of the communities in the 10 km radius was collected through primary social survey and secondary data from census 2011 & village directory 2011. Summary of the socio-economic status of the study area is given in **Table 15**.

**Table 15: Distribution of Population in the Study Area as per 2011 Census**

S. N.	Particulars	0-3 km	3-7 km	7-10 km	0 – 10 km
1	No. of Households	649	3400	7487	11536
2	Male Population	1439	7601	17170	26210
3	Female Population	1464	8083	17758	27305
4	<b>Total Population</b>	<b>2903</b>	<b>15684</b>	<b>34928</b>	<b>53515</b>
5	Scheduled Castes	428	1184	3785	5397
6	Scheduled Tribes	2053	10995	21306	34354
7	% of Males to Total Population	49.56	48.46	46.94	49.0
8	% of Females to Total Population	50.43	51.54	53.06	51.0
9	Average Household Size	4.47	4.61	4.66	4.63
10	Sex Ratio	1017	1063	1034	1041
11	Male Literates	1082	5661	12626	19369
12	Female Literates	841	4838	10160	15839
13	<b>Total Literates</b>	<b>1923</b>	<b>10499</b>	<b>22786</b>	<b>35208</b>

Source: District Primary Census Hand Book, Gadchiroli, Gondia and Rajnandgaon, 2011

#### **1.19 Anticipated Environmental Impacts and Mitigation Measures:**

##### **1.19.1 Air Environment:**

The air borne particulate matter is the main air pollutant contributed by opencast mining. Predictions have been carried out for the worst-case scenario considering all the operations of the mine will be under simultaneous continuous operation of 12 hours for the proposed emissions.

The air quality modeling has been done and the details of incremental emission load due to Iron Ore mining activity contributing in existing baseline values is given in **Table 16**.

**Table 16: Incremental Emission Load due to Mining Activity Contributing in Existing Baseline Values**

Pollutants	Baseline Concentration ( $\mu\text{g}/\text{m}^3$ )	Incremental ( $\mu\text{g}/\text{m}^3$ )	Resultant ( $\mu\text{g}/\text{m}^3$ )	CPCB Norms
PM <sub>10</sub>	53.40	--	53.40	100 (24 hourly)
SO <sub>2</sub>	6.60	0.25	16.29	80 (24 hourly)
NO <sub>x</sub>	4.80	0.19	33.43	80 (24 hourly)
CO (mg/m <sup>3</sup> )	< 0.1	--	< 0.1	4 (1 hour)

#### 1.19.2 Air Pollution Control Measures:

The following air pollution control measures will be implemented in the mine to control the impact of air pollution.

- In order to minimize the dust emanating from the mining operations water sprinkling is proposed at the mine pit, waste dump and also on the haulage roads to suppress the dust.
- Dust masks will be given to the mineworkers.
- Regular grading of haul roads will be done to clear the accumulation of loose materials on the roads.
- Transport vehicles are maintained regularly in order to minimize the emissions from them.
- Overloading of tippers will be avoided to prevent the material spillage on the roads.
- Loaded tippers will be covered with tarpaulin before they are allowed on to the main roads.

The air pollution impacts on the nearby villages will be negligible with this small-scale mining after adoption of the above air pollution control measures.

#### 1.19.3 Noise Environment:

Noise levels in the proposed mine will be produced due to movement of vehicles by transportation of Iron Ore and mining operations like blasting and drilling. But the pronounced effect of noise is felt only near the active working area.

Since the proposed mine will adopt open cast semi mechanized method for mining, there will not be much impact on the surrounding villages due to the mining operations. Also, habitations are away from the proposed project activity and the area is surrounded by thick and dense forest which will reduce the impacts of generated noise due to the proposed project activity. Hence, there will be no any noise impact on surrounding habitations of the proposed project site.

#### **1.19.4 Noise Pollution Control Measures:**

The following are the noise pollution control measures proposed in the mine.

- Ear plugs will be provided to the mine workers whenever needed.
- Vehicles used for transportation will be regularly maintained.
- Greenbelt will be provided all along the mine in 7.5 m barrier zone to reduce the noise levels.
- Speed of the vehicles entering or leaving the mine will be limited to 25 kmph to avoid undue noise from empty trucks.

#### **1.19.5 Impact due to Ground Vibrations:**

The proposed mine will adopt opencast semi mechanized with Category A method for mining with drilling and blasting. Hence, the impact on ground vibrations due to mining will be negligible.

#### **1.19.6 Water Environment:**

The total water requirement for the above operations will be 21 KLD and domestic water requirement will be met by water tankers at the mine site. Waste water generation from the above consumption is from domestic consumption i.e., 6.7 KLD. Wastewater generated from the Domestic front will be mainly from toilets. This waste water will be treated in septic tank followed by soak pit.

There are no natural drainage channels within the site. There are no chances for changes in quality of surface water or ground water. The mining operations will be carried out on slopes of the rocky terrain. Hence, neither the ground water table nor the general surface drainage pattern will be affected. No water will be discharged from the quarry. It is proposed to construct garland drains with sedimentation pits all along the mine pits to avoid erosion and sedimentation due to storm water. Only fresh water will be left into the nearby seasonal streams as after de-siltation.

#### **1.20 Greenbelt Development:**

Greenbelt will be developed for protection and improvement in the surrounding environment and to minimize the dust impact due to proposed mining activity. Planted saplings will be fruit bearing and native species having thick and broad leaves with canopy nature. Total mine lease area is 12 Ha. and 33% of the total mine lease area i.e.; 3.96 Ha. need to develop as a greenbelt. As the proposed project site is surrounded by thick and dense forest and there are already trees are available in the mine lease area. Almost, 3 Ha. area is available with good no. of trees which can be maintained as it is & vacant spaces in between these trees will be covered by planting trees. We need to develop 0.96 Ha. area as a greenbelt which is in the form pockets in between already available trees in the mine lease area. To improve the greenbelt coverage at the mine site,

plantation is proposed on 7.5 m safety zone. Also, greenbelt will be developed in other areas of mine lease such as administration office, beside of haulage roads etc.

The plantation work for green belt development will be carried in consultation with a horticulturist. By considering 2000 saplings per hectare, total no. of saplings with consideration of 75% rate of survival to be planted every year and balance assume mortality of 25% will be covered every year with applicable rate of saplings to be planted.

Details of Plantation area are as given below:

Total Mine Lease Area = 12.00 Ha.

Applicable 33% Greenbelt Area = 3.96 Ha.

Already Developed Greenbelt Area as of now = 3.00 Ha.

Area to be covered by Greenbelt in future = 0.96 Ha.

Plants proposed per Hectare as per MoEF&CC recommendation = 2000 Nos.

Total no. of plants to be planted in Greenbelt Development (For 0.96 Ha.) = 1920 Nos.

#### **1.21 Occupational Health & Safety Management:**

- Periodical Medical Examination (PME) of all workers before recruitment and during mining operations is carried out.
- Total workers in the mine – 80 immediate workers after 5 years it will be 149 Nos.
- First aid facility will be provided at the project site.
- Mine operators will be provided with personal protective equipment (PPEs) includes safety helmets and footwear, in addition to ear, eye, and hand protection devices.
- Dust masks will be provided for workers.
- Potable drinking water & shelter for mine workers will be provided.

#### **1.22 Environment Management Plan (EMP):**

In order to implement an effective environmental management plan for mitigating the adverse impacts on the environment, regular monitoring of various environmental components is necessary. Mine manager with the support of Safety and Env. Officer and other workers will monitor the environment management plan of this area.

#### **Budget for Implementation Environment Management Plan:**

Environment management plan is for the proposed project activity divided into two parts i.e.; one is capital cost & one is recurring cost. Total fund earmarked for EMP is Rs. 46.34 Lakhs (Rs. 0.46 Crores) in which capital cost is Rs. 37 Lakhs and recurring cost is Rs. 9.34 Lakhs. Detail budget for Environmental Management Plan is given in below **Table 17**.



**Table 17: EMP Budget**

S. N.	Item	Capital Cost (Rs. In Lakhs)	Recurring Cost (Rs. In Lakhs)
1	Air Pollution Control	5.0	1.0
2	Rain Water Harvesting System	5.0	1.0
3	Water Pollution Control	5.0	0.5
4	Noise Pollution Control	1.0	0.5
5	Environment Monitoring and Management	5.0	2.34
6	Occupational Health	2.0	1.0
7	Greenbelt Development	12.0	2.0
8	Safety Management	1.0	0.5
9	Renewable Energy System	1.0	0.5
	<b>Total Amount</b>	<b>37.0</b>	<b>9.34</b>
	<b>Total Amount (Capital Cost &amp; Recurring Cost)</b>	<b>46.34</b>	
	<b>Total Amount (Capital Cost &amp; Recurring Cost)</b>	<b>0.4634 Crores</b>	

### 1.23 Corporate Environment Responsibility:

The proposed project would proactively promote the public interest through provision of basic amenities such as roads, transportation, electricity, education, sanitation and healthcare facilities. Proposed project is a greenfield project and CER budget is calculated based on its category as prescribed in office Memorandum of MoEF&CC Dated: 01/05/2018. The CER budget allotted based on the capital cost of the proposed project shall be Rs. 20.0 Lakhs (2% of the Project Cost of Rs. 10 Crores). The details break up and activities considered under CER activities are given in below **Table 18**.

**Table 18: Proposed CER Activities and its Budget**

S. N.	Planned Activities under CER as per specific needs	Amount in Rs.
1	<b>Community Health Improvement</b> <ul style="list-style-type: none"> <li>Sanitary facilities for project surrounding villages</li> </ul>	3,00,000.00
2	<b>Community Education Facilities</b> <ul style="list-style-type: none"> <li>Providing desktop computers to schools</li> </ul>	3,00,000.00

3	<b>Infrastructural Development</b> <ul style="list-style-type: none"> <li>Maintenance/ Repair of Hand Pumps/ Bore wells</li> </ul>	10,00,000.00
4	<b>Afforestation Programs</b> <ul style="list-style-type: none"> <li>Plantation of trees in villages road side/ Panchayat House/ Public Health Center/ schools</li> </ul>	2,00,000.00
5	<b>Community Welfare Activities</b> <ul style="list-style-type: none"> <li>Solar Street Lights for common community area and village main approach roads as per the instruction of respective Gram Panchayat</li> </ul>	2,00,000.00
<b>Total Amount in Rs.</b>		<b>20,00,000.00</b>
<b>Total Amount (Rupees in Lakhs)</b>		<b>20.00</b>

#### 1.24 Project Benefits:

It is proposed to employ about 149 persons for carrying out mining operations and the lessee proposed to give preference to the local people in employment. In addition, there will be indirect employment to many people in the form of contractual jobs, business opportunities, service facilities etc. this will enhance the economic status of the local people. Local peoples may have a choice to purchase a vehicle and engage their vehicle for transportation activity of Iron Ore. This will generate new source of income to local peoples as it is remote area which is surrounded by forest and there are very less alternatives are available with them to enhance their life style.

The impact of mining activity in the area will be positive on the socio- economic environment of the region. The employment directly and indirectly will be increased and better infrastructure and communication facilities will be provided.

M/s. Anuj Mines Minerals & Chemicals Pvt. Ltd. would be required to initiate the following measures to minimize the possible negative impacts:

- Implementation of adequate dust control measures to check air pollution.
- Organize six monthly health camps in the area to check the incidence of any respiratory and other related disorders.
- Conduct Entrepreneurship Development Camps to nurture entrepreneurial talents among the local youth.

#### 1.25 Conclusion:

Based on the EIA study, it is observed that there will be a marginal increase in the dust pollution, which will be controlled by sprinkling of water and transportation of Iron Ore in trucks by covering the material with Tarpaulin.

There will be negligible impact on ambient environment & ecology due to mining activities, more over the mining operations will lead to direct and indirect employment generation in the area.

Hence, it can be summarized that the mining of minerals from the proposed Iron Ore mine of M/s. Anuj Mines Minerals & Chemicals Pvt. Ltd. Mine will have a positive impact on the socio-economic environment of the area.

\*\*\*\*\*

**Executive Summary**  
**of**  
**Environmental Impact Assessment**  
*For*  
**Proposed Zendepear Iron Ore Mining Project having**  
**Mine Lease Area of 4.0 Ha.**  
**by**  
**Shri. Manoj Kumar Ajitsaria**  
*at*  
**Khasra No.: 82 Part (82/5) of Zendepear Village, Tahsil:**  
**Korchi, Dist.: Gadchiroli, Maharashtra**



**Project Proponent:**  
**Shri. Manoj Kumar Ajitsaria,**  
“Shree Mangal”, 159, Ramdaspath,  
Nagpur, Maharashtra - 440010

**Consultant**



**Sri Sai Manasa Nature Tech Private**  
**Limited**

(Certificate No. NABET/EIA/2124/RA 0260, Validity: 21-11-2024)

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## **Executive Summary**

### **1.0 Introduction**

Shri. Manoj Kumar Ajitsaria has been granted mine lease for Iron Ore over an Extent of 4.0 Ha. at Khasra Nos.: 82 Part (82/5) of Zendevar Village, Tahsil: Korchi, Dist.: Gadchiroli, Maharashtra State for a period of 30 years by Industries, Energy and Labour Department, Govt. of Maharashtra vide ref. no.: MMN-1004/CR684/IND-9 Dated: 10/03/2005. Accordingly, again we have applied for renewal of mine lease agreement to the concerned authority and Form K was signed in between Mine Lease Holder and The District Mining Officer on Dated: 11/07/2017. Mine Lease renewed for period of valid from 11/01/2017 to 10/01/2047 for the period of 30 years. (As per new Amendment of "Law of the Land" is consider up to 10/01/2067 (50 Years) & the procedure for the extension of Lease period is in process.)

### **1.1 Statutory Clearances:**

Proposed Zendevar Iron Ore Mine by Shri. Manoj Kumar Ajitsaria at Khasra No. 82 Part (82/5), Village Zendevar, Tahsil Korchi, District Gadchiroli, Maharashtra having mine lease area of 12.0 Ha. Proposed project site was granted mine lease to Shri. Manoj Kumar Ajitsaria by Section Officer, Govt. of Industries, Energy & Labor Dept., Mumbai vide Ref. No.: MMN-1004/CR-684/IND-9, Dated: 10/03/2005 for the period of 30 year's subject to compliance of provisions of MM (D & R) Act, 1957, MCR – 1960 and MCDR -1988. Accordingly, after executing mine lease agreement with The District Mining Officer, Collector Office, Gadchiroli as per the applicable procedure, we have applied given the mining plan work to RQP for preparation of mining plan and its further needful approval. RQP prepared the mining plan of the proposed project and submitted to The Regional Controller of Mines, Indian Bureau of Mines, Nagpur. Submitted mining plan was approved by The Regional Controller of Mines, Indian Bureau of Mines, Nagpur vide ref. no.: GAD/FE/MPLN-898/NGP Dated: 04/01/2006. Demarcation of the mine lease area was carried out by Dy. S. L. R., Korchi by the order of The District Collector, Gadchiroli, Maharashtra in the year 2007. Accordingly, project proponent hired Environment Consultant for obtaining "Environmental Clearance" for the proposed project in the year 2010. Environment Consultant prepared the application and submitted to State Expert Appraisal Committee (SEAC), Maharashtra. Project was considered in 40<sup>th</sup> SEAC meeting held on Dated: 15/02/2011 and issued Terms of Reference as per Item No. 12a. Baseline monitoring was carried out by the Environment Consultant for the Period: March to May 2011 (Summer Season). It was told to us to obtain Forest No Objection Certificate for further proceeding of the project for submission of Draft EIA report. We then approached to Revenue Department, Collector Office,



Gadchiroli for want of Forest NOC and further needful confirmation from their side to the Forest Department. Accordingly, Chief Conservator of Forest, (Head Forest Force), Government of Maharashtra, Nagpur issued Forest NOC to The Collector, Gadchiroli, Maharashtra vide ref. no.: Kaksha-17/RS/3321 Dated: 22/02/2012 confirming that there is no any forest land involved in the proposed project site. Then we also follow up with forest department for obtaining Forest NOC in the name of mine lease holder. Accordingly, Deputy Conservator of Forest, Wadsa Forest Department, Wadsa Forest Office, Wadsa issued Forest “No Objection Certificate” (NOC) vide ref. no.: Kaksha-4/Survey/Land/561, Wadsa Dated: 05/06/2014. Preparation and submission of Draft Environment Report was got delayed for the want of Forest NOC. Till the time validity of TOR was expired and again we have applied for extension for the TOR validity to the SEAC committee, Maharashtra. Proposal for extension of TOR validity was considered by the SEAC Committee and it was taken in the 128<sup>th</sup> Meeting held on Dated: 02/06/2016. SEAC committee considered our request for extension of TOR validity and extended it for the period of one year. Environment Consultant prepared the Draft EIA report and submitted to The Regional Officer, MPCB, Chandrapur for conducting Public Hearing. Accordingly, MPCB, Chandrapur published the paper advertisement in both Languages i.e.; Marathi & English on Dated: 30/06/2017. Public Hearing was organized by the MPCB at Conference Hall, District Collector Office, Gadchiroli on Dated: 03/08/2017. Peoples have attended the Public Hearing and demanded to cancel the arranged Public Hearing at Gadchiroli and requested the authority to reconduct at Tahsil Place Kochi, Gadchiroli District. Due to the huge demand of the public attended over there, The Additional District Magistrate, Collector Office, Gadchiroli postponed the public hearing on that date. As the validity of TOR extended for one year only and it was expired up to the period.

Due to non-commencement of mining activity as per the provisions of the mine lease agreement within the stipulated period for want of obtaining statutory clearances, notice was issued for cancellation of mine lease from the Director, Directorate of Geology & Mining, Govt. of Maharashtra, Nagpur. Accordingly, again we have applied for renewal of mine lease agreement to the concerned authority and Form K was signed in between Mine Lease Holder and The District Mining Officer on Dated: 11/07/2017. Mine Lease renewed for period of 11/01/2017 to 10/01/2047 for the period of 30 years.

Now, after renewal of mine lease agreement again we have started the process for obtaining applicable statutory clearances like Approved Mining Plan, Environmental Clearance, Consent to Establish and Consent to Operate. Due to pandemic of COVID19 in the year 2020 and 2021,

requisite work got delayed. We have given the work of preparation of mining plan to RQP. Accordingly, RQP prepared mining plan and submitted to The Regional Controller of Mines, Indian Bureau of Mines, Nagpur. Mining plan was approved by The Regional Controller of Mines, Indian Bureau of Mines, Nagpur vide ref. no.: GAD/FE/MPLN-898/NGP Dated: 02/08/2021. As the mine lease area is having 4.0 Ha. & it is surrounded by other 4 Iron Ore mine leases in the same khasra no., it forms cluster with other four mine leases. Total cluster formation area of all 5 Iron Ore mine leases is 46.37 Ha. and accordingly, letter submitted to The District Mining Officer, Collector Office, Gadchiroli for obtaining "Cluster Certificate". Cluster certificate was issued by The District Mining Officer, Collector Office, Gadchiroli vide ref. no.: Desk-II/Sr. Cl. Mining/ Shri. Manoj Kumar Ajitsaria /302/2021 Dated: 27/10/2021. As the cluster formation mine lease area is more than 25 Ha. & as per the published EIA Notification, 2006 & its subsequent amendment, the proposed project falls in Category B1 of Mining of Minerals 1(a). As per the B1 Category of the proposed project, it needs Terms of Reference (TOR), Draft EIA report submission to MPCB for public hearing and after completion of public hearing Final EIA report submission to SEAC-1 & SEIAA for obtaining "Environmental Clearance". Now, after obtaining approved mining plan for the proposed project for the period: 2021 to 2026, we have applied for obtaining Terms of Reference (TOR) as per the EIA Notification, 2006 and its subsequent amendment time to time. After obtaining TOR for the proposed project, we will carry out Baseline Monitoring for preparation of Draft Environmental Impact Assessment Report. After preparation of draft EIA report, we will submit it to Regional Office, MPCB, Chandrapur for public hearing. After completion of the public hearing, we will prepare Final EIA report and will submit it to the SEAC-1 for obtaining Environmental Clearance for the proposed project.

Proposed project had already obtained "Consent to Establishment" (CTE) for the proposed project activity of Mining of Iron Ore from "Zendevar Iron Ore Mine" by Shri. Manoj Kumar Ajitsaria vide Consent No.: BO/Chandrapur/301-2005/E/CC-338 Dated: 12/09/2005. Now, project proponent will obtain "Consent to Operate" (CTO) after obtaining of Environmental Clearance" (EC).

### **1.2 Terms of Reference**

Project proponent applied for obtaining Terms of Reference (TOR) by submitting required documents like approved mining plan, Form 1 & Pre-Feasibility Report to SEIAA, MoEF&CC, Maharashtra as per EIA Notification, 2006 and its subsequent amendment. Project was uploaded on Parivesh portal vide Proposal No.: SIA/MH/MIN/68182/2021 Dated: 06/10/2021. It was

considered by SEAC-1 in their 209<sup>th</sup> meeting held on Dated: 10<sup>th</sup> to 12<sup>th</sup> November 2021 and recommended for issuing of TOR to SEIAA, Maharashtra.

SEIAA, MoEF&CC, Maharashtra considered the project in their 234<sup>th</sup> Meeting (Day 3) held on Dated: 17<sup>th</sup> December 2021 and asked to submit clarifications for regarding time lag from first mining lease approval to submission of current application for TOR & also asked to submit details of existing trees on proposed mining site and details of trees to be cut, if any along with its age. Accordingly, we have submitted compliance to 234<sup>th</sup> MOM of SEIAA, MoEF&CC, Maharashtra for grant of TOR to the proposed Iron Ore mining project. SEIAA. MoEF&CC, Maharashtra considered the project in their 248<sup>th</sup> Part-C meeting held on Dated: 18<sup>th</sup> August 2022 and asked to process NOC for tree cutting and also details of tree inventory with cumulative age of trees to be cut. Accordingly, we have submitted compliance to 248<sup>th</sup> MOM of SEIAA, MoEF&CC, Maharashtra for grant of TOR to the proposed Iron Ore mining project.

SEIAA. MoEF&CC, Maharashtra considered the project in their 256<sup>th</sup> Part-E meeting held on Dated: 25<sup>th</sup> January 2023 and grant a “Terms of Reference” (TOR) to the proposed Iron Ore mining project. “Terms of Reference” (TOR) grant to the proposed Iron Ore mining project vide ref. no.: SIA/MH/MIN/68182/2021 Dated: 22/02/2023.

Based on the documents submitted and presentations made, the committee prescribed the Terms of Reference (TOR) for preparing EIA/EMP report, by considering the project under the category ‘B1’ 1 (a) Mining of Minerals of the Schedule of EIA Notification 2006.

### **1.3 Project Proponent**

Shri. Manoj Kumar Ajitsaria is an entrepreneur & engaged in mining work. The Mining lease for Iron Ore has been granted to Shri. Manoj Kumar Ajitsaria over an area 4.0 Ha. at Zendevar Village in Korchi Tehsil of Gadchiroli District for the period of 30 years. The above said lease has been executed on 11/01/2017. Iron Ore is use in Steel Industry, Ferro-Alloys industries as main source of raw material, good quality of Iron Ore for steel making grade is available in and around Gadchiroli district of Maharashtra.

#### **Shri. Manoj Kumar Ajitsaria**

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Nagpur-440010, Maharashtra

Phone No.: 2221606/2246205, Mob. No.: 9822466070/9823466866

Email ID: anojagarwala@rediffmail.com

Site Address:

Khasra Nos.: 82 Part (82/5), Village: Zendevar,

Tahsil: Korchi, Dist.: Gadchiroli, Maharashtra.

#### 1.4 Brief Description of Nature, Size & Location of the Project

The proposed project is located in Zendevar Village, Tahsil: Korchi, Dist.: Gadchiroli, Maharashtra over an area of 4.0 Ha. The mining lease area falls in Survey of India Topo Sheet No. 64D5. The environmental settings of the 10 km study area are given in **Table 1.1**.

**Table 1: Environmental Settings of the Study Area**

S. N.	Particulars	Details																		
A.	Nature of project	Iron Ore																		
B.	Size of project																			
1.	Mining Lease area	4.0 Ha.																		
2.	Proposed Production capacity	Iron Ore: 30,450 TPA (Maximum Production in five years); Float ore: 548.1 TPA (Maximum Production in five years);																		
C.	Project location																			
1.	Village	Zendevar																		
2.	Tahsil	Korchi																		
3.	District	Gadchiroli																		
4.	State	Maharashtra																		
5.	Khasra Nos.	82 Part (82/5)																		
6.	Land	Non-forest, Govt. Revenue Land																		
7.	Toposheet No. Latitude & Longitude	64D5, 64D6, 64D9, 64D10. <table border="1"> <thead> <tr> <th>Boundary Pillars</th><th>Latitude</th><th>Longitude</th></tr> </thead> <tbody> <tr> <td>BP-1</td><td>20°46'08.694"</td><td>80°28'51.938"</td></tr> <tr> <td>BP-2</td><td>20°46'08.481"</td><td>80°29'01.597"</td></tr> <tr> <td>BP-3</td><td>20°46'06.687"</td><td>80°29'01.461"</td></tr> <tr> <td>BP-4</td><td>20°46'03.387"</td><td>80°29'01.281"</td></tr> <tr> <td>BP-5</td><td>20°46'03.460"</td><td>80°28'53.587"</td></tr> </tbody> </table>	Boundary Pillars	Latitude	Longitude	BP-1	20°46'08.694"	80°28'51.938"	BP-2	20°46'08.481"	80°29'01.597"	BP-3	20°46'06.687"	80°29'01.461"	BP-4	20°46'03.387"	80°29'01.281"	BP-5	20°46'03.460"	80°28'53.587"
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BP-4	20°46'03.387"	80°29'01.281"																		
BP-5	20°46'03.460"	80°28'53.587"																		

D.	<b>Environmental Settings Details (With approx. aerial distance and direction from the mining lease boundary)</b>	
1.	Nearest Village	Zendevar village – 3.5 km (SE)
2.	Nearest Town, city, district Headquarters	Nearest Tahsil Place – Korchi – 6.0 km - SW Nearest Town – Korchi – 6.0 km -SW Nearest District HQ – Gadchiroli – 45 km - SW
3.	Nearest National Highway,  Nearest Motorable Road	NH 543 – Shahdol to Bramhapuri passes from Korchi – 3.5 km (W) from the proposed site. Shahdol-Mandla-Balaghat-Gondia-Deori-Korchi-Bramhapuri Nandali to Sohale – 1.5 km - E
4.	Nearest Railway station, Airport & Sea port	Barabhati Railway Station – 45.0 Km, NW Dr. Babasaheb Ambedkar International Airport, Nagpur – 153.20 km, NW Visakhapatnam Sea Port – 450 km, SE
5.	Interstate boundary	Nil within 5 km. Chhattisgarh state border is at 7.0 km on East direction.
6.	Archeological Place	None within 10 km from the mine site
7.	National Park, Wild Life Sanctuary, Wildlife Corridors, Biosphere Reserves, Migratory routes for Birds. Protected Forest etc. within 10 Km radius study area	No any National Park, Wild Life Sanctuary, Wildlife Corridors, Biosphere Reserves, Migratory routes for Birds falls in study area. Reserved Forest – Malewada RF – 16.5 km (W)
8.	Reserve Forest and Protected Forest within 10 Km radius	None
9.	Water bodies within 10 km radius	Unidentified Small Ponds/ Talav within 10 Km
10.	List of Industries in 10 km Study Area	A.K. Agarwala– Adjacent to project site Anuj Mines Minerals & Chemicals Pvt. Ltd.– Adjacent to project site N. C. Jain – Adjacent to project site

		R. M. Rajurkar - Adjacent to project site
11.	Seismic Zone	Seismically this area is categorized under Zone II, which is moderate zone.
<b>E.</b>	<b>Employment Generation</b>	
1.	No. of Manpower	149 Nos.
<b>F.</b>	<b>Cost Details</b>	
1.	Total Project Cost	Rs. 7.34 Crore
2.	Cost for Environmental Management Plan	Capital Cost = Rs. 23 Lakhs Recurring Cost = Rs. 9.34 Lakhs Total Cost = Rs. 32.34 Lakhs
3.	CER Cost	Rs. 15 Lakhs

Map showing general and specific location of proposed mine site, 10 km topo map study area and Google imagery of the proposed project site are given in **Figure 1, Figure 2 and Figure 3.**

Executive Summary of Proposed Zendepar Iron Ore Mine by Shri. Manoj Kumar Ajitsaria having mine lease area of 4.0 Ha. at Khasra No. 82 Part (82/5) of Village: Zendepar, Tahsil: Korchi, Dist.: Gadchiroli, Maharashtra.



Figure 1: Location Map of the Project Site



Executive Summary of Proposed Zendevar Iron Ore Mine by Shri. Manoj Kumar Ajitsaria having mine lease area of 4.0 Ha. at Khasra No. 82 Part (82/5) of Village: Zendevar, Tahsil: Korchi, Dist.: Gadchiroli, Maharashtra.

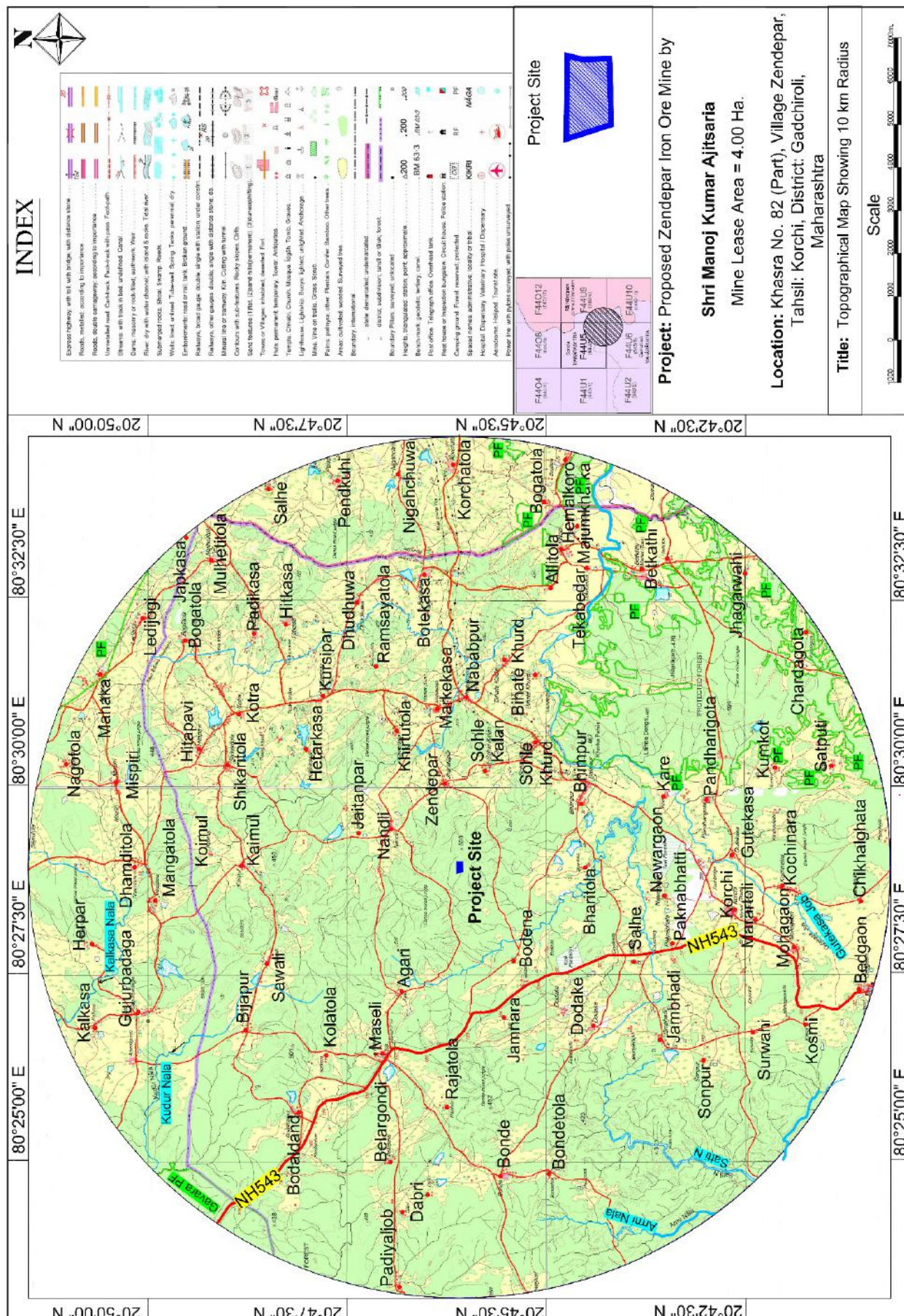


Figure 2: 10 KM Study Area Map of the Project Site





Figure 3: Google Image of the Project Site

### **1.5 Project Description:**

#### **1.5.1 Type of Project Including Interlinked and Interdependent Projects, If Any:**

The project is of open cast Iron ore mine. The proposed Iron Ore mine 4.0 Ha. will be developed as open cast semi-mechanized mining with bench pattern for the production of Iron ore 30450 TPA and Float ore 548.1 TPA (both Maximum Production in five years). Iron ore is used in Steel Industry, Ferro-Alloys Industries as main source of raw material, good quality of iron ore of Steel making grade is available in and around Gadchiroli district of Maharashtra State. No interlinked projects were associated with this project.

#### **1.5.2 Details of Alternate Sites:**

It is a cluster project. Nearby mines are available. No alternate site was considered as the project is mineral specific and site specific.

#### **1.5.3 Size or Magnitude of Operation:**

The mine lease area is of 4.0 Ha. and production of Iron Ore Mine is 30450 TPA and Float ore is 548.1 TPA (both Maximum Production in five years). The mine lease follows open cast semi-mechanized method of mining.

#### **1.5.4 Topography:**

Topography of the Lease area & its surrounding Leases are of undulating nature and controlled by Highly Compact Hard Quartzite, Banded Hematite Quartzite and Steep dip. The area is drained by seasonal local drainage streams in all Corners of Lease. The lease hold area lies in the "Zendevar Iron Ore Mine". Maximum elevation in the Lease area is 505 MRL & minimum is 460 MRL on the South & West direction.

#### **1.5.5 Regional Geology:**

The area forms a part of the region covered predominately by the granite gneisses with its variants, basic rocks and some meta-sediments comprising with various types quartzite including banded hematite quartzite and schist with inter-stratified Amphibolite's layers all belonging to Achaean Precambrian age. The meta-sediments appear to have been folded into series of close parallel anticlines a syncline with generally low plunge. Major part of the Iron Ore area is covered with scree, talus, Soil & Laterite and has few good rocks exposure exposed in the trenches and near about. The rocks of the area comprise of Banded Hematite Quartzite (BHQ associated with thick Iron Ore/ Hematite band, platy quartzite & Massive grey quartzite, pegmatite & quartz veins of Precambrian age. In all possibility, granite gneiss appears to be present on the eastern and western flanks of the ridge.

#### **1.5.6 Local Geology:**

The entire area is "Government Revenue land". The Lease area shows two hillocks along with the highest contour is 505 MRL & the Lowest Contour 460 MRL & Slope shown all corners of the Lease area in North-East, North-West corner.

The main Geological formation found in this area are the oldest metamorphic i.e., granite gneisses & Dharwas i.e.; Banded Hematite Quartzite. The proposed area comprises a hillock with lateritic capping with Banded Hematite Quartzite body exposed at places. The local geological litho units observed in the lease area are Soil, Banded Hematite Quartzite (BHQ) & associated with Hematite Iron Ore rich band.

#### **Formations are given below:**

**Lateritic soil:** The major part of the area on the surface is covered with Laterite. Lateritic soil and Limonite. Laterite which is showing varying thickness of 1.5 m to 3.0 m.

**Hematite Iron Ore rich band:** The Ore body is covered with Laterite. The ore body is covered with the general strike of the Ore body is North-East & South —West and dip varying from 65° to 70° towards West. The trend of the Ore bodies appears to North-South.

**Rocks like Quartzite, Banded Hematite Quartzite:** The Banded Hematite Quartzite is mainly Laterite & Massive. The Outcrop of Banded Hematite Quartzite is weathered and fractured.

**Float Ore:** Float ore is also seen in the area with Laterite Soil. There is float Ore zone on ground & is evident of about 1.5 M thicknesses.

#### **1.5.7 Reserves:**

Parameters for resource estimation as per approved Mining Plan:

- Method of mineral resource- "By Surface Area Method".
- The depth considered for estimation of Reserves is 10.00 from the surface,
- Estimated Bulk density in 3.5 T/ m<sup>3</sup>
- Maximum depth: Consider 6.00 m under 111,
- 6.00 M to 8.00 M under 121 &
- 8.00 M to 10.00 M under 122.
- Category: 'A'
- Area: 4.0 Ha.
- Iron Ore existing at the top of the Hilly terrain sloping downward

- Waste Rock: Approx. 1.5 to 3 M Lateritic soil followed by Iron Ore.
- Surface MRL: Iron Ore existing at the top of the Hilly terrain sloping downward. Due to this reason not considered any one particular surface RL.
- Recovery: 90% for Iron ore
- Mining Losses: 10%.

Geological reserves as per UNFC classification are given in below **Table 2**.

**Table 2: Geological Reserves as per UNFC Classification**

Estimated Mineral Reserve/Resources in Different Categories of UNFC as reported are given below:						
A. Total Mineral Reserve	UNFC Code	Quantity in tons Reserves				
		Ore Body I	Ore Body II	Float Ore	Total Tons	Grade
Proved Mineral Reserves	111	60900.00	<b>58800.00</b>	12600.00	132300.00	Avg. Fe: <b>67.04%</b>
Probable mineral Reserves	121	20300.00	19600.00	0.00	39900.00	
Possible Mineral Resource	122	20300.00	19600.00	0.00	39900.00	
<b>Total A</b>		<b>101500.00</b>	<b>98000.00</b>	<b>12600.00</b>	<b>212100.00</b>	
B. Total Remaining Resources						
Feasibility Mineral Resource	211	0.00	0.00	0.00	0.00	
Prefeasibility mineral resource	222	0.00	0.00	0.00	0.00	
Measured mineral resource	331	0.00	0.00	0.00	0.00	
Indicated mineral resource	332	0.00	0.00	0.00	0.00	
Inferred mineral resource	333	0.00	0.00	0.00	0.00	
Reconnaissance mineral resource	334	0.00	0.00	0.00	0.00	
<b>Total "B"</b>		<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	
Total Reserves + Resources (A+B)		<b>101500.00</b>	<b>98000.00</b>	<b>12600.00</b>	<b>212100.00</b>	

(Source: Approved Mining plan)

## **1.6 Method of Mining:**

### **1.6.1 Salient description of the Mining Method:**

At the beginning of mining operations topography of the Lease area & its surrounding Leases are of undulating nature and controlled by Highly compact hard Quartzite, Banded Hematite Quartzite and steep dip. The area is drain by Seasonal Local drainage streams in all Corners of Lease. The lease hold area lies in the “Zendevar Iron Ore Mine” Maximum elevation in the Lease area is 505 MRL & minimum is 460 MRL on the South & West direction. The area in scheme of mining for the period of Year 2021 to 2026, it is stated that the mining operations would be done by Category A – semi-mechanized. The mining operations will be carried out in between the periods of 2020-21 to 2025-2026 after obtaining of environmental clearance.

### **1.6.2 Proposed Method of Mining:**

In view of the ore geometry including strike, dip, depth from the surface etc. it is proposed to go for open cast method of mining & mining operation start after getting EC, CTO & CTE. Open Cast Method of Mining -The following main activities are involved;

- Deep holes drilling and blasting for breaking ground.
- Removal of over burden from the mine to waste dumping yards with the use of Heavy Earth Moving Machineries (HRMMs)
- Mining out ore in the course of OB development.
- Processing of ROM.
- Dewatering of pits. Dust suppression.
- Routine and preventive maintenance of HEMMs
- Soil dump management
- Other activities.

In view of the average grade of 53% to 63% Fe content stripping ratio of 1:10 is considered i.e.; for every 1 (One) ton of “ROM” 10 (Ten) m<sup>3</sup> of waste Rock will be removed. The density of “ROM” is considered as 3.5 T/ m<sup>3</sup>.

### **1.7 Mining Program for next Five Years:**

In- situ tentative excavation of Iron Ore and Float Ore indicates year-wise tentative excavation in cubic meters indicating development, ROM, pit wise as in below **Table 3 & 4.**

**Table 3: In- situ Tentative Excavation of Iron Ore**

S. N.	Year	Total Tentative Excavation (m3)	Soil m <sup>3</sup>	O/B m <sup>3</sup>	100% ROM m <sup>3</sup>	ROM m <sup>3</sup>		BD kg/T	Ore in Tons
						Saleble Ore 90% m3	ML m3 (10%)		
1	2021-22	16627	1740	5220	9667	8700	967	3.5	30450
2	2022-23	16627	1740	5220	9667	8700	967	3.5	30450
3	2023-24	16054	1680	5040	9334	8400	934	3.5	29400
4	2024-25	16054	1680	5040	9334	8400	934	3.5	29400
5	2025-26	14887	0	5220	9667	8700	967	3.5	30450
<b>Total</b>		<b>80249</b>	<b>6840</b>	<b>25740</b>	<b>47669</b>	<b>42900</b>	<b>4769</b>		<b>150150</b>
<b>Avg. Prod. Per year</b>				<b>5148</b>	<b>9533.8</b>	<b>8580</b>			<b>30030</b>
Steeping ratio 1:0.8									
M.L 10%: Mining Loss (As Per Approved M.P., There is no Subgrade & M.R.)									

(Source: Approved Mining plan)

**Table 4: In- situ Tentative Excavation of Float Ore**

S. N.	Years	Area Con. 40% for Float Ore sq. m	Thick of Float Ore 1.5 M	Recovery of Float Ore 15%	B.D T/m <sup>3</sup>	Total Ton
1	2021-22	696	1044	156.6	3.5	548.1
2	2022-23	696	1044	156.6	3.5	548.1
3	2023-24	672	1008	151.2	3.5	529.2
4	2024-25	672	1008	151.2	3.5	529.2
5	2025-26	0.00	0.00	0.00	0.00	0.00
	<b>Total</b>	<b>2736.00</b>	<b>4104.00</b>	<b>615.60</b>		<b>2154.60</b>

(Source: Approved Mining plan)

**1.8 Raw Material Required Along with Estimated Quantity, Likely Source, Marketing Area of Final Product/S, Mode of Transport of Raw Material and Finished Product:**

No raw material will be required in the proposed project. The operation involves the extraction of iron ore and it will be transported to the Local market through tippers. New approach road will be developed for transportation.

**1.9 Use of Mineral:**

The Iron Ore will be mined out during the mining operation & consumed by the various steel industries in the surroundings. The firm does not have any captive unit.

**1.10 Availability of Water, Energy/ Power Requirement and its Sources:**

**1.10.1 Water Requirement:**

Water required for the proposed mining project will be sourced from water tankers from the nearby villages. The total water requirement will be around 12 KLD. Water requirement details are given in below **Table 5**.

**Table 5: Water Requirement Details**

S. N.	Details of Usage	Quantity (KLD)
1	Dust Suppression	2.0
2	Domestic Usage	6.71
3	Green Belt Development	3.2
	<b>Total Requirement</b>	<b>11.91</b>
	<b>Total Requirement (Rounded Off)</b>	<b>12</b>

**1.10.2 Power:**

Proposed project site location is undulating and remote from the nearby villages & obtaining electricity supply is difficult and is become costly affair. As the proposed project is only for mining activity which includes excavation of iron ore from the mine & no further process is required on it for selling in the market, requirement of electricity supply is not essential and it can be met from DG set. DG set power can be used for lighting purpose in addition to proposed solar lights.

- Estimated Power: 5 KVA
- Source: 1 X 5 KVA DG Set
- DG set is proposed.



### **1.11 Quantity of wastes to be generated (liquid and solid) and scheme for their management/disposal:**

#### **1.11.1 Solid Waste Generation & its Disposal:**

Laterite Soil: The major part of the area on the surface is covered with Laterite, Lateritic Soil & Limonite. At place outcrop of Iron Ore is exposed on surface. The Ore body is covered with Laterite which is showing varying thickness of 1.5 m to 3.0 m. and as such will be stored in 'Dumps'. The Laterite Soil is used for Road construction within Mining lease area.

O.B: The area is having undulating topography and Iron is mostly outcropping. The Waste rock/Side burden will consist of mainly Banded Hematite Quartzite.

Dumps: The waste will be collected/ stacked in the main dump only. The waste material is proposed to dump along the boundaries. No surface water bodies in the lease area and the adjoining area. The drainage of the area will not be disturbed to cause any adverse impact on water regime either surface or groundwater & for seasonal rain fall a garland & retaining wall terrace will be provided at an interval of 6.0 m.

Prior to the disposal of waste, dumping site will be prepared as per the following manner: Dumping site will be surveyed and earmarked as per the proposal. Roads will be developed from Quarry to the dumping site at suitable gradient of 1:16. Shrubs and bushes wherever found will be cut and removed. Soil if any shall be scrapped off and disposed over the existing dumps. Grass will be sown over the waste dump to control erosion and dust generation.

Protective measures for O.B /Soil Dumps & ROM Yard: by using Garland drainage & retaining wall.

#### **1.11.2 Liquid Effluent:**

No liquid effluent will be generated in proposed mining project except domestic waste. Domestic wastewater from the mine will be treated in septic tank followed by soak pit.

### **1.12 Site Analysis:**

#### **1.12.1 Accessibility:**

The site for the proposed mine is located at Sy. No. Part of 82 (82/5) near Zendevar village in Korchi tehsil of Gadchiroli district in the state of Maharashtra. Proposed project site is at a distance of 3.5 km (W) from NH 543 – Shahdol to Bramhapuri passes from Korchi. NH 543 starts at Shahdol (Madhya Pradesh) and ends at Bramhapuri (Maharashtra) and it passes through Shahdol-Mandla-Balaghat-Gondia-Deori-Korchi-Bramhapuri. Project site is approachable from Nandali to Sohole village road at a distance of 1.5 km (E). Proposed project site is at a distance of 45 km from District Headquarter, Gadchiroli. Barabhati railway station is the nearest railhead at a distance of 45 km



(NW) from the proposed project site. Barabhati railway station is on the Gondia to Balharshah railway line which is connecting Chhattisgarh to south part of the India. Dr. Babasaheb Ambedkar International Airport, Nagpur is the nearest airport at a distance of 153.0 km (NW) from the proposed project site. Visakhapatnam Sea Port is the nearest sea port at a distance of 450 km (SE) from the proposed project site.

### **1.13 Planning Brief:**

#### **1.13.1 Land Use Planning:**

The project is located in 4.0 Ha. of Govt. non forests revenue land. Land use indicating the area likely to be degraded due to quarrying, dumping, roads, workshops, processing, plant tailing ponds/dam etc. There will be change in land use as the Iron ore will be excavated from the mine lease area.

#### **1.13.2 Assessment of Infrastructure Demand (Physical & Social):**

On the basis of the preliminary site visit, the infrastructure demand in the villages was assessed on the basis of need and priority.

#### **1.13.3 Amenities/Facilities:**

First aid box and drinking water facility will be made available at the project site. Rest shelter will be provided at the project site. Mines office and other statutory constructions like rest shelter, first aid, work shed and drinking water as required in the mine lease area will be provided. Drinking water will be supplied to the workers by the water tankers from the surrounding villages.

### **1.14 Proposed Infrastructure & Environment Management Plan:**

#### **1.14.1 Residential Area (Non-Processing Area):**

As the local persons of surrounding villages will be given employment, no residential area/ housing is proposed within the mining lease area.

#### **1.14.2 Water Management:**

The total water requirement is 12 KLD. There are no chances for changes in quality of surface water or ground water. The mining operations will be carried out on slopes of the rocky terrain. Hence, neither the ground water table nor the general surface drainage pattern will be affected. No water will be discharged from the mine.

Following measures shall be taken:

- PP will ensure that good quality potable water is provided for drinking purposes. Good sanitation facilities (toilets with septic tank followed by soak pits) will be provided and maintained for good hygienic conditions.
- The spillages from fueling of machinery shall be avoided and in case of any spillage the same

shall be handled properly. Likewise, the spent lubricating oils etc., shall be safely collected and properly disposed off.

#### **1.15 Sewerage System:**

Domestic waste will be disposed in to septic tank followed by soak pit.

#### **1.16 Solid Waste Management:**

No waste generation is envisaged from the mine.

#### **1.17 Baseline Environmental Studies:**

Baseline environmental studies were conducted in the area within 10 km radius of the proposed project site to assess the existing environmental scenario in the area. Baseline environmental studies were carried out in the months October to December 2022 i.e.; post monsoon season. The baseline environmental quality data for various components of environment, viz. Air, Noise, Water, Land were monitored during October to December 2022 in the study area covering 10 km radius around the project site.

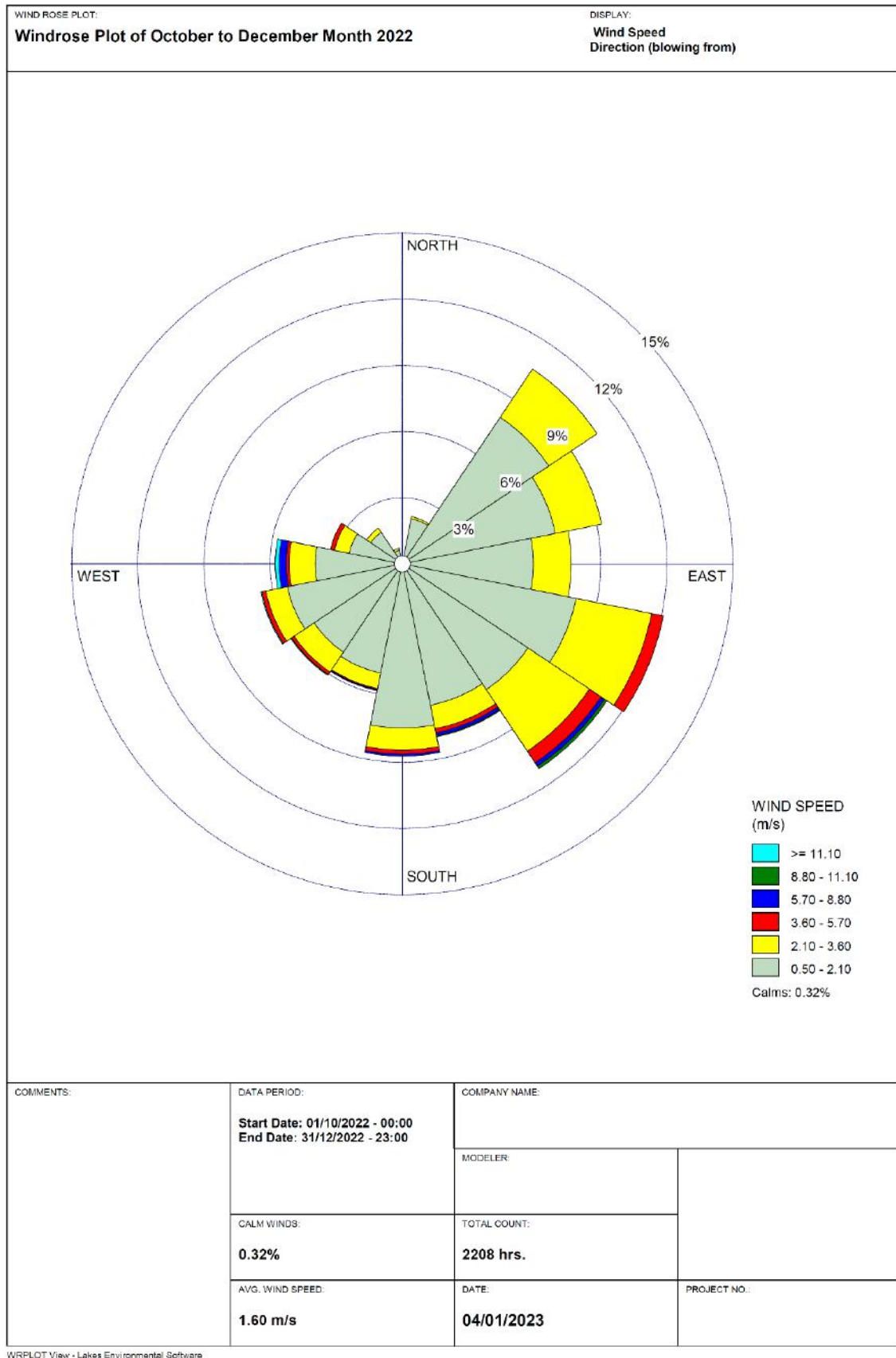
##### **1.17.1 Meteorology:**

##### **Summary of the Meteorological Data Generated at Site**

The site-Specific meteorological data is given in **Table 6** and wind rose diagram is given in **Figure 4**.

**Table 6: Site Specific Climatological Data**

S. N.	Month	Temperature (°C)		Relative Humidity (%)		Rainfall (mm)
		Min.	Max.	Min.	Max.	
1	October 2022	19	34	30	98	39
2	November 2022	21	32	78	95	8
3	December 2022	11	30	20	95	7
	<b>Total</b>					<b>54</b>



**Figure 4: Wind Rose Diagram – October to December 2022 (IMD Specific)**

### 1.17.2 Ambient Air Quality Status:

The status of ambient air quality within the study area was monitored for the period of during October to December 2022 at 8 locations including the project site and in 10 km study area villages. Total 8 sampling locations were selected based on the meteorological conditions considering upwind and downwind directions. The levels of Respirable Particulate Matter (PM<sub>10</sub>), Fine Particulates (PM<sub>2.5</sub>), Sulphur Dioxide (SO<sub>2</sub>) and Oxides of Nitrogen (NO<sub>x</sub>) were monitored. Based on the above, the AAQ stations have been identified and locations of ambient air quality stations are presented in **Table 7**. The minimum and maximum values of monitoring results are summarized in **Table 8 A, 8 B, 8 C, & 8 D**.

**Table 7: Ambient Air Quality Monitoring Stations**

Code	Sampling Location	Distance w.r.t Project	Direction w.r.t Project
A1	Project Site	--	-
A2	Zendevar Village	3.5 km	E
A3	Bharitola Village	2.5 km	S
A4	Bondena Village	1.5 km	SW
A5	Jamnara Village	3.5 km	SW
A6	Rajatola Village	4.5 km	W
A7	Maseli Village	2.5 km	NW
A8	Kaimul Village	4.5 km	N

**Table 8: Summary of Ambient Air Quality Results**

**Table 8 A: Particulate Matter – PM<sub>10</sub>**

Location Name	A1	A2	A3	A4	A5	A6	A7	A8
Minimum	46.20	45.20	46.20	45.10	45.20	48.20	47.20	48.10
Maximum	50.80	51.80	51.30	51.90	51.90	51.40	53.40	52.90
Average	48.56	48.89	48.70	48.27	47.84	50.05	50.53	50.67
98 <sup>th</sup> Percentile	50.71	51.62	51.26	51.58	51.58	51.40	53.26	52.81
<b>CPCB Standards</b>	<b>100</b>							

All Values are in µg/m<sup>3</sup>

**Table 8 B: Particulate Matter – PM<sub>2.5</sub>**

Location Name	A1	A2	A3	A4	A5	A6	A7	A8
Minimum	12.30	11.70	12.30	15.30	10.60	13.30	12.60	12.30
Maximum	16.80	17.80	16.60	21.30	16.80	17.40	18.30	17.90
Average	14.53	14.97	14.99	18.23	13.36	15.59	15.60	15.08
98 <sup>th</sup> Percentile	16.71	17.57	16.55	21.21	16.71	17.31	18.21	17.81
<b>CPCB Standards</b>	<b>60</b>							

All Values are in µg/m<sup>3</sup>

**Table 8 C: Sulphur Dioxide - SO<sub>2</sub>**

Location Name	A1	A2	A3	A4	A5	A6	A7	A8
Minimum	2.20	2.70	2.30	2.60	2.80	2.50	2.60	2.40
Maximum	5.80	6.30	5.80	6.00	5.90	6.40	6.60	6.20
Average	4.51	4.60	4.31	4.32	4.49	4.63	4.65	4.34
98 <sup>th</sup> Percentile	5.75	6.30	5.80	5.91	5.85	6.35	6.51	6.15
<b>CPCB Standards</b>	<b>80</b>							

All Values are in µg/m<sup>3</sup>

**Table 8 D: Oxides of Nitrogen – NO<sub>x</sub>**

Location Name	A1	A2	A3	A4	A5	A6	A7	A8
Minimum	4.80	5.20	4.90	5.10	4.90	4.90	5.00	5.30
Maximum	8.50	9.30	8.90	9.00	8.90	9.40	9.50	9.00
Average	6.84	7.76	7.52	7.45	7.37	7.70	7.75	7.50
98 <sup>th</sup> Percentile	8.41	9.30	8.85	9.00	8.81	9.40	9.41	8.95
<b>CPCB Standards</b>	<b>80</b>							

All Values are in µg/m<sup>3</sup>

**Table 10.5: Carbon Monoxide – CO**

Location Name	A1	A2	A3	A4	A5	A6	A7	A8
Minimum	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Maximum	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Average	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
98 <sup>th</sup> Percentile	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1

All Values are in µg/m<sup>3</sup>

The analysis of ambient air quality data for three months consequently indicates good ambient air quality conditions at site as well as around the site upwind as well as downwind. Particulate matter PM<sub>10</sub> as well as PM<sub>2.5</sub> is within prescribed limits. SO<sub>2</sub> and NO<sub>x</sub> levels are well below the limits prescribed hence overall picture as far as ambient air quality concerned is positive. As per the baseline data collection, the maximum value of the PM<sub>10</sub> was recorded at Maseli Village – 53.40 µg/m<sup>3</sup> and minimum value at A4 Bondena Village – 45.10 µg/m<sup>3</sup>. As per the baseline data collection, the maximum value of the PM<sub>2.5</sub> was recorded at Bondena Village – 21.30 µg/m<sup>3</sup> and minimum value at Jamnara village – 10.60 µg/m<sup>3</sup>. As per the baseline data collection, the maximum value of the SO<sub>2</sub> was recorded at Maseli village – 6.60 µg/m<sup>3</sup> and minimum value at Mine Site – 2.20 µg/m<sup>3</sup>. As per the baseline data collection, the maximum value of the NO<sub>x</sub> was recorded at Maseli Village – 9.50 µg/m<sup>3</sup> and minimum value at Mine Site – 4.80 µg/m<sup>3</sup>.

### 1.17.3 Ambient Noise Levels:

Ambient noise level monitoring was carried out at the 8 monitoring locations; those were selected for ambient air quality monitoring. The noise recording stations are shown in **Table 9**. The monitoring results are summarized in **Table 10**.

**Table 9: Ambient Noise Quality Monitoring Stations**

Code	Location	Distance w.r.to Project	Direction w.r.to Project
N1	Project Site	--	-
N2	Zendevar Village	3.5 km	E
N3	Bharitola Village	2.5 km	S
N4	Bondena Village	1.5 km	SW
N5	Jamnara Village	3.5 km	SW
N6	Rajatola Village	4.5 km	W
N7	Maseli Village	2.5 km	NW
N8	Kaimul Village	4.5 km	N

**Table 10: Summary of Ambient Noise Level Monitoring Results**

Equivalent Noise levels	N1	N2	N3	N4	N5	N6	N7	N8
Ld (Max)	54.8	52.4	52.9	54.8	48.9	53.8	57.6	57.9
Ld (Min)	43.2	44.6	42.2	43.2	36.8	43.2	44.6	44.9

LN (Max)	50.2	48.5	48.2	50.2	43.8	48.1	54.1	50.8
LN (Min)	40.2	40.8	38.6	40.2	34.6	40.2	41.7	42.1
Leq (Day)	49.9	48.6	48.2	49.9	43.8	50.3	54.6	52.7
Leq (Night)	43.5	42.4	40.9	43.5	36.4	42.7	43	44.2
<b>CPCB</b>	<b>Ld</b>	<b>75</b>	<b>55</b>	<b>55</b>	<b>55</b>	<b>55</b>	<b>55</b>	<b>55</b>
	<b>Ln</b>	<b>70</b>	<b>45</b>	<b>45</b>	<b>45</b>	<b>45</b>	<b>45</b>	<b>45</b>

**\*All values in dB(A)**

$L_{min}$  : Minimum Noise Level Recorded

$L_{max}$  : Maximum Noise Level Recorded

$L_d$  : Day Equivalent

$L_n$  : Night Equivalents

$L_{dn}$  : Day-Night Equivalents

### Conclusion

The Maximum Noise (day) value was observed 57.9 dB (A) at Kaimul Village (N8) the Minimum Noise (day) value was observed 36.8 dB (A) at Jamnara Village (N5). The Maximum Noise (night) value was observed 54.1 dB (A) at Maseli Village (N7) and the Minimum Noise (night) value was observed 34.6 dB (A) at Jamnara Village (N5). The maximum and minimum day time equivalent noise levels were found in the range of 43.8 to 54.6 dB (A) and the maximum and minimum night time equivalent noise levels were found in the range of 36.4 to 44.2 dB (A).

#### 1.17.4 Surface and Ground Water Quality:

##### Ground Water Sampling Locations:

Ground water sampling locations were selected surrounding the mine site within 10 km study area. Total eight ground water samples were collected and analyzed from the study area. The locations of ground water sampling with its distance and direction w.r.to the project site are given in **Table 11**.

**Table 11: Ground Water Sampling Locations**

Code	Location	Distance w.r.t Project	Direction w.r.t Project
GW1	Project Site	--	-
GW2	Zendevar Village	3.5 km	E
GW3	Bharitola Village	2.5 km	S
GW4	Bondena Village	1.5 km	SW
GW5	Jamnara Village	3.5 km	SW

GW6	Rajatola Village	4.5 km	W
GW7	Maseli Village	2.5 km	NW
GW8	Kaimul Village	4.5 km	N

#### Conclusion:

#### Ground Water Samples within 10 km Study Area:

- pH of the ground water samples collected was in the range of 7.02 – 7.97.
- Total Dissolved Solids in the samples was in the range of 260.0 – 505.0 mg/l.
- Hardness was found to vary between 120.0 – 255 mg/l.
- Chlorides concentration was found to vary between 25.16 – 78.02 mg/l.
- Sulphates concentration was found to vary between 15.97 – 57.95 mg/l.
- Heavy metal concentrations in all the samples were found to be well within the limits.

#### Surface Water Sampling Locations:

Surface water sampling locations were selected surrounding the mine site within 10 km study area. Three surface water samples were collected from the study area. Two surface water samples were from downstream and one from upstream of the project site. The locations of surface water sampling with its distance and directions w.r.to the project site given in **Table 12**.

• **Table 12: Surface Water Sampling Locations**

S. N.	Code	Location	Distance w.r.t Project site	Direction w.r.t Project site
1	SW1	Khursipar Village Talav, Khursipar Village	6.0 km	Upstream – North-East
2	SW2	Jambhali Waterfall, Jambhali Village	8.0 km	Downstream - South

#### Conclusion:

#### Surface Water Samples within 10 km Study Area:

Sampling was carried out at 2 locations during the study period. Sampling and analysis were carried out, as per standard methods and frequency of the sampling was thrice/stations. The summary of the results is presented below:

- pH of the surface water samples collected was in the range of 7.20 - 7.49.
- Total dissolved solids in the samples were in the range of 160.0 – 455.0mg/l.
- Chloride's concentration was found to vary between 17.61 – 98.16 mg/l.
- Sulphates concentration was found to vary between 11.03 – 48.07 mg/l.



#### 1.17.5 Soil Quality:

##### Location of Soil Sampling Sites:

The soil samples were collected from 8 sampling locations within an area of 10 km radius around the proposed project for analysis of the physico-chemical characteristics of the soil quality. Soil samples were collected from three different types of land i.e.; agriculture, waste (mine site) and barren land. The locations of soil sampling are given with its distance and direction w.r.to project site in **Table 13**.

**Table 13: Soil Sampling Locations**

S. N.	Code	Location	Distance w.r.t Project	Direction w.r.t Project
1	S1	Project Site	--	-
2	S2	Zendevar Village	3.5 km	E
3	S3	Bharitola Village	2.5 km	S
4	S4	Bondena Village	1.5 km	SW
5	S5	Jamnara Village	3.5 km	SW
6	S6	Rajatola Village	4.5 km	W
7	S7	Maseli Village	2.5 km	NW
8	S8	Kaimul Village	4.5 km	N

##### Conclusion:

Sampling was carried out at 8 locations during the study period. The summary of the results is presented below:

The summary of the results is presented below:

- pH in soil sample was observed to be in the range 6.69 to 7.54.
- Organic Carbon was observed in the range of 0.47 – 1.21 %.
- Available Nitrogen as N was observed in the range of 139.48 -179.74 Kg/ Hac.
- Available Phosphates as P was observed in the range of 30.39- 46.19 Kg/ Hac.
- Available Potassium as K was observed in the range of 194.78 - 391.47. Kg/ Hac.

#### 1.17.6 Land Use Land Cover Classification:

The Land Cover classes and their coverage are summarized in **Table 14**.

**Table 14: Land Use Pattern of the Study Area**

Sr. No.	Land Use Class (Level-I)	Land use/Land cover Classes (Level – II)	Area in (Sq. Km) 314	Area in (%) 100
1	Forest	Forest	137.63	43.83
2	Water bodies	Waterbody	2.07	0.66
3	Agricultural Land	Crop Land	21.61	6.88
		Fallow Land	149.10	47.48
4	Built-up Land	Built-up Land	1.89	0.60
5	Waste Land	Waste Land	1.69	0.54
		<b>Total</b>	<b>314.00</b>	<b>100.00</b>

#### **1.17.7 Ecology & Biodiversity in 10 km Study Area:**

##### **Rare and Endangered Flora in the Study Area:**

On the basis of literature survey, from red data books of Indian plants, detailed list rare and Endangered plant genera of Chhattisgarh particularly with reference to Rajnandgaon district reveals that there are no endangered, threatened, rare plant species or endangered, threatened, most threatened, vulnerable plant species observed or recorded during study period and this plant species are commonly present in the Chhattisgarh state.

Flora and fauna studies have been carried out in 10 km radius study area and no any endangered species were found out in the study area.

##### **Presence of Protected Areas as per Wildlife Protection Act, 1972 in Study Area:**

As per MoEF&CC and Forest department of Government of Chhattisgarh state notifications reveals that there are no biospheres, tiger reserves, elephant reserves, national parks, wildlife sanctuaries, conservation reserves and community reserves in 10-km radius from mine lease boundary.

#### **1.18 Socio-Economic Environment:**

Information on socio-demographic status and the trends of the communities in the 10 km radius was collected through primary social survey and secondary data from census 2011 & village directory 2011. Summary of the socio-economic status of the study area is given in **Table 15**.

**Table 15: Distribution of Population in the Study Area as per 2011 Census**

S. N.	Particulars	0-3 km	3-7 km	7-10 km	0 – 10 km
-------	-------------	--------	--------	---------	-----------

1	No. of Households	649	3400	7487	11536
2	Male Population	1439	7601	17170	26210
3	Female Population	1464	8083	17758	27305
4	<b>Total Population</b>	<b>2903</b>	<b>15684</b>	<b>34928</b>	<b>53515</b>
5	Scheduled Castes	428	1184	3785	5397
6	Scheduled Tribes	2053	10995	21306	34354
7	% of Males to Total Population	49.56	48.46	46.94	49.0
8	% of Females to Total Population	50.43	51.54	53.06	51.0
9	Average Household Size	4.47	4.61	4.66	4.63
10	Sex Ratio	1017	1063	1034	1041
11	Male Literates	1082	5661	12626	19369
12	Female Literates	841	4838	10160	15839
13	<b>Total Literates</b>	<b>1923</b>	<b>10499</b>	<b>22786</b>	<b>35208</b>

Source: District Primary Census Hand Book, Gadchiroli, Gondia and Rajnandgaon, 2011

## 1.19 Anticipated Environmental Impacts and Mitigation Measures:

### 1.19.1 Air Environment:

The air borne particulate matter is the main air pollutant contributed by opencast mining. Predictions have been carried out for the worst-case scenario considering all the operations of the mine will be under simultaneous continuous operation of 12 hours for the proposed emissions.

The air quality modeling has been done and the details of incremental emission load due to Iron Ore mining activity contributing in existing baseline values is given in **Table 16**.

**Table 16: Incremental Emission Load due to Mining Activity Contributing in Existing Baseline Values**

Pollutants	Baseline Concentration ( $\mu\text{g}/\text{m}^3$ )	Incremental ( $\mu\text{g}/\text{m}^3$ )	Resultant ( $\mu\text{g}/\text{m}^3$ )	CPCB Norms
PM <sub>10</sub>	53.40	--	53.40	100 (24 hourly)
SO <sub>2</sub>	6.60	0.16	6.76	80 (24 hourly)
NO <sub>x</sub>	4.80	0.10	4.90	80 (24 hourly)
CO (mg/m <sup>3</sup> )	< 0.1	--	< 0.1	4 (1 hour)

#### **1.19.2 Air Pollution Control Measures:**

The following air pollution control measures will be implemented in the mine to control the impact of air pollution.

- In order to minimize the dust emanating from the mining operations water sprinkling is proposed at the mine pit, waste dump and also on the haulage roads to suppress the dust.
- Dust masks will be given to the mineworkers.
- Regular grading of haul roads will be done to clear the accumulation of loose materials on the roads.
- Transport vehicles are maintained regularly in order to minimize the emissions from them.
- Overloading of tippers will be avoided to prevent the material spillage on the roads.
- Loaded tippers will be covered with tarpaulin before they are allowed on to the main roads.

The air pollution impacts on the nearby villages will be negligible with this small-scale mining after adoption of the above air pollution control measures.

#### **1.19.3 Noise Environment:**

Noise levels in the proposed mine will be produced due to movement of vehicles by transportation of Iron Ore and mining operations like blasting and drilling. But the pronounced effect of noise is felt only near the active working area.

Since the proposed mine will adopt open cast semi mechanized method for mining, there will not be much impact on the surrounding villages due to the mining operations. Also, habitations are away from the proposed project activity and the area is surrounded by thick and dense forest which will reduce the impacts of generated noise due to the proposed project activity. Hence, there will be no any noise impact on surrounding habitations of the proposed project site.

#### **1.19.4 Noise Pollution Control Measures:**

The following are the noise pollution control measures proposed in the mine.

- Ear plugs will be provided to the mine workers whenever needed.
- Vehicles used for transportation will be regularly maintained.
- Greenbelt will be provided all along the mine in 7.5 m barrier zone to reduce the noise levels.
- Speed of the vehicles entering or leaving the mine will be limited to 25 kmph to avoid undue noise from empty trucks.

#### **1.19.5 Impact due to Ground Vibrations:**

The proposed mine will adopt opencast semi mechanized with Category A method for mining with drilling and blasting. Hence, the impact on ground vibrations due to mining will be negligible.

#### **1.19.6 Water Environment:**

The total water requirement for the above operations will be 12 KLD and domestic water requirement will be met by water tankers at the mine site. Waste water generation from the above consumption is from domestic consumption i.e., 6.7 KLD. Wastewater generated from the Domestic front will be mainly from toilets. This waste water will be treated in septic tank followed by soak pit.

There are no natural drainage channels within the site. There are no chances for changes in quality of surface water or ground water. The mining operations will be carried out on slopes of the rocky terrain. Hence, neither the ground water table nor the general surface drainage pattern will be affected. No water will be discharged from the quarry. It is proposed to construct garland drains with sedimentation pits all along the mine pits to avoid erosion and sedimentation due to storm water. Only fresh water will be left into the nearby seasonal streams as after de-siltation.

#### **1.20 Greenbelt Development:**

Greenbelt will be developed for protection and improvement in the surrounding environment and to minimize the dust impact due to proposed mining activity. Planted saplings will be fruit bearing and native species having thick and broad leaves with canopy nature. Total mine lease area is 4.0 Ha. and 33% of the total mine lease area i.e.; 1.32 Ha. need to develop as a greenbelt. As the proposed project site is surrounded by thick and dense forest and there are already trees are available in the mine lease area. Almost, 1 Ha. area is available with good no. of trees which can be maintained as it is & vacant spaces in between these trees will be covered by planting trees. We need to develop 0.32 Ha. area as a greenbelt which is in the form pockets in between already available trees in the mine lease area. To improve the greenbelt coverage at the mine site, plantation is proposed on 7.5 m safety zone. Also, greenbelt will be developed in other areas of mine lease such as administration office, beside of haulage roads etc.

The plantation work for green belt development will be carried in consultation with a horticulturist. By considering 2000 saplings per hectare, total no. of saplings with consideration of 75% rate of survival to be planted every year and balance assume mortality of 25% will be covered every year with applicable rate of saplings to be planted.

Details of Plantation area are as given below:

Total Mine Lease Area = 4.0 Ha.

Applicable 33% Greenbelt Area = 1.32 Ha.

**Already Developed Greenbelt Area as of now = 1.00 Ha.**

Area to be covered by Greenbelt in future = 0.32 Ha.

Plants proposed per Hectare as per MoEF&CC recommendation = 2000 Nos.

Total no. of plants to be planted in Greenbelt Development (For 0.32 Ha.) = 640 Nos.

#### **1.21 Occupational Health & Safety Management:**

- Periodical Medical Examination (PME) of all workers before recruitment and during mining operations is carried out.
- Total workers in the mine – 80 immediate workers after 5 years it will be 149 Nos.
- First aid facility will be provided at the project site.
- Mine operators will be provided with personal protective equipment (PPEs) includes safety helmets and footwear, in addition to ear, eye, and hand protection devices.
- Dust masks will be provided for workers.
- Potable drinking water & shelter for mine workers will be provided.

#### **1.22 Environment Management Plan (EMP):**

In order to implement an effective environmental management plan for mitigating the adverse impacts on the environment, regular monitoring of various environmental components is necessary. Mine manager with the support of Safety and Env. Officer and other workers will monitor the environment management plan of this area.

#### **Budget for Implementation Environment Management Plan:**

Environment management plan is for the proposed project activity divided into two parts i.e.; one is capital cost & one is recurring cost. Total fund earmarked for EMP is Rs. 32.34 Lakhs (Rs. 0.3234 Crores) in which capital cost is Rs. 23 Lakhs and recurring cost is Rs. 9.34 Lakhs. Detail budget for Environmental Management Plan is given in below **Table 17**.

**Table 17: EMP Budget**

<b>S. N.</b>	<b>Item</b>	<b>Capital Cost (Rs. In Lakhs)</b>	<b>Recurring Cost (Rs. In Lakhs)</b>
1	Air Pollution Control	3.0	1.0
2	Rain Water Harvesting System	3.0	1.0
3	Water Pollution Control	3.0	0.5
4	Noise Pollution Control	1.0	0.5
5	Environment Monitoring and Management	3.0	2.34

6	Occupational Health	1.0	1.0
7	Greenbelt Development	7.0	2.0
8	Safety Management	1.0	0.5
9	Renewable Energy System	1.0	0.5
	<b>Total Amount</b>	<b>23.0</b>	<b>9.34</b>
	<b>Total Amount (Capital Cost &amp; Recurring Cost)</b>	<b>32.34</b>	
	<b>Total Amount (Capital Cost &amp; Recurring Cost)</b>	<b>0.3234 Crores</b>	

### 1.23 Corporate Environment Responsibility:

The proposed project would proactively promote the public interest through provision of basic amenities such as roads, transportation, electricity, education, sanitation and healthcare facilities. Proposed project is a greenfield project and CER budget is calculated based on its category as prescribed in office Memorandum of MoEF&CC Dated: 01/05/2018. The CER budget allotted based on the capital cost of the proposed project shall be Rs. 15.0 Lakhs (2% of the Project Cost of Rs. 7.34 Crores). The details break up and activities considered under CER activities are given in below **Table 18.**

**Table 18: Proposed CER Activities and its Budget**

S. N.	Planned Activities under CER as per specific needs	Amount in Rs.
1	<b>Community Health Improvement</b> • Sanitary facilities for project surrounding villages	2,00,000.00
2	<b>Community Education Facilities</b> • Providing desktop computers to schools	2,00,000.00
3	<b>Infrastructural Development</b> • Maintenance/ Repair of Hand Pumps/ Bore wells	8,00,000.00
4	<b>Afforestation Programs</b> • Plantation of trees in villages road side/ Panchayat House/ Public Health Center/ schools	1,50,000.00
5	<b>Community Welfare Activities</b> • Solar Street Lights for common community area and village main approach roads as per the instruction of respective Gram Panchayat	1,50,000.00
<b>Total Amount in Rs.</b>		<b>15,00,000.00</b>
<b>Total Amount (Rupees in Lakhs)</b>		<b>15.00</b>

#### **1.24 Project Benefits:**

It is proposed to employ about 149 persons for carrying out mining operations and the lessee proposed to give preference to the local people in employment. In addition, there will be indirect employment to many people in the form of contractual jobs, business opportunities, service facilities etc. this will enhance the economic status of the local people. Local peoples may have a choice to purchase a vehicle and engage their vehicle for transportation activity of Iron Ore. This will generate new source of income to local peoples as it is remote area which is surrounded by forest and there are very less alternatives are available with them to enhance their life style.

The impact of mining activity in the area will be positive on the socio- economic environment of the region. The employment directly and indirectly will be increased and better infrastructure and communication facilities will be provided.

Shri. Manoj Kumar Ajitsaria would be required to initiate the following measures to minimize the possible negative impacts:

- Implemetation of adquate dust control measures to check air pollution.
- Organize six monthly health camps in the area to check the incidence of any respiratory and other related disorders.
- Conduct Entrepreneurship Development Camps to nurture entrepreneurial talents among the local youth.

#### **1.25 Conclusion:**

Based on the EIA study, it is observed that there will be a marginal increase in the dust pollution, which will be controlled by sprinkling of water and transportation of Iron Ore in trucks by covering the material with Tarpaulin.

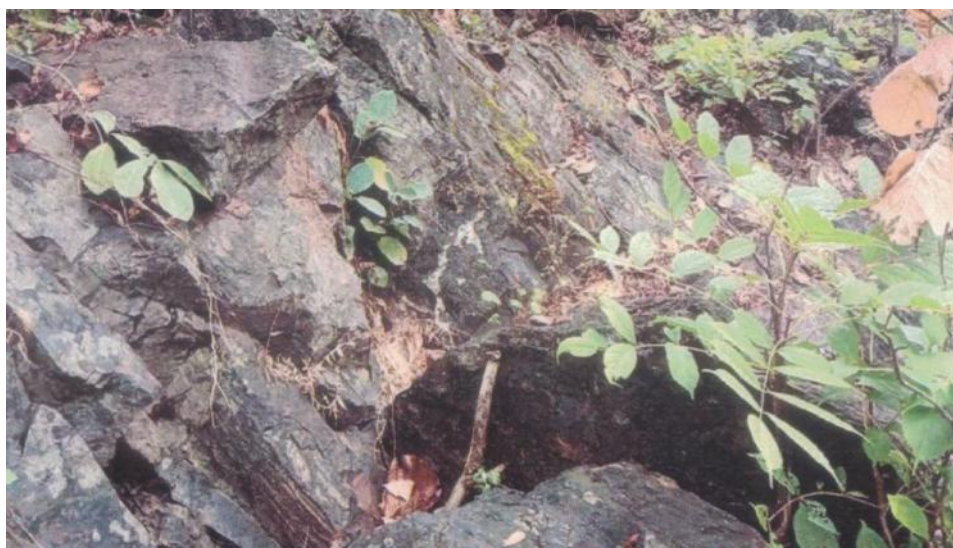
There will be negligible impact on ambient environment & ecology due to mining activities, more over the mining operations will lead to direct and indirect employment generation in the area.

Hence, it can be summarized that the mining of minerals from the proposed Iron Ore mine of Shri. Manoj Kumar Ajitsaria Mine will have a positive impact on the socio-economic environment of the area.

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**Executive Summary**  
**of**  
**Environmental Impact Assessment**  
*For*  
**Proposed Zendepar Iron Ore Mining Project having**  
**Mine Lease Area of 10.37 Ha.**  
*by*  
**Shri. Nirmal Chand Jain**  
*at*  
**Khasra No.: 82 Part (82/3) of Zendepar Village, Tahsil:**  
**Korchi, Dist.: Gadchiroli, Maharashtra**



**Project Proponent:**  
**Shri. Nirmal Chand Jain,**  
Plot No.2, Rajendra Apartment,  
Khare Town, Dharampeth,  
Nagpur, Maharashtra - 440010

**Consultant**  
  
**Sri Sai Manasa Nature Tech Private**  
**Limited**

(Certificate No. NABET/EIA/2124/RA 0260, Validity: 21-11-2024)

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## **Executive Summary**

### **1.0 Introduction**

**Shri. Nirmal Chand Jain** has been granted mine lease for Iron Ore over an Extent of 10.37 Ha. at Khasra Nos.: 82 Part (82/3) of Zendevar Village, Tahsil: Korchi, Dist.: Gadchiroli, Maharashtra State for a period of 30 years by Industries, Energy and Labour Department, Govt. of Maharashtra vide ref. no.: MMN-1004/CR-684/IND-9 Dated: 10/03/2005. Accordingly, again we have applied for renewal of mine lease agreement to the concerned authority and Form K was signed in between Mine Lease Holder and The District Mining Officer on Dated: 11/07/2017. Mine Lease renewed for period of valid from 11/01/2017 to 10/01/2047 for the period of 30 years. (As per new Amendment of "Law of the Land" is consider up to 10/01/2067 (50 Years) & the procedure for the extension of Lease period is in process.)

### **1.1 Statutory Clearances:**

Proposed Zendevar Iron Ore Mine by Shri. Nirmal Chand Jain at Khasra No. 82 Part (82/3), Village Zendevar, Tahsil Korchi, District Gadchiroli, Maharashtra having mine lease area of 10.37 Ha. Proposed project site was granted mine lease to Shri. Nirmal Chand Jain by Section Officer, Govt. of Industries, Energy & Labor Dept., Mumbai vide Ref. No.: MMN-1004/CR-684/IND-9, Dated: 10/03/2005 for the period of 30 year's subject to compliance of provisions of MM (D & R) Act, 1957, MCR – 1960 and MCDR -1988. Accordingly, after executing mine lease agreement with The District Mining Officer, Collector Office, Gadchiroli as per the applicable procedure, we have applied given the mining plan work to RQP for preparation of mining plan and its further needful approval. RQP prepared the mining plan of the proposed project and submitted to The Regional Controller of Mines, Indian Bureau of Mines, Nagpur. Submitted mining plan was approved by The Regional Controller of Mines, Indian Bureau of Mines, Nagpur vide ref. no.: GAD/FE/MPLN-899/NGP Dated: 02/01/2006. Demarcation of the mine lease area was carried out by Dy. S. L. R., Korchi by the order of The District Collector, Gadchiroli, Maharashtra in the year 2007. Accordingly, project proponent hired Environment Consultant for obtaining "Environmental Clearance" for the proposed project in the year 2010. Environment Consultant prepared the application and submitted to State Expert Appraisal Committee (SEAC), Maharashtra. Project was considered in 40<sup>th</sup> SEAC meeting held on Dated: 15/02/2011 and issued Terms of Reference as per Item No. 12b. Baseline monitoring was carried out by the Environment Consultant for the Period: March to May 2011 (Summer Season). It was told to us to obtain Forest No Objection Certificate for further proceeding of the project for submission of Draft EIA report. We then

approached to Revenue Department, Collector Office, Gadchiroli for want of Forest NOC and further needful confirmation from their side to the Forest Department. Accordingly, Chief Conservator of Forest, (Head Forest Force), Government of Maharashtra, Nagpur issued Forest NOC to The Collector, Gadchiroli, Maharashtra vide ref. no.: Kaksha-17/RS/3321 Dated: 22/02/2012 confirming that there is no any forest land involved in the proposed project site. Then we also follow up with forest department for obtaining Forest NOC in the name of mine lease holder. Accordingly, Deputy Conservator of Forest, Wadsa Forest Department, Wadsa Forest Office, Wadsa issued Forest “No Objection Certificate” (NOC) vide ref. no.: Kaksha-4/Survey/Land/561, Wadsa Dated: 05/06/2014. Preparation and submission of Draft Environment Report was got delayed for the want of Forest NOC. Till the time validity of TOR was expired and again we have applied for extension for the TOR validity to the SEAC committee, Maharashtra. Proposal for extension of TOR validity was considered by the SEAC Committee and it was taken in the 128<sup>th</sup> Meeting held on Dated: 02/06/2016. SEAC committee considered our request for extension of TOR validity and extended it for the period of one year. Environment Consultant prepared the Draft EIA report and submitted to The Regional Officer, MPCB, Chandrapur for conducting Public Hearing. Accordingly, MPCB, Chandrapur published the paper advertisement in both Languages i.e.; Marathi & English on Dated: 30/06/2017. Public Hearing was organized by the MPCB at Conference Hall, District Collector Office, Gadchiroli on Dated: 03/08/2017. Peoples have attended the Public Hearing and demanded to cancel the arranged Public Hearing at Gadchiroli and requested the authority to reconduct at Tahsil Place Kochi, Gadchiroli District. Due to the huge demand of the public attended over there, The Additional District Magistrate, Collector Office, Gadchiroli postponed the public hearing on that date. As the validity of TOR extended for one year only and it was expired up to the period.

Due to non-commencement of mining activity as per the provisions of the mine lease agreement within the stipulated period for want of obtaining statutory clearances, notice was issued for cancellation of mine lease from the Director, Directorate of Geology & Mining, Govt. of Maharashtra, Nagpur. Accordingly, again we have applied for renewal of mine lease agreement to the concerned authority and Form K was signed in between Mine Lease Holder and The District Mining Officer on Dated: 11/07/2017. Mine Lease renewed for period of 11/01/2017 to 10/01/2047 for the period of 30 years.

Now, after renewal of mine lease agreement again we have started the process for obtaining applicable statutory clearances like Approved Mining Plan, Environmental Clearance, Consent to Establish and Consent to Operate. Due to pandemic of COVID19 in the year 2020 and 2021,

requisite work got delayed. We have given the work of preparation of mining plan to RQP. Accordingly, RQP prepared mining plan and submitted to The Regional Controller of Mines, Indian Bureau of Mines, Nagpur. Mining plan was approved by The Regional Controller of Mines, Indian Bureau of Mines, Nagpur vide ref. no.: GAD/FE/MPLN-899/NGP Dated: 02/08/2021. As the mine lease area is having 10.37 Ha. & it is surrounded by other 4 Iron Ore mine leases in the same khasra no., it forms cluster with other four mine leases. Total cluster formation area of all 5 Iron Ore mine leases is 46.37 Ha. and accordingly, letter submitted to The District Mining Officer, Collector Office, Gadchiroli for obtaining "Cluster Certificate". Cluster certificate was issued by The District Mining Officer, Collector Office, Gadchiroli vide ref. no.: Desk-II/Sr. Cl. Mining/ Nirmal Chand Jain /303/2021 Dated: 27/10/2021. As the cluster formation mine lease area is more than 25 Ha. & as per the published EIA Notification, 2006 & its subsequent amendment, the proposed project falls in Category B1 of Mining of Minerals 1(a). As per the B1 Category of the proposed project, it needs Terms of Reference (TOR), Draft EIA report submission to MPCB for public hearing and after completion of public hearing Final EIA report submission to SEAC-1 & SEIAA for obtaining "Environmental Clearance". Now, after obtaining approved mining plan for the proposed project for the period: 2021 to 2026, we have applied for obtaining Terms of Reference (TOR) as per the EIA Notification, 2006 and its subsequent amendment time to time. After obtaining TOR for the proposed project, we will carry out Baseline Monitoring for preparation of Draft Environmental Impact Assessment Report. After preparation of draft EIA report, we will submit it to Regional Office, MPCB, Chandrapur for public hearing. After completion of the public hearing, we will prepare Final EIA report and will submit it to the SEAC-1 for obtaining Environmental Clearance for the proposed project.

Proposed project had already obtained "Consent to Establishment" (CTE) for the proposed project activity of Mining of Iron Ore from "Zendevar Iron Ore Mine" by Shri. Nirmal Chand Jain vide Consent No.: BO/Chandrapur/302-2005/E/CC-339 Dated: 12/09/2005. Now, project proponent will obtain "Consent to Operate" (CTO) after obtaining of Environmental Clearance" (EC).

## **1.2 Terms of Reference**

Project proponent applied for obtaining Terms of Reference (TOR) by submitting required documents like approved mining plan, Form 1 & Pre-Feasibility Report to SEIAA, MoEF&CC, Maharashtra as per EIA Notification, 2006 and its subsequent amendment. Project was uploaded on Parivesh portal vide Proposal No.: SIA/MH/MIN/68177/2021 Dated: 05/10/2021. It was

considered by SEAC-1 in their 209<sup>th</sup> meeting held on Dated: 10<sup>th</sup> to 12<sup>th</sup> November 2021 and recommended for issuing of TOR to SEIAA, Maharashtra.

SEIAA, MoEF&CC, Maharashtra considered the project in their 234<sup>th</sup> Meeting (Day 3) held on Dated: 17<sup>th</sup> December 2021 and asked to submit clarifications for regarding time lag from first mining lease approval to submission of current application for TOR & also asked to submit details of existing trees on proposed mining site and details of trees to be cut, if any along with its age. Accordingly, we have submitted compliance to 234<sup>th</sup> MOM of SEIAA, MoEF&CC, Maharashtra for grant of TOR to the proposed Iron Ore mining project. SEIAA, MoEF&CC, Maharashtra considered the project in their 248<sup>th</sup> Part-C meeting held on Dated: 18<sup>th</sup> August 2022 and asked to process NOC for tree cutting and also details of tree inventory with cumulative age of trees to be cut. Accordingly, we have submitted compliance to 248<sup>th</sup> MOM of SEIAA, MoEF&CC, Maharashtra for grant of TOR to the proposed Iron Ore mining project.

SEIAA, MoEF&CC, Maharashtra considered the project in their 256<sup>th</sup> Part-E meeting held on Dated: 25<sup>th</sup> January 2023 and grant a “Terms of Reference” (TOR) to the proposed Iron Ore mining project. “Terms of Reference” (TOR) grant to the proposed Iron Ore mining project vide ref. no.: SIA/MH/MIN/68177/2021 Dated: 22/02/2023.

Based on the documents submitted and presentations made, the committee prescribed the Terms of Reference (TOR) for preparing EIA/EMP report, by considering the project under the category ‘B1’ 1 (a) Mining of Minerals of the Schedule of EIA Notification 2006.

### **1.3 Project Proponent**

Shri. Nirmal Chand Jain is working in the field of mining and marketing of the Iron Ore. The Mining lease for Iron Ore has been granted to Shri. Nirmal Chand Jain over an area 10.37 Ha. at Zendepar Village in Korchi Tehsil of Gadchiroli District for the period of 30 years. The above said lease has been executed on 11/01/2017. Iron Ore is use in Steel Industry, Ferro-Alloys industries as main source of raw material, good quality of Iron Ore for steel making grade is available in and around Gadchiroli district of Maharashtra.

#### **Shri. Nirmal Chand Jain**

Office Address:

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Mobile: 09425551216

Email ID: mahavirminerals07@rediffmail.com



Executive Summary of Proposed Zendevar Iron Ore Mine by Nirmal Chand Jain having mine lease area of 10.37 Ha. at Khasra No. 82 Part (82/3) of Village: Zendevar, Tahsil: Korchi, Dist.: Gadchiroli, Maharashtra.

Site Address:

Khasra Nos.: 82 Part (82/3), Village: Zendevar,

Tahsil: Korchi, Dist.: Gadchiroli, Maharashtra.

#### 1.4 Brief Description of Nature, Size & Location of the Project

The proposed project is located in Zendevar Village, Tahsil: Korchi, Dist.: Gadchiroli, Maharashtra over an area of 10.37 Ha. The mining lease area falls in Survey of India Topo Sheet No. 64D5. The environmental settings of the 10 km study area are given in **Table 1.1**.

**Table 1: Environmental Settings of the Study Area**

S. N.	Particulars	Details																					
A.	Nature of project	Iron Ore																					
B.	Size of project																						
1.	Mining Lease area	10.37 Ha.																					
2.	Proposed Production capacity	Iron Ore: 50,008.0 TPA (Maximum Production in five years); Float ore: 1875.04 TPA (Maximum Production in five years);																					
C.	Project location																						
1.	Village	Zendevar																					
2.	Tahsil	Korchi																					
3.	District	Gadchiroli																					
4.	State	Maharashtra																					
5.	Khasra Nos.	82 Part (82/3)																					
6.	Land	Non-forest, Govt. Revenue Land																					
7.	Toposheet No. Latitude & Longitude	64D5, 64D6, 64D9, 64D10. <table border="1"> <thead> <tr> <th>Boundary Pillars</th><th>Latitude</th><th>Longitude</th></tr> </thead> <tbody> <tr> <td>BP-1</td><td>20°46'06.687"</td><td>80°29'01.461"</td></tr> <tr> <td>BP-2</td><td>20°46'04.283"</td><td>80°29'05.922"</td></tr> <tr> <td>BP-3</td><td>20°46'00.819"</td><td>80°29'05.778"</td></tr> <tr> <td>BP-4</td><td>20°45'54.194"</td><td>80°29'05.502"</td></tr> <tr> <td>BP-5</td><td>20°45'47.424"</td><td>80°29'05.221"</td></tr> <tr> <td>BP-6</td><td>20°45'47.194"</td><td>80°29'06.605"</td></tr> </tbody> </table>	Boundary Pillars	Latitude	Longitude	BP-1	20°46'06.687"	80°29'01.461"	BP-2	20°46'04.283"	80°29'05.922"	BP-3	20°46'00.819"	80°29'05.778"	BP-4	20°45'54.194"	80°29'05.502"	BP-5	20°45'47.424"	80°29'05.221"	BP-6	20°45'47.194"	80°29'06.605"
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		BP-7	20°45'44.351"	80°29'06.544"
		BP-8	20°45'43.837"	80°29'12.229"
		BP-9	20°45'41.767"	80°29'12.311"
		BP-10	20°45'44.171"	80°29'08.082"
		BP-11	20°45'44.602"	80°29'01.171"
		BP-12	20°45'44.948"	80°28'59.316"
		BP-13	20°45'50.832"	80°28'59.943"
		BP-14	20°45'55.762"	80°29'00.468"
		BP-15	20°46'00.019"	80°29'00.922"
		BP-16	20°46'03.387"	80°29'01.281"
<b>D.</b>	<b>Environmental Settings Details (With approx. aerial distance and direction from the mining lease boundary)</b>			
1.	Nearest Village	Zendevar village – 3.5 km (SE)		
2.	Nearest Town, city, district Headquarters	Nearest Tahsil Place – Korchi – 6.0 km - SW Nearest Town – Korchi – 6.0 km -SW Nearest District HQ – Gadchiroli – 45 km - SW		
3.	Nearest National Highway,  Nearest Motorable Road	NH 543 – Shahdol to Bramhapuri passes from Korchi – 3.5 km (W) from the proposed site. Shahdol-Mandla-Balaghat-Gondia-Deori-Korchi-Bramhapuri Nandali to Sohale – 1.5 km - E		
4.	Nearest Railway station, Airport & Sea port	Barabhati Railway Station – 45.0 Km, NW Dr. Babasaheb Ambedkar International Airport, Nagpur – 153.20 km, NW Visakhapatnam Sea Port – 450 km, SE		
5.	Interstate boundary	Nil within 5 km. Chhattisgarh state border is at 7.0 km on East direction.		
6.	Archeological Place	None within 10 km from the mine site		
7.	National Park, Wild Life Sanctuary, Wildlife Corridors, Biosphere Reserves, Migratory routes for Birds. Protected	No any National Park, Wild Life Sanctuary, Wildlife Corridors, Biosphere Reserves, Migratory routes for Birds falls in study area. Reserved Forest – Malewada RF – 16.5 km (W)		

	Forest etc. within 10 Km radius study area	
8.	Reserve Forest and Protected Forest within 10 Km radius	None
9.	Water bodies within 10 km radius	Unidentified Small Ponds/ Talav within 10 Km
10.	List of Industries in 10 km Study Area	Anuj Mines Minerals & Chemicals Pvt. Ltd. – Adjacent to project site Manoj Kumar Ajitsaria – Adjacent to project site A. K. Agarwala – Adjacent to project site R. M. Rajurkar - Adjacent to project site
11.	Seismic Zone	Seismically this area is categorized under Zone II, which is moderate zone.
<b>E.</b>	<b>Employment Generation</b>	
1.	No. of Manpower	149 Nos.
<b>F.</b>	<b>Cost Details</b>	
1.	Total Project Cost	Rs. 10.17 Crore
2.	Cost for Environmental Management Plan	Capital Cost = Rs. 33.0 Lakhs Recurring Cost = Rs. 9.34 Lakhs Total Cost = Rs. 42.34 Lakhs
3.	CER Cost	Rs. 20 Lakhs

Map showing general and specific location of proposed mine site, 10 km topo map study area and Google imagery of the proposed project site are given in **Figure 1, Figure 2 and Figure 3.**

Executive Summary of Proposed Zendepar Iron Ore Mine by Nirmal Chand Jain having mine lease area of 10.37 Ha. at Khasra No. 82 Part (82/3) of Village: Zendepar, Tahsil: Korchi, Dist.: Gadchiroli, Maharashtra.

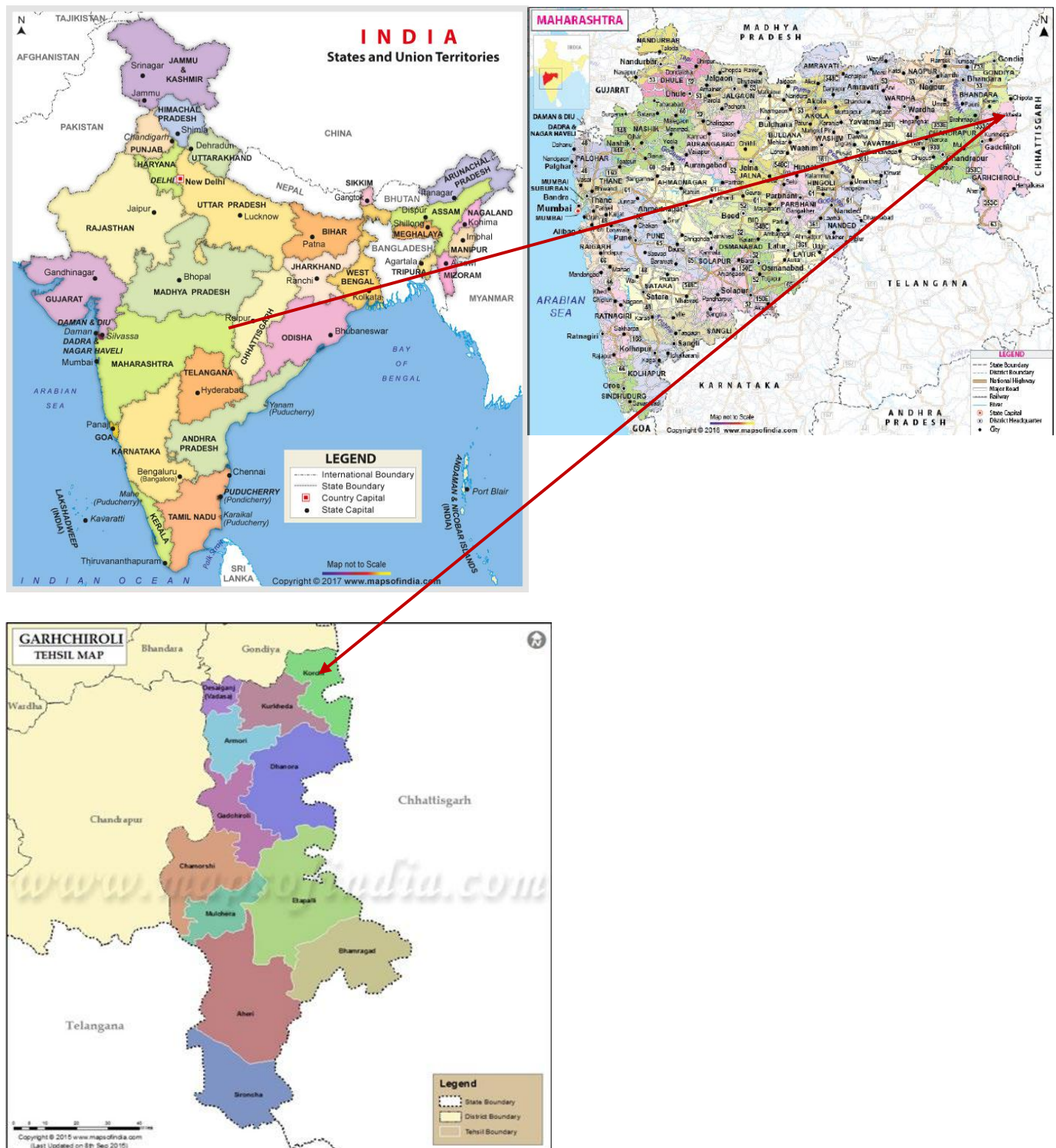


Figure 1: Location Map of the Project Site



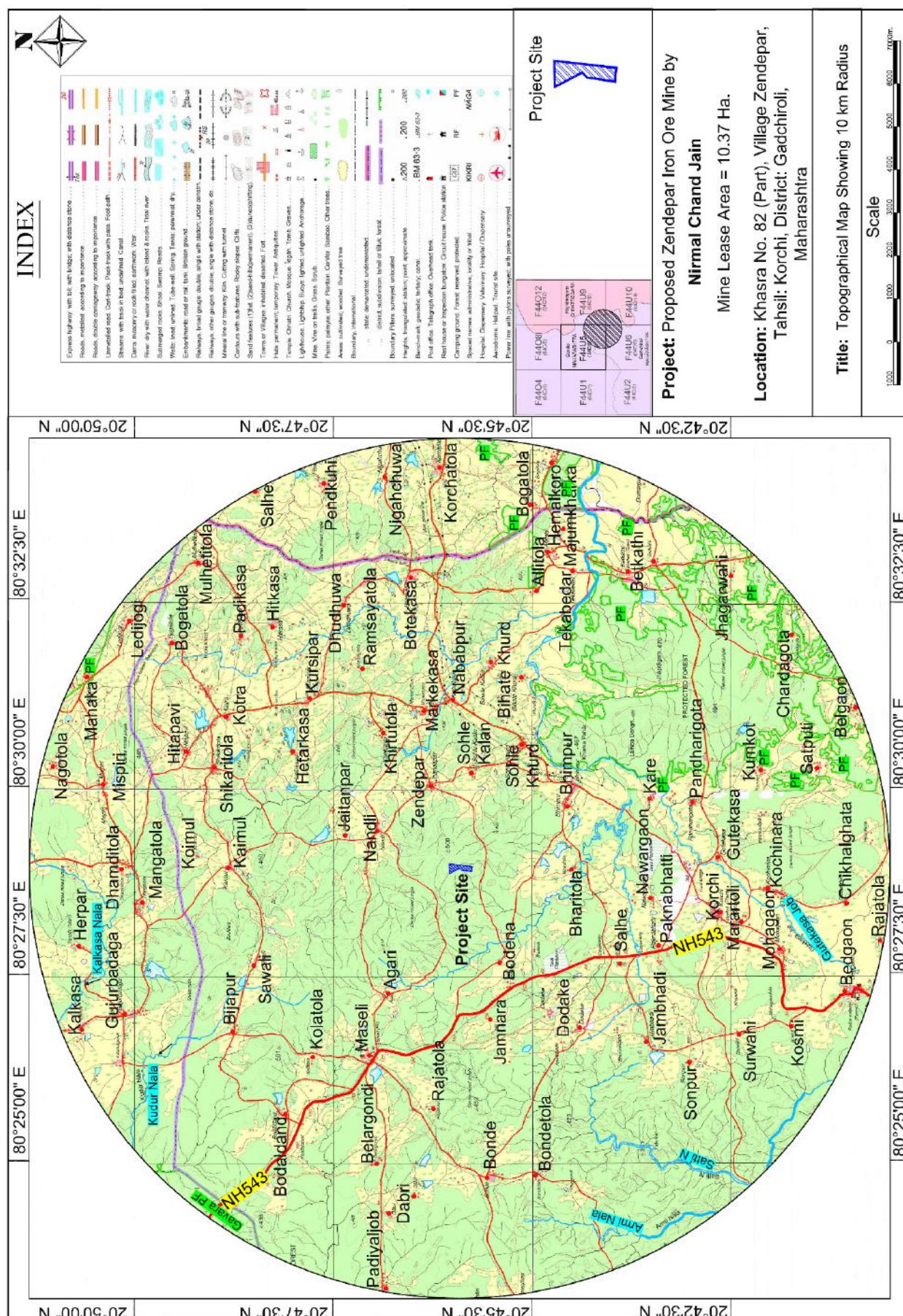


Figure 2: 10 KM Study Area Map of the Project Site





Figure 3: Google Image of the Project Site

### **1.5 Project Description:**

#### **1.5.1 Type of Project Including Interlinked and Interdependent Projects, If Any:**

The project is of open cast Iron ore mine. The proposed Iron Ore mine 10.37 Ha. will be developed as open cast semi-mechanized mining with bench pattern for the production of Iron ore 50,008.0 TPA and Float ore 1875.04 TPA (both Maximum Production in five years). Iron ore is used in Steel Industry, Ferro-Alloys Industries as main source of raw material, good quality of iron ore of Steel making grade is available in and around Gadchiroli district of Maharashtra State. No interlinked projects were associated with this project.

#### **1.5.2 Details of Alternate Sites:**

It is a cluster project. Nearby mines are available. No alternate site was considered as the project is mineral specific and site specific.

#### **1.5.3 Size or Magnitude of Operation:**

The mine lease area is of 10.37 Ha. and production of Iron Ore Mine is 50008.0 TPA and Float ore is 1875.04 TPA (both Maximum Production in five years). The mine lease follows open cast semi-mechanized method of mining.

#### **1.5.4 Topography:**

Topography of the Lease area & its surrounding Leases are of undulating nature and controlled by Highly Compact Hard Quartzite, Banded Hematite Quartzite and Steep dip. The area is drained by seasonal local drainage streams in all Corners of Lease. The lease hold area lies in the "Zendevar Iron Ore Mine". Maximum elevation in the Lease area is 505 MRL & minimum is 460 MRL on the South & West direction.

#### **1.5.5 Regional Geology:**

The area forms a part of the region covered predominately by the granite gneisses with its variants, basic rocks and some meta-sediments comprising with various types quartzite including banded hematite quartzite and schist with inter-stratified Amphibolite's layers all belonging to Achaean Precambrian age. The meta-sediments appear to have been folded into series of close parallel anticlines a syncline with generally low plunge. Major part of the Iron Ore area is covered with scree, talus, Soil & Laterite and has few good rocks exposure exposed in the trenches and near about. The rocks of the area comprise of Banded Hematite Quartzite (BHQ associated with thick Iron Ore/ Hematite band, platy quartzite & Massive grey quartzite, pegmatite & quartz veins of Precambrian age. In all possibility, granite gneiss appears to be present on the eastern and western flanks of the ridge.

#### **1.5.6 Local Geology:**

The entire area is "Government Revenue land". The Lease area shows two hillocks along with the highest contour is 505 MRL & the Lowest Contour 460 MRL & Slope shown all corners of the Lease area in North-East, North-West corner.

The main Geological formation found in this area are the oldest metamorphic i.e., granite gneisses & Dharwas i.e.; Banded Hematite Quartzite. The proposed area comprises a hillock with lateritic capping with Banded Hematite Quartzite body exposed at places. The local geological litho units observed in the lease area are Soil, Banded Hematite Quartzite (BHQ) & associated with Hematite Iron Ore rich band.

#### **Formations are given below:**

**Lateritic soil:** The major part of the area on the surface is covered with Laterite. Lateritic soil and Limonite. Laterite which is showing varying thickness of 1.5 m to 3.0 m.

**Hematite Iron Ore rich band:** The Ore body is covered with Laterite. The ore body is covered with the general strike of the Ore body is North-East & South —West and dip varying from 65° to 70° towards West. The trend of the Ore bodies appears to North-South.

**Rocks like Quartzite, Banded Hematite Quartzite:** The Banded Hematite Quartzite is mainly Laterite & Massive. The Outcrop of Banded Hematite Quartzite is weathered and fractured.

**Float Ore:** Float ore is also seen in the area with Laterite Soil. There is float Ore zone on ground & is evident of about 1.5 M thicknesses.

#### **1.5.7 Reserves:**

Parameters for resource estimation as per approved Mining Plan:

- Method of mineral resource- "By Surface Area Method".
- The depth considered for estimation of Reserves is 10.00 from the surface,
- Estimated Bulk density in 3.5 T/ m<sup>3</sup>
- Maximum depth: Consider 6.00 m under 111,
- 6.00 M to 8.00 M under 121 &
- 8.00 M to 10.00 M under 122.
- Category: 'A'
- Area: 10.37 Ha.
- Iron Ore existing at the top of the Hilly terrain sloping downward



- Waste Rock: Approx. 1.5 to 3 M Lateritic soil followed by Iron Ore.
- Surface MRL: Iron Ore existing at the top of the Hilly terrain sloping downward. Due to this reason not considered any one particular surface RL.
- Recovery: 90% for Iron ore
- Mining Losses: 10%.

Geological reserves as per UNFC classification are given in below **Table 2**.

**Table 2: Geological Reserves as per UNFC Classification**

Estimated Mineral Reserve/Resources in Different Categories of UNFC as reported are given below:				
A. Total Mineral Reserve	UNFC Code	Quantity in Tons	Float Ore	Grade
Proved Mineral Reserve	111	197400.00	32665.00	Fe 52%
Probable mineral Reserve	121	65800.00	0.00	
	122	65800.00	0.00	
<b>B. Total Remaining Resources</b>		<b>329000.00</b>	<b>32665.00</b>	
Feasibility Mineral Resource	211	0.00	0.00	
Prefeasibility mineral resource	221 & 222	0.00	0.00	
Measured mineral resource	331	0.00	0.00	
Indicated mineral resource	332	0.00	0.00	
Inferred mineral resource	333	0.00	0.00	
Reconnaissance mineral resource	334	0.00	0.00	
<b>Total Reserves + Resources (A+B)</b>		<b>329000.00</b>	<b>32665.00</b>	

(Source: Approved Mining plan)

## 1.6 Method of Mining:

### 1.6.1 Salient description of the Mining Method:

At the beginning of mining operations topography of the Lease area & its surrounding Leases are of undulating nature and controlled by Highly compact hard Quartzite, Banded Hematite Quartzite and steep dip. The area is drain by Seasonal Local drainage streams in all Corners of Lease. The lease hold area lies in the “Zendevar Iron Ore Mine” Maximum elevation in the Lease area is 505 MRL & minimum is 460 MRL on the South & West direction. The area in scheme of mining for the period of Year 2021 to 2026, it is stated that the mining operations would be done by Category A –

semi-mechanized. The mining operations will be carried out in between the periods of 2020-21 to 2025-2026 after obtaining of environmental clearance.

### 1.6.2 Proposed Method of Mining:

In view of the ore geometry including strike, dip, depth from the surface etc. it is proposed to go for open cast method of mining & mining operation start after getting EC, CTO & CTE. Open Cast Method of Mining -The following main activities are involved;

- Deep holes drilling and blasting for breaking ground.
- Removal of over burden from the mine to waste dumping yards with the use of Heavy Earth Moving Machineries (HRMMs)
- Mining out ore in the course of OB development.
- Processing of ROM.
- Dewatering of pits. Dust suppression.
- Routine and preventive maintenance of HEMMs
- Soil dump management
- Other activities.

In view of the average grade of 53% to 63% Fe content stripping ratio of 1:10 is considered i.e.; for every 1 (One) ton of “ROM” 10 (Ten) m<sup>3</sup> of waste Rock will be removed. The density of “ROM” is considered as 3.5 T/ m<sup>3</sup>.

### 1.7 Mining Program for next Five Years:

In- situ tentative excavation of Iron Ore and Float Ore indicates year-wise tentative excavation in cubic meters indicating development, ROM, pit wise as in below **Table 3 & 4.**

**Table 3: In- situ Tentative Excavation of Iron Ore**

S. N.	Year	Total Tentative Excavation (m <sup>3</sup> )	Soil m <sup>3</sup>	O/B m <sup>3</sup>	100% ROM m <sup>3</sup>	ROM Ore m <sup>3</sup>		BD T/m <sup>3</sup>	Ore in Tons
						Saleable Ore 90% m <sup>3</sup>	ML m <sup>3</sup> (10%)		
1	2021-22	22833	1740	5220	15873	14286	1587	3.5	50001
2	2022-23	22833	1740	5220	15873	14286	1587	3.5	50001
3	2023-24	22593	1680	5040	15873	14286	1587	3.5	50001
4	2024-25	21653	1680	5040	14933	13440	1493	3.5	47040
5	2025-26	21096	0	5220	15876	14288	1588	3.5	50008

Executive Summary of Proposed Zendevar Iron Ore Mine by Nirmal Chand Jain having mine lease area of 10.37 Ha. at Khasra No. 82 Part (82/3) of Village: Zendevar, Tahsil: Korchi, Dist.: Gadchiroli, Maharashtra.

<b>Total</b>	<b>111008</b>	<b>6840</b>	<b>25740</b>	<b>78428</b>	<b>70586</b>	<b>7842</b>		<b>247051</b>
<b>Avg. Prod. Per year</b>			<b>5148</b>	<b>15686</b>	<b>14117</b>			<b>49410</b>
Steeping ratio 1:0.8								
M.L 10%: Mining Loss (As Per Approved M.P., There is no Subgrade & M.R.)								

(Source: Approved Mining plan)

**Table 4: In- situ Tentative Excavation of Float Ore**

<b>S. N.</b>	<b>Years</b>	<b>Float Ore Cu. M</b>	<b>Recovery of Float Ore 15%</b>	<b>B.D T/m<sup>3</sup></b>	<b>Total Ton</b>
1	2021-22	3571.50	535.73	3.5	1875.04
2	2022-23	3571.50	535.73	3.5	1875.04
3	2023-24	3571.50	535.73	3.5	1875.04
4	2024-25	3360.00	504.00	3.5	1764.00
5	2025-26	0.00	0.00	3.5	0.00
	<b>Total</b>	<b>14074.5</b>	<b>2111.175</b>		<b>7389.113</b>

(Source: Approved Mining plan)

### **1.8 Raw Material Required Along with Estimated Quantity, Likely Source, Marketing Area of Final Product/S, Mode of Transport of Raw Material and Finished Product:**

No raw material will be required in the proposed project. The operation involves the extraction of iron ore and it will be transported to the Local market through tippers. New approach road will be developed for transportation.

### **1.9 Use of Mineral:**

The Iron Ore will be mined out during the mining operation & consumed by the various steel industries in the surroundings. The firm does not have any captive unit.

### **1.10 Availability of Water, Energy/ Power Requirement and its Sources:**

#### **1.10.1 Water Requirement:**

Water required for the proposed mining project will be sourced from water tankers from the nearby villages. The total water requirement will be around 20 KLD. Water requirement details are given in below **Table 5**.

**Table 5: Water Requirement Details**

S. N.	Details of Usage	Quantity (KLD)
1	Dust Suppression	4.0
2	Domestic Usage	6.71
3	Green Belt Development	9.2
	<b>Total Requirement</b>	<b>19.91</b>
	<b>Total Requirement (Rounded Off)</b>	<b>20</b>

#### **1.10.2 Power:**

Proposed project site location is undulating and remote from the nearby villages & obtaining electricity supply is difficult and is become costly affair. As the proposed project is only for mining activity which includes excavation of iron ore from the mine & no further process is required on it for selling in the market, requirement of electricity supply is not essential and it can be met from DG set. DG set power can be used for lighting purpose in addition to proposed solar lights.

- Estimated Power: 10 KVA
- Source: 1 X 10 KVA DG Set
- DG set is proposed.

#### **1.11 Quantity of wastes to be generated (liquid and solid) and scheme for their management/ disposal:**

##### **1.11.1 Solid Waste Generation& its Disposal:**

Laterite Soil: The major part of the area on the surface is covered with Laterite, Lateritic Soil & Limonite. At place outcrop of Iron Ore is exposed on surface. The Ore body is covered with Laterite which is showing varying thickness of 1.5 m to 3.0 m. and as such will be stored in 'Dumps'. The Laterite Soil is used for Road construction within Mining lease area.

O.B: The area is having undulating topography and Iron is mostly outcropping. The Waste rock/Side burden will consist of mainly Banded Hematite Quartzite.

Dumps: The waste will be collected/ stacked in the main dump only. The waste material is proposed to dump along the boundaries. No surface water bodies in the lease area and the adjoining area. The drainage of the area will not be disturbed to cause any adverse impact on water regime either surface or groundwater& for seasonal rain fall a garland & retaining wall terrace will be provided at an interval of 6.0 m.

Prior to the disposal of waste, dumping site will be prepared as per the following manner:

Dumping site will be surveyed and earmarked as per the proposal. Roads will be developed from Quarry to the dumping site at suitable gradient of 1:16. Shrubs and bushes wherever found will be cut and removed. Soil if any shall be scrapped off and disposed over the existing dumps. Grass will be sown over the waste dump to control erosion and dust generation.

Protective measures for O.B /Soil Dumps & ROM Yard: by using Garland drainage & retaining wall.

#### **1.11.2 Liquid Effluent:**

No liquid effluent will be generated in proposed mining project except domestic waste. Domestic wastewater from the mine will be treated in septic tank followed by soak pit.

#### **1.12 Site Analysis:**

##### **1.12.1 Accessibility:**

The site for the proposed mine is located at Sy. No. 82 Part (82/3) near Zendevar village in Korchi tehsil of Gadchiroli district in the state of Maharashtra. Proposed project site is at a distance of 3.5 km (W) from NH 543 – Shahdol to Bramhapuri passes from Korchi. NH 543 starts at Shahdol (Madhya Pradesh) and ends at Bramhapuri (Maharashtra) and it passes through Shahdol-Mandla-Balaghat-Gondia-Deori-Korchi-Bramhapuri. Project site is approachable from Nandali to Sohole village road at a distance of 1.5 km (E). Proposed project site is at a distance of 45 km from District Headquarter, Gadchiroli. Barabhati railway station is the nearest railhead at a distance of 45 km (NW) from the proposed project site. Barabhati railway station is on the Gondia to Balharshah railway line which is connecting Chhattisgarh to south part of the India. Dr. Babasaheb Ambedkar International Airport, Nagpur is the nearest airport at a distance of 153.0 km (NW) from the proposed project site. Visakhapatnam Sea Port is the nearest sea port at a distance of 450 km (SE) from the proposed project site.

#### **1.13 Planning Brief:**

##### **1.13.1 Land Use Planning:**

The project is located in 10.37 Ha. of Govt. non forests revenue land. Land use indicating the area likely to be degraded due to quarrying, dumping, roads, workshops, processing, plant tailing ponds/dam etc. There will be change in land use as the Iron ore will be excavated from the mine lease area.

##### **1.13.2 Assessment of Infrastructure Demand (Physical & Social):**

On the basis of the preliminary site visit, the infrastructure demand in the villages was assessed on the basis of need and priority.

### **1.13.3 Amenities/Facilities:**

First aid box and drinking water facility will be made available at the project site. Rest shelter will be provided at the project site. Mines office and other statutory constructions like rest shelter, first aid, work shed and drinking water as required in the mine lease area will be provided. Drinking water will be supplied to the workers by the water tankers from the surrounding villages.

### **1.14 Proposed Infrastructure & Environment Management Plan:**

#### **1.14.1 Residential Area (Non-Processing Area):**

As the local persons of surrounding villages will be given employment, no residential area/ housing is proposed within the mining lease area.

#### **1.14.2 Water Management:**

The total water requirement is 20 KLD. There are no chances for changes in quality of surface water or ground water. The mining operations will be carried out on slopes of the rocky terrain. Hence, neither the ground water table nor the general surface drainage pattern will be affected. No water will be discharged from the mine.

Following measures shall be taken:

- PP will ensure that good quality potable water is provided for drinking purposes. Good sanitation facilities (toilets with septic tank followed by soak pits) will be provided and maintained for good hygienic conditions.
- The spillages from fueling of machinery shall be avoided and in case of any spillage the same shall be handled properly. Likewise, the spent lubricating oils etc., shall be safely collected and properly disposed off.

#### **1.15 Sewerage System:**

Domestic waste will be disposed in to septic tank followed by soak pit.

#### **1.16 Solid Waste Management:**

No waste generation is envisaged from the mine.

#### **1.17 Baseline Environmental Studies:**

Baseline environmental studies were conducted in the area within 10 km radius of the proposed project site to assess the existing environmental scenario in the area. Baseline environmental studies were carried out in the months October to December 2022 i.e.; post monsoon season. The baseline environmental quality data for various components of environment, viz. Air, Noise, Water, Land were monitored during October to December 2022 in the study area covering 10 km radius around the project site.

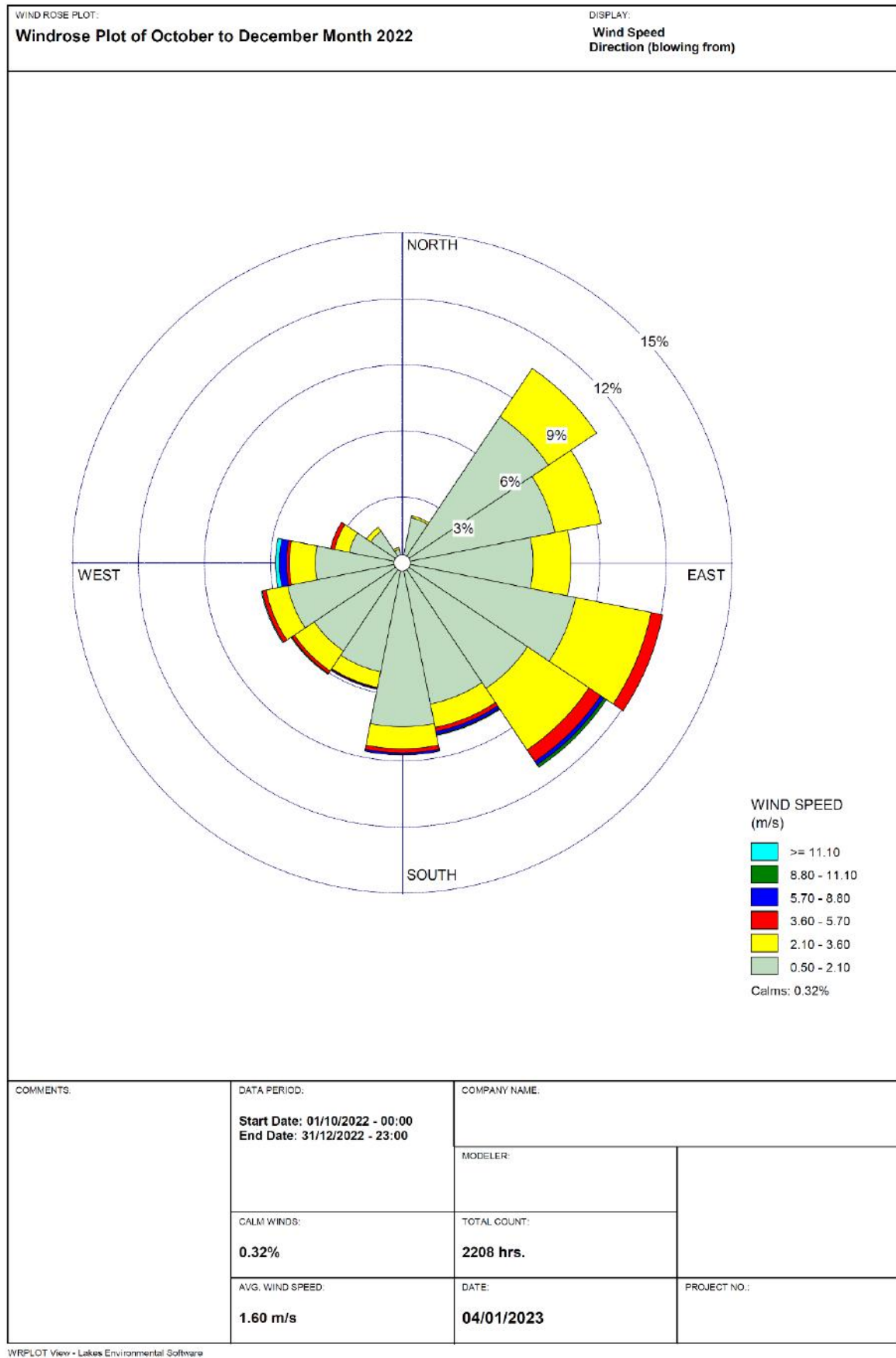
#### 1.17.1 Meteorology:

##### Summary of the Meteorological Data Generated at Site

The site-Specific meteorological data is given in **Table 6** and wind rose diagram is given in **Figure 4**.

**Table 6: Site Specific Climatological Data**

S. N.	Month	Temperature (°C)		Relative Humidity (%)		Rainfall (mm)
		Min.	Max.	Min.	Max.	
1	October 2022	19	34	30	98	39
2	November 2022	21	32	78	95	8
3	December 2022	11	30	20	95	7
	Total					54



**Figure 4: Wind Rose Diagram – October to December 2022 (IMD Specific)**



### 1.17.2 Ambient Air Quality Status:

The status of ambient air quality within the study area was monitored for the period of during October to December 2022 at 8 locations including the project site and in 10 km study area villages. Total 8 sampling locations were selected based on the meteorological conditions considering upwind and downwind directions. The levels of Respirable Particulate Matter (PM<sub>10</sub>), Fine Particulates (PM<sub>2.5</sub>), Sulphur Dioxide (SO<sub>2</sub>) and Oxides of Nitrogen (NO<sub>x</sub>) were monitored. Based on the above, the AAQ stations have been identified and locations of ambient air quality stations are presented in **Table 7**. The minimum and maximum values of monitoring results are summarized in **Table 8 A, 8 B, 8 C, & 8 D**.

**Table 7: Ambient Air Quality Monitoring Stations**

Code	Sampling Location	Distance w.r.t Project	Direction w.r.t Project
A1	Project Site	--	-
A2	Zendevar Village	3.5 km	E
A3	Bharitola Village	2.5 km	S
A4	Bondena Village	1.5 km	SW
A5	Jamnara Village	3.5 km	SW
A6	Rajatola Village	4.5 km	W
A7	Maseli Village	2.5 km	NW
A8	Kaimul Village	4.5 km	N

**Table 8: Summary of Ambient Air Quality Results**

**Table 8 A: Particulate Matter – PM<sub>10</sub>**

Location Name	A1	A2	A3	A4	A5	A6	A7	A8
Minimum	45.20	45.20	46.20	45.10	45.20	48.20	47.20	48.10
Maximum	49.90	51.80	51.30	51.90	51.90	51.40	53.40	52.90
Average	47.52	48.89	48.70	48.27	47.84	50.05	50.53	50.67
98 <sup>th</sup> Percentile	49.76	51.62	51.26	51.58	51.58	51.40	53.26	52.81
<b>CPCB Standards</b>	<b>100</b>							

All Values are in µg/m<sup>3</sup>

**Table 8 B: Particulate Matter – PM<sub>2.5</sub>**

Location Name	A1	A2	A3	A4	A5	A6	A7	A8
Minimum	10.30	11.70	12.30	15.30	10.60	13.30	12.60	12.30
Maximum	14.60	17.80	16.60	21.30	16.80	17.40	18.30	17.90
Average	12.44	14.97	14.99	18.23	13.36	15.59	15.60	15.08
98 <sup>th</sup> Percentile	14.55	17.57	16.55	21.21	16.71	17.31	18.21	17.81
<b>CPCB Standards</b>	<b>60</b>							

All Values are in µg/m<sup>3</sup>

**Table 8 C: Sulphur Dioxide - SO<sub>2</sub>**

Location Name	A1	A2	A3	A4	A5	A6	A7	A8
Minimum	2.20	2.70	2.30	2.60	2.80	2.50	2.60	2.40
Maximum	6.10	6.30	5.80	6.00	5.90	6.40	6.60	6.20
Average	4.69	4.60	4.31	4.32	4.49	4.63	4.65	4.34
98 <sup>th</sup> Percentile	5.96	6.30	5.80	5.91	5.85	6.35	6.51	6.15
<b>CPCB Standards</b>	<b>80</b>							

All Values are in µg/m<sup>3</sup>

**Table 8 D: Oxides of Nitrogen – NO<sub>x</sub>**

Location Name	A1	A2	A3	A4	A5	A6	A7	A8
Minimum	4.80	5.20	4.90	5.10	4.90	4.90	5.00	5.30
Maximum	8.70	9.30	8.90	9.00	8.90	9.40	9.50	9.00
Average	7.50	7.76	7.52	7.45	7.37	7.70	7.75	7.50
98 <sup>th</sup> Percentile	8.61	9.30	8.85	9.00	8.81	9.40	9.41	8.95
<b>CPCB Standards</b>	<b>80</b>							

All Values are in µg/m<sup>3</sup>

**Table 8 E: Carbon Monoxide – CO**

Location Name	A1	A2	A3	A4	A5	A6	A7	A8
Minimum	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Maximum	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Average	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
98 <sup>th</sup> Percentile	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1

All Values are in µg/m<sup>3</sup>

The analysis of ambient air quality data for three months consequently indicates good ambient air quality conditions at site as well as around the site upwind as well as downwind. Particulate matter PM<sub>10</sub> as well as PM<sub>2.5</sub> is within prescribed limits. SO<sub>2</sub> and NO<sub>x</sub> levels are well below the limits prescribed hence overall picture as far as ambient air quality concerned is positive. As per the baseline data collection, the maximum value of the PM<sub>10</sub> was recorded at Maseli Village – 53.40 µg/m<sup>3</sup> and minimum value at Bondena Village – 45.10 µg/m<sup>3</sup>. As per the baseline data collection, the maximum value of the PM<sub>2.5</sub> was recorded at Bondena Village – 21.30 µg/m<sup>3</sup> and minimum value at Project Site – 10.30 µg/m<sup>3</sup>. As per the baseline data collection, the maximum value of the SO<sub>2</sub> was recorded at Maseli village – 6.60 µg/m<sup>3</sup> and minimum value at Project Site – 2.20 µg/m<sup>3</sup>. As per the baseline data collection, the maximum value of the NO<sub>x</sub> was recorded at Maseli Village – 9.50 µg/m<sup>3</sup> and minimum value at Project Site – 4.80 µg/m<sup>3</sup>.

### 1.17.3 Ambient Noise Levels:

Ambient noise level monitoring was carried out at the 8 monitoring locations; those were selected for ambient air quality monitoring. The noise recording stations are shown in **Table 9**. The monitoring results are summarized in **Table 10**.

**Table 9: Ambient Noise Quality Monitoring Stations**

Code	Location	Distance w.r.to Project	Direction w.r.to Project
N1	Project Site	--	-
N2	Zendevar Village	3.5 km	E
N3	Bharitola Village	2.5 km	S
N4	Bondena Village	1.5 km	SW
N5	Jamnara Village	3.5 km	SW
N6	Rajatola Village	4.5 km	W
N7	Maseli Village	2.5 km	NW
N8	Kaimul Village	4.5 km	N

**Table 10: Summary of Ambient Noise Level Monitoring Results**

Equivalent Noise levels	N1	N2	N3	N4	N5	N6	N7	N8
Ld (Max)	54.7	52.4	52.9	54.8	48.9	53.8	57.6	57.9
Ld (Min)	43.2	44.6	42.2	43.2	36.8	43.2	44.6	44.9
LN (Max)	48.1	48.5	48.2	50.2	43.8	48.1	54.1	50.8

LN (Min)		40.2	40.8	38.6	40.2	34.6	40.2	41.7	42.1
Leq (Day)		51.6	48.6	48.2	49.9	43.8	50.3	54.6	52.7
Leq (Night)		42.1	42.4	40.9	43.5	36.4	42.7	43	44.2
<b>CPCB</b>	<b>Ld</b>	<b>75</b>	<b>55</b>	<b>55</b>	<b>55</b>	<b>55</b>	<b>55</b>	<b>55</b>	<b>55</b>
	<b>Ln</b>	<b>70</b>	<b>45</b>	<b>45</b>	<b>45</b>	<b>45</b>	<b>45</b>	<b>45</b>	<b>45</b>

**\*All values in dB(A)**

$L_{min}$  : Minimum Noise Level Recorded

$L_{max}$  : Maximum Noise Level Recorded

$L_d$  : Day Equivalent

$L_n$  : Night Equivalents

$L_{dn}$  : Day-Night Equivalents

### Conclusion

The Maximum Noise (day) value was observed 57.9 dB (A) at Kaimul Village (N8) and the Minimum Noise (day) value was observed 36.8 dB (A) at Jamnara Village (N5). The Maximum Noise (night) value was observed 54.1 dB (A) at Maseli Village (N7) and the Minimum Noise (night) value was observed 34.6 dB (A) at Jamnara Village (N5).

The maximum and minimum day time equivalent noise levels were found in the range of 54.6 to 43.8 dB (A) and the maximum and minimum night time equivalent noise levels were found in the range of 44.2 to 36.4 dB (A).

#### 1.17.4 Surface and Ground Water Quality:

##### Ground Water Sampling Locations:

Ground water sampling locations were selected surrounding the mine site within 10 km study area. Total eight ground water samples were collected and analyzed from the study area. The locations of ground water sampling with its distance and direction w.r.to the project site are given in **Table 11**.

**Table 11: Ground Water Sampling Locations**

<b>Code</b>	<b>Location</b>	<b>Distance w.r.t Project</b>	<b>Direction w.r.t Project</b>
GW1	Project Site	--	-
GW2	Zendepar Village	3.5 km	E
GW3	Bharitola Village	2.5 km	S
GW4	Bondena Village	1.5 km	SW
GW5	Jamnara Village	3.5 km	SW

GW6	Rajatola Village	4.5 km	W
GW7	Maseli Village	2.5 km	NW
GW8	Kaimul Village	4.5 km	N

**Conclusion:**

**Ground Water Samples within 10 km Study Area:**

- pH of the ground water samples collected was in the range of 7.02 – 7.97.
- Total Dissolved Solids in the samples was in the range of 260.0 – 505.0 mg/l.
- Hardness was found to vary between 120.0 – 280.0 mg/l.
- Chloride's concentration was found to vary between 25.16 – 78.02 mg/l.
- Sulphates concentration was found to vary between 15.97 – 57.95 mg/l.
- Heavy metal concentrations in all the samples were found to be well within the limits.
- Heavy metal concentrations in all the samples were found to be well within the limits.

**Surface Water Sampling Locations:**

Surface water sampling locations were selected surrounding the mine site within 10 km study area. Three surface water samples were collected from the study area. Two surface water samples were from downstream and one from upstream of the project site. The locations of surface water sampling with its distance and directions w.r.to the project site given in **Table 12**.

**Table 12: Surface Water Sampling Locations**

S. N.	Code	Location	Distance w.r.t Project	Direction w.r.t Project
1	SW1	Khursipar Village Talav, Khursipar Village	6.0 km	Upstream – North-East
2	SW2	Jambhali Waterfall, Jambhali Village	8.0 km	Downstream - South

**Conclusion:**

**Surface Water Samples within 10 km Study Area:**

Sampling was carried out at 2 locations during the study period. Sampling and analysis were carried out, as per standard methods and frequency of the sampling was thrice/stations. The summary of the results is presented below:

- pH of the surface water samples collected was in the range of 7.20 - 7.49.
- Total dissolved solids in the samples were in the range of 160.0 – 455.0 mg/l.
- Chlorides concentration was found to vary between 17.61 – 98.16 mg/l.

- Sulphates concentration was found to vary between 11.03 – 48.07 mg/l.

#### 1.17.5 Soil Quality:

##### Location of Soil Sampling Sites:

The soil samples were collected from 8 sampling locations within an area of 10 km radius around the proposed project for analysis of the physico-chemical characteristics of the soil quality. Soil samples were collected from three different types of land i.e.; agriculture, waste (mine site) and barren land. The locations of soil sampling are given with its distance and direction w.r.to project site in **Table 13**.

**Table 13: Soil Sampling Locations**

S. N.	Code	Location	Distance w.r.t Project	Direction w.r.t Project
1	S1	Project Site	--	-
2	S2	Zendevar Village	3.5 km	E
3	S3	Bharitola Village	2.5 km	S
4	S4	Bondena Village	1.5 km	SW
5	S5	Jamnara Village	3.5 km	SW
6	S6	Rajatola Village	4.5 km	W
7	S7	Maseli Village	2.5 km	NW
8	S8	Kaimul Village	4.5 km	N

##### Conclusion:

Sampling was carried out at 8 locations during the study period. The summary of the results is presented below:

The summary of the results is presented below:

- pH in soil sample was observed to be in the range 6.69 to 7.54.
- Organic Carbon was observed in the range of 0.47 – 1.21 %.
- Available Nitrogen as N was observed in the range of 139.48 – 184.73 Kg/ Hac.
- Available Phosphates as P was observed in the range of 30.39 – 46.19 Kg/ Hac.
- Available Potassium as K was observed in the range of 176.64 – 391.47 Kg/ Hac.

#### 1.17.6 Land Use Land Cover Classification:

The Land Cover classes and their coverage are summarized in **Table 14**.

**Table 14: Land Use Pattern of the Study Area**

Sr. No.	Land Use Class (Level-I)	Land use/Land cover Classes (Level – II)	Area in (Sq. Km) 314	Area in (%) 100
1	Forest	Forest	137.63	43.83
2	Water bodies	Waterbody	2.07	0.66
3	Agricultural Land	Crop Land	21.61	6.88
		Fallow Land	149.10	47.48
4	Built-up Land	Built-up Land	1.89	0.60
5	Waste Land	Waste Land	1.69	0.54
		<b>Total</b>	<b>314.00</b>	<b>100.00</b>

#### **1.17.7 Ecology & Biodiversity in 10 km Study Area:**

##### **Rare and Endangered Flora in the Study Area:**

On the basis of literature survey, from red data books of Indian plants, detailed list rare and Endangered plant genera of Chhattisgarh particularly with reference to Rajnandgaon district reveals that there are no endangered, threatened, rare plant species or endangered, threatened, most threatened, vulnerable plant species observed or recorded during study period and this plant species are commonly present in the Chhattisgarh state.

Flora and fauna studies have been carried out in 10 km radius study area and no any endangered species were found out in the study area.

##### **Presence of Protected Areas as per Wildlife Protection Act, 1972 in Study Area:**

As per MoEF&CC and Forest department of Government of Chhattisgarh state notifications reveals that there are no biospheres, tiger reserves, elephant reserves, national parks, wildlife sanctuaries, conservation reserves and community reserves in 10-km radius from mine lease boundary.

#### **1.18 Socio-Economic Environment:**

Information on socio-demographic status and the trends of the communities in the 10 km radius was collected through primary social survey and secondary data from census 2011 & village directory 2011. Summary of the socio-economic status of the study area is given in **Table 15**.

**Table 15: Distribution of Population in the Study Area as per 2011 Census**

S. N.	Particulars	0-3 km	3-7 km	7-10 km	0 – 10 km
1	No. of Households	649	3400	7487	11536
2	Male Population	1439	7601	17170	26210
3	Female Population	1464	8083	17758	27305
4	<b>Total Population</b>	<b>2903</b>	<b>15684</b>	<b>34928</b>	<b>53515</b>
5	Scheduled Castes	428	1184	3785	5397
6	Scheduled Tribes	2053	10995	21306	34354
7	% of Males to Total Population	49.56	48.46	46.94	49.0
8	% of Females to Total Population	50.43	51.54	53.06	51.0
9	Average Household Size	4.47	4.61	4.66	4.63
10	Sex Ratio	1017	1063	1034	1041
11	Male Literates	1082	5661	12626	19369
12	Female Literates	841	4838	10160	15839
13	<b>Total Literates</b>	<b>1923</b>	<b>10499</b>	<b>22786</b>	<b>35208</b>

*Source: District Primary Census Hand Book, Gadchiroli, Gondia and Rajnandgaon, 2011*

### **1.19 Anticipated Environmental Impacts and Mitigation Measures:**

#### **1.19.1 Air Environment:**

The air borne particulate matter is the main air pollutant contributed by opencast mining. Predictions have been carried out for the worst-case scenario considering all the operations of the mine will be under simultaneous continuous operation of 12 hours for the proposed emissions.

The air quality modeling has been done and the details of incremental emission load due to Iron Ore mining activity contributing in existing baseline values is given in **Table 16**.



**Table 16: Incremental Emission Load due to Mining Activity Contributing in Existing Baseline Values**

Pollutants	Baseline Concentration ( $\mu\text{g}/\text{m}^3$ )	Incremental ( $\mu\text{g}/\text{m}^3$ )	Resultant ( $\mu\text{g}/\text{m}^3$ )	CPCB Norms
PM <sub>10</sub>	53.40	--	53.40	100 (24 hourly)
SO <sub>2</sub>	6.60	0.25	6.85	80 (24 hourly)
NO <sub>x</sub>	4.80	0.19	4.99	80 (24 hourly)
CO ( $\text{mg}/\text{m}^3$ )	< 0.1	--	< 0.1	4 (1 hour)

#### 1.19.2 Air Pollution Control Measures:

The following air pollution control measures will be implemented in the mine to control the impact of air pollution.

- In order to minimize the dust emanating from the mining operations water sprinkling is proposed at the mine pit, waste dump and also on the haulage roads to suppress the dust.
- Dust masks will be given to the mineworkers.
- Regular grading of haul roads will be done to clear the accumulation of loose materials on the roads.
- Transport vehicles are maintained regularly in order to minimize the emissions from them.
- Overloading of tippers will be avoided to prevent the material spillage on the roads.
- Loaded tippers will be covered with tarpaulin before they are allowed on to the main roads.

The air pollution impacts on the nearby villages will be negligible with this small-scale mining after adoption of the above air pollution control measures.

#### 1.19.3 Noise Environment:

Noise levels in the proposed mine will be produced due to movement of vehicles by transportation of Iron Ore and mining operations like blasting and drilling. But the pronounced effect of noise is felt only near the active working area.

Since the proposed mine will adopt open cast semi mechanized method for mining, there will not be much impact on the surrounding villages due to the mining operations. Also, habitations are away from the proposed project activity and the area is surrounded by thick and dense forest which will reduce the impacts of generated noise due to the proposed project activity. Hence, there will be no any noise impact on surrounding habitations of the proposed project site.

#### **1.19.4 Noise Pollution Control Measures:**

The following are the noise pollution control measures proposed in the mine.

- Ear plugs will be provided to the mine workers whenever needed.
- Vehicles used for transportation will be regularly maintained.
- Greenbelt will be provided all along the mine in 7.5 m barrier zone to reduce the noise levels.
- Speed of the vehicles entering or leaving the mine will be limited to 25 kmph to avoid undue noise from empty trucks.

#### **1.19.5 Impact due to Ground Vibrations:**

The proposed mine will adopt opencast semi mechanized with Category A method for mining with drilling and blasting. Hence, the impact on ground vibrations due to mining will be negligible.

#### **1.19.6 Water Environment:**

The total water requirement for the above operations will be 20 KLD and domestic water requirement will be met by water tankers at the mine site. Waste water generation from the above consumption is from domestic consumption i.e., 6.71 KLD. Wastewater generated from the Domestic front will be mainly from toilets. This waste water will be treated in septic tank followed by soak pit.

There are no natural drainage channels within the site. There are no chances for changes in quality of surface water or ground water. The mining operations will be carried out on slopes of the rocky terrain. Hence, neither the ground water table nor the general surface drainage pattern will be affected. No water will be discharged from the quarry. It is proposed to construct garland drains with sedimentation pits all along the mine pits to avoid erosion and sedimentation due to storm water. Only fresh water will be left into the nearby seasonal streams as after de-siltation.

#### **1.20 Greenbelt Development:**

Greenbelt will be developed for protection and improvement in the surrounding environment and to minimize the dust impact due to proposed mining activity. Planted saplings will be fruit bearing and native species having thick and broad leaves with canopy nature. Total mine lease area is 10.37 Ha. and 33% of the total mine lease area i.e.; 3.42 Ha. need to develop as a greenbelt. As the proposed project site is surrounded by thick and dense forest and there are already trees are available in the mine lease area. Almost, 2.50 Ha. area is available with good no. of trees which can be maintained as it is & vacant spaces in between these trees will be covered by planting trees. We need to develop 0.92 Ha. area as a greenbelt which is in the form pockets in between already available trees in the mine lease area. To improve the greenbelt coverage at the mine site,

plantation is proposed on 7.5 m safety zone. Also, greenbelt will be developed in other areas of mine lease such as administration office, beside of haulage roads etc.

The plantation work for green belt development will be carried in consultation with a horticulturist. By considering 2000 saplings per hectare, total no. of saplings with consideration of 75% rate of survival to be planted every year and balance assume mortality of 25% will be covered every year with applicable rate of saplings to be planted.

Details of Plantation area are as given below:

Total Mine Lease Area = 10.37 Ha.

Applicable 33% Greenbelt Area = 3.42 Ha.

Already Developed Greenbelt Area as of now = 2.50 Ha.

Area to be covered by Greenbelt in future = 0.92 Ha.

Plants proposed per Hectare as per MoEF&CC recommendation = 2000 Nos.

Total no. of plants to be planted in Greenbelt Development (For 0.92 Ha.) = 1840 Nos.

#### **1.21 Occupational Health & Safety Management:**

- Periodical Medical Examination (PME) of all workers before recruitment and during mining operations is carried out.
- Total workers in the mine – 80 immediate workers after 5 years it will be 149 Nos.
- First aid facility will be provided at the project site.
- Mine operators will be provided with personal protective equipment (PPEs) includes safety helmets and footwear, in addition to ear, eye, and hand protection devices.
- Dust masks will be provided for workers.
- Potable drinking water & shelter for mine workers will be provided.

#### **1.22 Environment Management Plan (EMP):**

In order to implement an effective environmental management plan for mitigating the adverse impacts on the environment, regular monitoring of various environmental components is necessary. Mine manager with the support of Safety and Env. Officer and other workers will monitor the environment management plan of this area.

#### **Budget for Implementation Environment Management Plan:**

Environment management plan is for the proposed project activity divided into two parts i.e.; one is capital cost & one is recurring cost. Total fund earmarked for EMP is Rs. 42.34 Lakhs (Rs. 0.42 Crores) in which capital cost is Rs. 33 Lakhs and recurring cost is Rs. 9.34 Lakhs. Detail budget for Environmental Management Plan is given in below **Table 17**.

**Table 17: EMP Budget**

S. N.	Item	Capital Cost (Rs. In Lakhs)	Recurring Cost (Rs. In Lakhs)
1	Air Pollution Control	4.0	1.0
2	Rain Water Harvesting System	4.0	1.0
3	Water Pollution Control	5.0	0.5
4	Noise Pollution Control	1.0	0.5
5	Environment Monitoring and Management	4.0	2.34
6	Occupational Health	2.0	1.0
7	Greenbelt Development	11.0	2.0
8	Safety Management	1.0	0.5
9	Renewable Energy System	1.0	0.5
	<b>Total Amount</b>	<b>33.0</b>	<b>9.34</b>
	<b>Total Amount (Capital Cost &amp; Recurring Cost)</b>	<b>42.34</b>	
	<b>Total Amount (Capital Cost &amp; Recurring Cost)</b>	<b>0.4234 Crores</b>	

### 1.23 Corporate Environment Responsibility:

The proposed project would proactively promote the public interest through provision of basic amenities such as roads, transportation, electricity, education, sanitation and healthcare facilities. Proposed project is a greenfield project and CER budget is calculated based on its category as prescribed in office Memorandum of MoEF&CC Dated: 01/05/2018. The CER budget allotted based on the capital cost of the proposed project shall be Rs. 20 Lakhs (2% of the Project Cost of Rs. 10.17 Crores). The details break up and activities considered under CER activities are given in below **Table 18**.

**Table 18: Proposed CER Activities and its Budget**

S. N.	Planned Activities under CER as per specific needs	Amount in Rs.
1	<b>Community Health Improvement</b> <ul style="list-style-type: none"> <li>Sanitary facilities for project surrounding villages</li> </ul>	3,00,000.00
2	<b>Community Education Facilities</b> <ul style="list-style-type: none"> <li>Providing desktop computers to schools</li> </ul>	3,0,000.00

3	<b>Infrastructural Development</b> • Maintenance/ Repair of Hand Pumps/ Bore wells	10,00,000.00
4	<b>Afforestation Programs</b> • Plantation of trees in villages road side/ Panchayat House/ Public Health Center/ schools	2,00,000.00
5	<b>Community Welfare Activities</b> • Solar Street Lights for common community area and village main approach roads as per the instruction of respective Gram Panchayat	2,00,000.00
<b>Total Amount in Rs.</b>		<b>20,00,000.00</b>
<b>Total Amount (Rupees in Lakhs)</b>		<b>20</b>

#### 1.24 Project Benefits:

It is proposed to employ about 149 persons for carrying out mining operations and the lessee proposed to give preference to the local people in employment. In addition, there will be indirect employment to many people in the form of contractual jobs, business opportunities, service facilities etc. this will enhance the economic status of the local people. Local peoples may have a choice to purchase a vehicle and engage their vehicle for transportation activity of Iron Ore. This will generate new source of income to local peoples as it is remote area which is surrounded by forest and there are very less alternatives are available with them to enhance their life style.

The impact of mining activity in the area will be positive on the socio- economic environment of the region. The employment directly and indirectly will be increased and better infrastructure and communication facilities will be provided.

Shri. Nirmal Chand Jain would be required to initiate the following measures to minimize the possible negative impacts:

- Implementation of adequate dust control measures to check air pollution.
- Organize six monthly health camps in the area to check the incidence of any respiratory and other related disorders.
- Conduct Entrepreneurship Development Camps to nurture entrepreneurial talents among the local youth.

#### 1.25 Conclusion:

Based on the EIA study, it is observed that there will be a marginal increase in the dust pollution, which will be controlled by sprinkling of water and transportation of Iron Ore in trucks by covering the material with Tarpaulin.

There will be negligible impact on ambient environment & ecology due to mining activities, more over the mining operations will lead to direct and indirect employment generation in the area.

Hence, it can be summarized that the mining of minerals from the proposed Iron Ore mine of Shri. Nirmal Chand Jain Mine will have a positive impact on the socio-economic environment of the area.

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**Executive Summary**  
**of**  
**Environmental Impact Assessment**  
*For*  
**Proposed Zendevar Iron Ore Mining Project having**  
**Mine Lease Area of 8.0 Ha.**  
**by**  
**Shri. R. M. Rajurkar**  
*at*  
**Khasra No.: 82 Part (82/1) of Zendevar Village, Tahsil:**  
**Korchi, Dist.: Gadchiroli, Maharashtra**



**Project Proponent:**

**Shri. R. M. Rajurkar,**  
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**Consultant**



**Sri Sai Manasa Nature Tech Private**  
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## **Executive Summary**

### **1.0 Introduction**

Shri. R. M. Rajurkar has been granted mine lease for Iron Ore over an Extent of 8.0 Ha. at Khasra Nos.: 82 Part (82/1) of Zendevar Village, Tahsil: Korchi, Dist.: Gadchiroli, Maharashtra State for a period of 30 years by Industries, Energy and Labour Department, Govt. of Maharashtra vide ref. no.: MMN-1004/CR684/IND-9 Dated: 10/03/2005. Accordingly, again we have applied for renewal of mine lease agreement to the concerned authority and Form K was signed in between Mine Lease Holder and The District Mining Officer on Dated: 11/07/2017. Mine Lease renewed for period of valid from 11/01/2017 to 10/01/2047 for the period of 30 years. (As per new Amendment of "Law of the Land" is consider up to 10/01/2067 (50 Years) & the procedure for the extension of Lease period is in process.)

### **1.1 Statutory Clearances:**

Proposed Zendevar Iron Ore Mine by Shri. R. M. Rajurkar at Khasra No. 82 Part (82/1), Village Zendevar, Tahsil Korchi, District Gadchiroli, Maharashtra having mine lease area of 8.0 Ha. Proposed project site was granted mine lease to Shri. R. M. Rajurkar by Section Officer, Govt. of Industries, Energy & Labor Dept., Mumbai vide Ref. No.: MMN-1004/CR-684/IND-9, Dated: 10/03/2005 for the period of 30 year's subject to compliance of provisions of MM (D & R) Act, 1957, MCR – 1960 and MCDR -1988. Accordingly, after executing mine lease agreement with The District Mining Officer, Collector Office, Gadchiroli as per the applicable procedure, we have applied given the mining plan work to RQP for preparation of mining plan and its further needful approval. RQP prepared the mining plan of the proposed project and submitted to The Regional Controller of Mines, Indian Bureau of Mines, Nagpur. Submitted mining plan was approved by The Regional Controller of Mines, Indian Bureau of Mines, Nagpur vide ref. no.: GAD/FE/MPLN-900/NGP Dated: 03/01/2006. Demarcation of the mine lease area was carried out by Dy. S. L. R., Korchi by the order of The District Collector, Gadchiroli, Maharashtra in the year 2007. Accordingly, project proponent hired Environment Consultant for obtaining "Environmental Clearance" for the proposed project in the year 2010. Environment Consultant prepared the application and submitted to State Expert Appraisal Committee (SEAC), Maharashtra. Project was considered in 40<sup>th</sup> SEAC meeting held on Dated: 15/02/2011 and issued Terms of Reference as per Item No. 12b. Baseline monitoring was carried out by the Environment Consultant for the Period: March to May 2011 (Summer Season). It was told to us to obtain Forest No Objection Certificate for further proceeding of the project for submission of Draft EIA report. We then

approached to Revenue Department, Collector Office, Gadchiroli for want of Forest NOC and further needful confirmation from their side to the Forest Department. Accordingly, Chief Conservator of Forest, (Head Forest Force), Government of Maharashtra, Nagpur issued Forest NOC to The Collector, Gadchiroli, Maharashtra vide ref. no.: Kaksha-17/RS/3321 Dated: 22/02/2012 confirming that there is no any forest land involved in the proposed project site. Then we also follow up with forest department for obtaining Forest NOC in the name of mine lease holder. Accordingly, Deputy Conservator of Forest, Wadsa Forest Department, Wadsa Forest Office, Wadsa issued Forest “No Objection Certificate” (NOC) vide ref. no.: Kaksha-4/Survey/Land/561, Wadsa Dated: 05/06/2014. Preparation and submission of Draft Environment Report was got delayed for the want of Forest NOC. Till the time validity of TOR was expired and again we have applied for extension for the TOR validity to the SEAC committee, Maharashtra. Proposal for extension of TOR validity was considered by the SEAC Committee and it was taken in the 128<sup>th</sup> Meeting held on Dated: 02/06/2016. SEAC committee considered our request for extension of TOR validity and extended it for the period of one year. Environment Consultant prepared the Draft EIA report and submitted to The Regional Officer, MPCB, Chandrapur for conducting Public Hearing. Accordingly, MPCB, Chandrapur published the paper advertisement in both Languages i.e.; Marathi & English on Dated: 30/06/2017. Public Hearing was organized by the MPCB at Conference Hall, District Collector Office, Gadchiroli on Dated: 03/08/2017. Peoples have attended the Public Hearing and demanded to cancel the arranged Public Hearing at Gadchiroli and requested the authority to reconduct at Tahsil Place Kochi, Gadchiroli District. Due to the huge demand of the public attended over there, The Additional District Magistrate, Collector Office, Gadchiroli postponed the public hearing on that date. As the validity of TOR extended for one year only and it was expired up to the period.

Due to non-commencement of mining activity as per the provisions of the mine lease agreement within the stipulated period for want of obtaining statutory clearances, notice was issued for cancellation of mine lease from the Director, Directorate of Geology & Mining, Govt. of Maharashtra, Nagpur. Accordingly, again we have applied for renewal of mine lease agreement to the concerned authority and Form K was signed in between Mine Lease Holder and The District Mining Officer on Dated: 11/07/2017. Mine Lease renewed for period of 11/01/2017 to 10/01/2047 for the period of 30 years.

Now, after renewal of mine lease agreement again we have started the process for obtaining applicable statutory clearances like Approved Mining Plan, Environmental Clearance, Consent to Establish and Consent to Operate. Due to pandemic of COVID19 in the year 2020 and 2021,

requisite work got delayed. We have given the work of preparation of mining plan to RQP. Accordingly, RQP prepared mining plan and submitted to The Regional Controller of Mines, Indian Bureau of Mines, Nagpur. Mining plan was approved by The Regional Controller of Mines, Indian Bureau of Mines, Nagpur vide ref. no.: GAD/FE/MPLN-900/NGP Dated: 27/07/2021. As the mine lease area is having 8.0 Ha. & it is surrounded by other 4 Iron Ore mine leases in the same khasra no., it forms cluster with other four mine leases. Total cluster formation area of all 5 Iron Ore mine leases is 46.37 Ha. and accordingly, letter submitted to The District Mining Officer, Collector Office, Gadchiroli for obtaining "Cluster Certificate". Cluster certificate was issued by The District Mining Officer, Collector Office, Gadchiroli vide ref. no.: Desk-II/Sr. Cl. Mining/R. M. Rajurkar/304/2021 Dated: 27/10/2021. As the cluster formation mine lease area is more than 25 Ha. & as per the published EIA Notification, 2006 & its subsequent amendment, the proposed project falls in Category B1 of Mining of Minerals 1(a). As per the B1 Category of the proposed project, it needs Terms of Reference (TOR), Draft EIA report submission to MPCB for public hearing and after completion of public hearing Final EIA report submission to SEAC-1 & SEIAA for obtaining "Environmental Clearance". Now, after obtaining approved mining plan for the proposed project for the period: 2021 to 2026, we have applied for obtaining Terms of Reference (TOR) as per the EIA Notification, 2006 and its subsequent amendment time to time. After obtaining TOR for the proposed project, we will carry out Baseline Monitoring for preparation of Draft Environmental Impact Assessment Report. After preparation of draft EIA report, we will submit it to Regional Office, MPCB, Chandrapur for public hearing. After completion of the public hearing, we will prepare Final EIA report and will submit it to the SEAC-1 for obtaining Environmental Clearance for the proposed project.

Proposed project had already obtained "Consent to Establishment" (CTE) for the proposed project activity of Mining of Iron Ore from "Zendevar Iron Ore Mine" by Shri. R. M. Rajurkar vide Consent No.: BO/Chandrapur/63-2005/E/CC-340 Dated: 12/09/2005. Now, project proponent will obtain "Consent to Operate" (CTO) after obtaining of Environmental Clearance" (EC).

### **1.2 Terms of Reference**

Project proponent applied for obtaining Terms of Reference (TOR) by submitting required documents like approved mining plan, Form 1 & Pre-Feasibility Report to SEIAA, MoEF&CC, Maharashtra as per EIA Notification, 2006 and its subsequent amendment. Project was uploaded on Parivesh portal vide Proposal No.: SIA/MH/MIN/68156/2021 Dated: 05/10/2021. It was considered by SEAC-1 in their 209<sup>th</sup> meeting held on Dated: 10<sup>th</sup> to 12<sup>th</sup> November 2021 and recommended for issuing of TOR to SEIAA, Maharashtra.

SEIAA, MoEF&CC, Maharashtra considered the project in their 234<sup>th</sup> Meeting (Day 3) held on Dated: 17<sup>th</sup> December 2021 and asked to submit clarifications for regarding time lag from first mining lease approval to submission of current application for TOR & also asked to submit details of existing trees on proposed mining site and details of trees to be cut, if any along with its age. Accordingly, we have submitted compliance to 234<sup>th</sup> MOM of SEIAA, MoEF&CC, Maharashtra for grant of TOR to the proposed Iron Ore mining project. SEIAA. MoEF&CC, Maharashtra considered the project in their 248<sup>th</sup> Part-C meeting held on Dated: 18<sup>th</sup> August 2022 and asked to process NOC for tree cutting and also details of tree inventory with cumulative age of trees to be cut. Accordingly, we have submitted compliance to 248<sup>th</sup> MOM of SEIAA, MoEF&CC, Maharashtra for grant of TOR to the proposed Iron Ore mining project.

SEIAA. MoEF&CC, Maharashtra considered the project in their 256<sup>th</sup> Part-E meeting held on Dated: 25<sup>th</sup> January 2023 and grant a “Terms of Reference” (TOR) to the proposed Iron Ore mining project. “Terms of Reference” (TOR) grant to the proposed Iron Ore mining project vide ref. no.: SIA/MH/MIN/68156/2021 Dated: 22/02/2023.

Based on the documents submitted and presentations made, the committee prescribed the Terms of Reference (TOR) for preparing EIA/EMP report, by considering the project under the category ‘B1’ 1 (a) Mining of Minerals of the Schedule of EIA Notification 2006.

### **1.3 Project Proponent**

Shri. R. M. Rajurkar is engaged in work of Govt. Contractor, Transportation and Building material supply work & mining work. The Mining lease for Iron Ore has been granted to Shri. R. M. Rajurkar over an area 8.0 Ha. at Zendevar Village in Korchi Tehsil of Gadchiroli District for the period of 30 years. The above said lease has been executed on 11/01/2017. Iron Ore is use in Steel Industry, Ferro-Alloys industries as main source of raw material, good quality of Iron Ore for steel making grade is available in and around Gadchiroli district of Maharashtra.

#### **Shri. R. M. Rajurkar**

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Site Address:

Khasra Nos.: 82 Part (82/1), Village: Zendevar,

Tahsil: Korchi, Dist.: Gadchiroli, Maharashtra.

#### 1.4 Brief Description of Nature, Size & Location of the Project

The proposed project is located in Zendevar Village, Tahsil: Korchi, Dist.: Gadchiroli, Maharashtra over an area of 8.0 Ha. The mining lease area falls in Survey of India Topo Sheet No. 64D5. The environmental settings of the 10 km study area are given in **Table 1**.

**Table 1: Environmental Settings of the Study Area**

S. N.	Particulars	Details
A.	Nature of project	Iron Ore
B.	Size of project	
1.	Mining Lease area	8.0 Ha.
2.	Proposed Production capacity	Iron Ore: 46,200.00 TPA (Maximum Production in five years); Float ore: 831.6 TPA (Maximum Production in five years);
C.	Project location	
1.	Village	Zendevar
2.	Tahsil	Korchi
3.	District	Gadchiroli
4.	State	Maharashtra
5.	Khasra Nos.	82 Part (82/1)
6.	Land	Non-forest, Govt. Revenue Land

7.	Toposheet No.  Latitude &  Longitude	64D5, 64D6, 64D9, 64D10.		
		<b>Boundary Pillars</b>	<b>Latitude</b>	<b>Longitude</b>
		BP-1	20°46'03.460"	80°28'53.587"
		BP-2	20°46'03.387"	80°29'01.281"
		BP-3	20°46'00.019"	80°29'00.922"
		BP-4	20°45'55.762"	80°29'00.468"
		BP-5	20°45'50.832"	80°28'59.943"
		BP-6	20°45'44.948"	80°28'59.316"
		BP-7	20°45'45.178"	80°28'58.078"
		BP-8	20°45'45.415"	80°28'55.121"
		BP-9	20°45'53.709"	80°28'56.472"
D.	<b>Environmental Settings Details (With approx. aerial distance and direction from the mining lease boundary)</b>			
1.	Nearest Village	Zendevar village – 3.3 km (SE)		
2.	Nearest Town, city, district Headquarters	Nearest Tahsil Place – Korchi – 6.0 km - SW Nearest Town – Korchi – 6.0 km -SW Nearest District HQ – Gadchiroli – 45 km - SW		
3.	Nearest National Highway,  Nearest Motorable Road	NH 543 – Shahdol to Bramhapuri passes from Korchi – 3.5 km (W) from the proposed site. Shahdol-Mandla-Balaghat-Gondia-Deori-Korchi-Bramhapuri Nandali to Sohale – 1.5 km - E		
4.	Nearest Railway station, Airport & Sea port	Barabhati Railway Station – 45.0 Km, NW Dr. Babasaheb Ambedkar International Airport, Nagpur – 153.20 km, NW Visakhapatnam Sea Port – 450 km, SE		
5.	Interstate boundary	Nil within 5 km. Chhattisgarh state border is at 7.0 km on East direction.		
6.	Archeological Place	None within 10 km from the mine site		
7.	National Park, Wild Life	No any National Park, Wild Life Sanctuary, Wildlife		



	Sanctuary, Wildlife Corridors, Biosphere Reserves, Migratory routes for Birds. Protected Forest etc. within 10 Km radius study area	Corridors, Biosphere Reserves, Migratory routes for Birds falls in study area. Reserved Forest – Malewada RF – 16.5 km (W)
8.	Reserve Forest and Protected Forest within 10 Km radius	None
9.	Water bodies within 10 km radius	Unidentified Small Ponds/ Talav within 10 Km
10.	List of Industries in 10 km Study Area	A K Agarwala - Adjacent to project site Anuj Mines Minerals & Chemicals Pvt. Ltd. – Adjacent to project site Manoj Kumar Ajitsaria – Adjacent to project site N. C. Jain – Adjacent to project site
11.	Seismic Zone	Seismically this area is categorized under Zone II, which is moderate zone.
<b>E.</b>	<b>Employment Generation</b>	
1.	No. of Manpower	149 Nos.
<b>F.</b>	<b>Cost Details</b>	
1.	Total Project Cost	Rs. 8.24 Crore
2.	Cost for Environmental Management Plan	Capital Cost = Rs. 32 Lakhs Recurring Cost = Rs. 9.34 Lakhs Total Cost = 41.34 Lakhs
3.	CER Cost	Rs. 16 Lakhs

Map showing general and specific location of proposed mine site, 10 km topo map study area and Google imagery of the proposed project site are given in **Figure 1, Figure 2 and Figure 3.**

Executive Summary of Proposed Zendevar Iron Ore Mine by Shri. R. M. Rajurkar having mine lease area of 8.0 Ha. at Khasra No.: 82 Part (82/1) of Village: Zendevar, Tahsil: Korchi, Dist.: Gadchiroli, Maharashtra.



Figure 1: Location Map of the Project Site



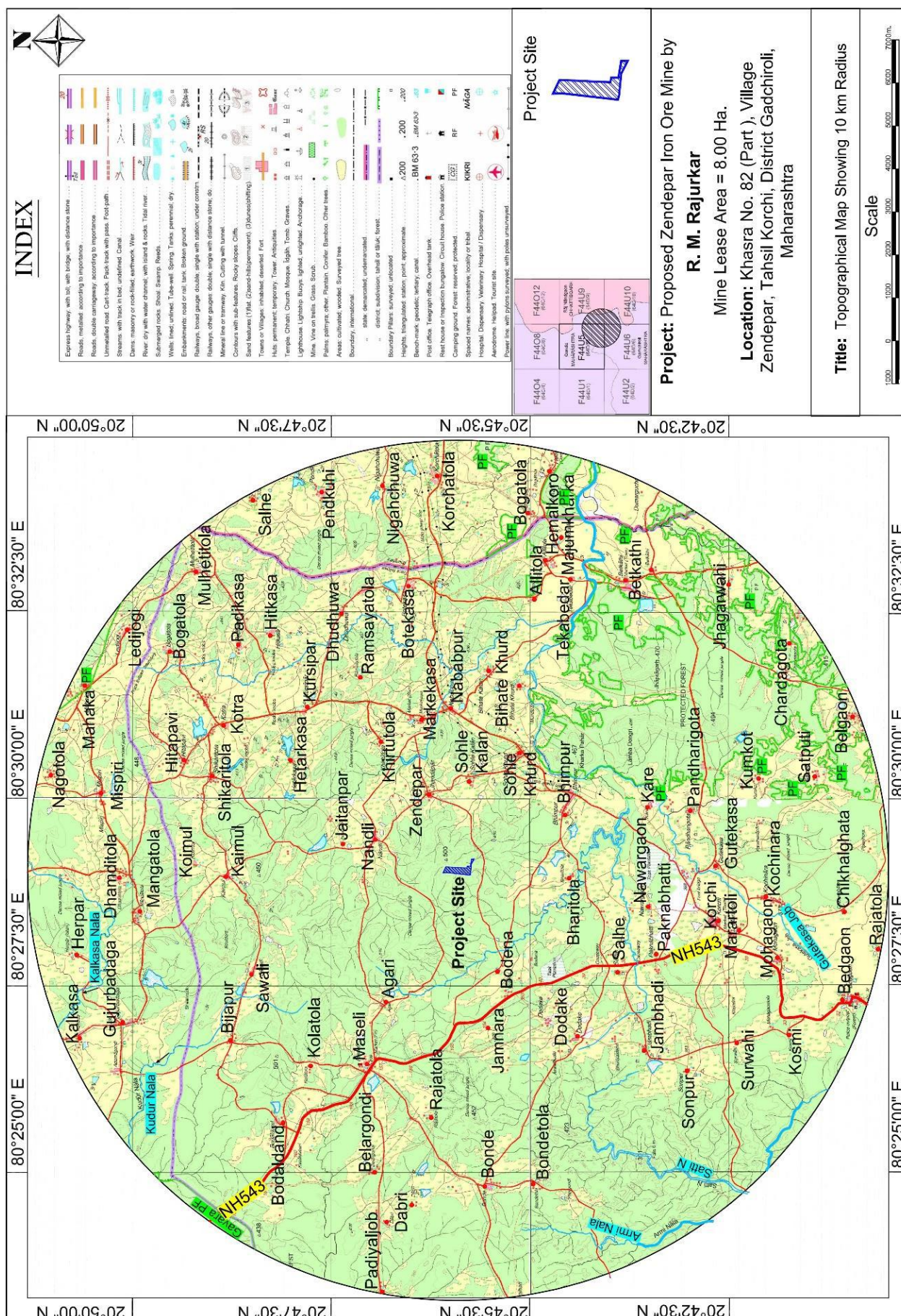






Figure 3: Google Image of the Project Site

### **1.5 Project Description:**

#### **1.5.1 Type of Project Including Interlinked and Interdependent Projects, If Any:**

The project is of open cast Iron ore mine. The proposed Iron Ore mine 8.0 Ha. will be developed as open cast semi-mechanized mining with bench pattern for the production of Iron ore 46.200.00 TPA and Float ore 831.6 TPA (both Maximum Production in five years). Iron ore is use in Steel Industry, Ferro-Alloys Industries as main source of raw material, good quality of iron ore of Steel making grade is available in and around Gadchiroli district of Maharashtra State. No interlinked projects were associated with this project.

#### **1.5.2 Details of Alternate Sites:**

It is a cluster project. Nearby mines are available. No alternate site was considered as the project is mineral specific and site specific.

#### **1.5.3 Size or Magnitude of Operation:**

The mine lease area is of 8.0 Ha. and production of Iron Ore Mine is 46.200.00 TPA and Float ore is 831.6 TPA (both Maximum Production in five years). The mine lease follows open cast semi-mechanized method of mining.

#### **1.5.4 Topography:**

Topography of the Lease area & its surrounding Leases are of undulating nature and controlled by Highly Compact Hard Quartzite, Banded Hematite Quartzite and Steep dip. The area is drain by seasonal local drainage streams in all Corners of Lease. The lease hold area lies in the “Zendevar Iron Ore Mine”. Maximum elevation in the Lease area is 505 MRL & minimum is 460 MRL on the South & West direction.

#### **1.5.5 Regional Geology:**

The area forms a part of the region covered predominately by the granite gneisses with its variants, basic rocks and some meta-sediments comprising with various types quartzite including banded hematite quartzite and schist with inter-stratified Amphibolite's layers all belonging to Achaean Precambrian age. The meta-sediments appear to have been folded into series of close parallel anticlines a syncline with generally low plunge. Major part of the Iron Ore area is covered with scree, talus, Soil & Laterite and has few good rocks exposure accepts in the trenches and near about. The rocks of the area comprise of Banded Hematite Quartzite (BHQ associated with thick Iron Ore/ Hematite band, platy quartzite & Massive grey quartzite, pegmatite a quartz veins of Precambrian age. In all possibility, granite gneiss appears to be present on the eastern and western flanks of the ridge.

#### **1.5.6 Local Geology:**

The entire area is “Government Revenue land”. The Lease area shows two hillocks along with the highest contour is 505 MRL & the Lowest Contour 460 MRL & Slope shown all corners of the Lease area in North-East, North-West corner.

The main Geological formation found in this area are the oldest metamorphic i.e., granite gneisses & Dharwas i.e.; Banded Hematite Quartzite. The proposed area comprises a hillock with lateritic capping with Banded Hematite Quartzite body exposed at places. The local geological litho units observed in the lease area are Soil, Banded Hematite Quartzite (BHQ) & associated with Hematite Iron Ore rich band.

#### **Formations are given below:**

**Lateritic soil:** The major part of the area on the surface is covered with Laterite. Lateritic soil and Limonite. Laterite which is showing varying thickness of 1.5 m to 3.0 m.

**Hematite Iron Ore rich band:** The Ore body is covered with Laterite. The ore body is covered with the general strike of the Ore body is North-East & South —West and dip varying from 65° to 70° towards West. The trend of the Ore bodies appears to North-South.

**Rocks like Quartzite, Banded Hematite Quartzite:** The Banded Hematite Quartzite is mainly Laterite & Massive. The Outcrop of Banded Hematite Quartzite is weathered and fractured.

**Float Ore:** Float ore is also seen in the area with Laterite Soil. There is float Ore zone on ground & is evident of about 1.5 M thicknesses.

#### **1.5.7 Reserves:**

Parameters for resource estimation as per approved Mining Plan:

- Method of mineral resource- “By Surface Area Method”.
- The depth considered for estimation of Reserves is 10.00 from the surface,
- Estimated Bulk density in 3.5 T/ m<sup>3</sup>
- Maximum depth: Consider 6.00 m under 111,
- 6.00 M to 8.00 M under 121 &
- 8.00 M to 10.00 M under 122.
- Category: ‘A’
- Area: 8.0 Ha.
- Iron Ore existing at the top of the Hilly terrain sloping downward
- Waste Rock: Approx. 1.5 to 3 M Lateritic soil followed by Iron Ore.

- Surface MRL: Iron Ore existing at the top of the Hilly terrain sloping downward. Due to this reason not considered any one particular surface RL.
- Recovery: 90% for Iron ore
- Mining Losses: 10%.

Geological reserves as per UNFC classification are given in below **Table 2**.

**Table 2: Geological Reserves as per UNFC Classification**

<b>Estimated Mineral Reserve/Resources in Different Categories of UNFC as reported are given below:</b>				
<b>A. Total Mineral Reserve</b>	<b>UNFC Code</b>	<b>Quantity in Tons</b>	<b>Float Ore</b>	<b>Grade</b>
Proved Mineral Reserve	111	2,12,100.00	25,200.00	Fe 63%
Probable mineral Reserve	121	70700.00	0.00	
	122	70700.00	0.00	
<b>B. Total Remaining Resources</b>		<b>3,53,500.00</b>	<b>25,200.00</b>	
Feasibility Mineral Resource	211	0.00	0.00	
Prefeasibility mineral resource	221 & 222	0.00	0.00	
Measured mineral resource	331	0.00	0.00	
Indicated mineral resource	332	0.00	0.00	
Inferred mineral resource	333	0.00	0.00	
Reconnaissance mineral resource	334	0.00	0.00	
<b>Total Reserves + Resources (A+B)</b>		<b>3,53,500.00</b>	<b>25,200.00</b>	

(Source: Approved Mining plan)

## **1.6 Method of Mining:**

### **1.6.1 Salient description of the Mining Method:**

At the beginning of mining operations topography of the Lease area & its surrounding Leases are of undulating nature and controlled by Highly compact hard Quartzite, Banded Hematite Quartzite and steep dip. The area is drain by Seasonal Local drainage streams in all Corners of Lease. The lease hold area lies in the “Zendevar Iron Ore Mine” Maximum elevation in the Lease area is 505 MRL & minimum is 460 MRL on the South & West direction. The area in scheme of mining for the period of Year 2021 to 2026, it is stated that the mining operations would be done by Category A – semi-mechanized. The mining operations will be carried out in between the periods of 2020-21 to 2025-2026 after obtaining of environmental clearance.

### 1.6.2 Proposed Method of Mining:

In view of the ore geometry including strike, dip, depth from the surface etc. it is proposed to go for open cast method of mining & mining operation start after getting EC, CTO & CTE. Open Cast Method of Mining -The following main activities are involved;

- Deep holes drilling and blasting for breaking ground.
- Removal of over burden from the mine to waste dumping yards with the use of Heavy Earth Moving Machineries (HRMMs)
- Mining out ore in the course of OB development.
- Processing of ROM.
- Dewatering of pits. Dust suppression.
- Routine and preventive maintenance of HEMMs
- Soil dump management
- Other activities.

In view of the average grade of 53% to 63% Fe content stripping ratio of 1:10 is considered i.e.; for every 1 (One) ton of “ROM” 10 (Ten) m<sup>3</sup> of waste Rock will be removed. The density of “ROM” is considered as 3.5 T/ m<sup>3</sup>.

### 1.7 Mining Program for next Five Years:

In- situ tentative excavation of Iron Ore and Float Ore indicates year-wise tentative excavation in cubic meters indicating development, ROM, pit wise as in below **Table 3 & 4.**

**Table 3: In- situ Tentative Excavation of Iron Ore**

S. N.	Year	Total Tentative Excavation (m <sup>3</sup> )	Soil m <sup>3</sup>	O/B m <sup>3</sup>	100% ROM m <sup>3</sup>	ROM Ore m <sup>3</sup>		BD T/m <sup>3</sup>	Ore in Tons
						Saleble Ore 90% m <sup>3</sup>	ML m <sup>3</sup> (10%)		
1	2021-22	24987	2400	7920	14667	13200	1467	3.5	46200
2	2022-23	24987	2400	7920	14667	13200	1467	3.5	46200
3	2023-24	24987	2400	7920	14667	13200	1467	3.5	46200
4	2024-25	24987	2400	7920	14667	13200	1467	3.5	46200
5	2025-26	20907	1560	4680	14667	13200	1467	3.5	46200
<b>Total</b>		<b>120855</b>	<b>11160</b>	<b>36360</b>	<b>73335</b>	<b>66000</b>	<b>7335</b>		<b>231000</b>
Steeping ratio 1:1.9									
M.L 10%: Mining Loss (As Per Approved M.P., There is no Subgrade & M.R.)									

(Source: Approved Mining plan)



**Table 4: In- situ Tentative Excavation of Float Ore**

S. N.	Years	Area Con. 40% for Float Ore sq. m	Thick of Float Ore 1.5 m Cu. m	Recovery of Float Ore 15% cu. m	B.D T/m3	Total Ton
1	2021-22	1056.00	1584.00	237.60	3.5	831.6
2	2022-23	1056.00	1584.00	237.60	3.5	831.6
3	2023-24	1056.00	1584.00	237.60	3.5	831.6
4	2024-25	1056.00	1584.00	237.60	3.5	831.6
5	2025-26	624.00	936.00	140.40	3.5	491.4
	<b>Total</b>	<b>4848.00</b>	<b>7272.00</b>	<b>1090.8</b>		<b>3817.8</b>

(Source: Approved Mining plan)

#### **1.8 Raw Material Required Along with Estimated Quantity, Likely Source, Marketing Area of Final Product/S, Mode of Transport of Raw Material and Finished Product:**

No raw material will be required in the proposed project. The operation involves the extraction of iron ore and it will be transported to the Local market through tippers. New approach road will be developed for transportation.

#### **1.9 Use of Mineral:**

The Iron Ore will be mined out during the mining operation & consumed by the various steel industries in the surroundings. The firm does not have any captive unit.

#### **1.10 Availability of Water, Energy/ Power Requirement and its Sources:**

##### **1.10.1 Water Requirement:**

Water required for the proposed mining project will be sourced from water tankers from the nearby villages. The total water requirement will be around 16 KLD. Water requirement details are given in below **Table 5**.

**Table 5: Water Requirement Details**

S. N.	Details of Usage	Quantity (KLD)
1	Dust Suppression	3.0
2	Domestic Usage	6.71
3	Green Belt Development	6.4
	<b>Total Requirement</b>	<b>16.11</b>
	<b>Total Requirement (Rounded Off)</b>	<b>16</b>

#### **1.10.2 Power:**

Proposed project site location is undulating and remote from the nearby villages & obtaining electricity supply is difficult and is become costly affair. As the proposed project is only for mining activity which includes excavation of iron ore from the mine & no further process is required on it for selling in the market, requirement of electricity supply is not essential and it can be met from DG set. DG set power can be used for lighting purpose in addition to proposed solar lights.

- Estimated Power: 10 KVA
- Source: 1 X 10 KVA DG Set
- DG set is proposed.

#### **1.11 Quantity of wastes to be generated (liquid and solid) and scheme for their management/disposal:**

##### **1.11.1 Solid Waste Generation& its Disposal:**

Laterite Soil: The major part of the area on the surface is covered with Laterite, Lateritic Soil & Limonite. At place outcrop of Iron Ore is exposed on surface. The Ore body is covered with Laterite which is showing varying thickness of 1.5 m to 3.0 m. and as such will be stored in 'Dumps'. The Laterite Soil is used for Road construction within Mining lease area.

O.B: The area is having undulating topography and Iron is mostly outcropping. The Waste rock/Side burden will consist of mainly Banded Hematite Quartzite.

Dumps: The waste will be collected/ stacked in the main dump only. The waste material is proposed to dump along the boundaries. No surface water bodies in the lease area and the adjoining area. The drainage of the area will not be disturbed to cause any adverse impact on water regime either surface or groundwater& for seasonal rain fall a garland & retaining wall terrace will be provided at an interval of 6.0 m.

Prior to the disposal of waste, dumping site will be prepared as per the following manner: Dumping site will be surveyed and earmarked as per the proposal. Roads will be developed from Quarry to the dumping site at suitable gradient of 1:16. Shrubs and bushes wherever found will be cut and removed. Soil if any shall be scrapped off and disposed over the existing dumps. Grass will be sown over the waste dump to control erosion and dust generation.

Protective measures for O.B /Soil Dumps & ROM Yard: by using Garland drainage & retaining wall.

### **1.11.2 Liquid Effluent:**

No liquid effluent will be generated in proposed mining project except domestic waste. Domestic wastewater from the mine will be treated in septic tank followed by soak pit.

### **1.12 Site Analysis:**

#### **1.12.1 Accessibility:**

The site for the proposed mine is located at Sy. No. Part of 82 (82/1) near Zendevar village in Korchi tehsil of Gadchiroli district in the state of Maharashtra. Proposed project site is at a distance of 3.5 km (W) from NH 543 – Shahdol to Bramhapuri passes from Korchi. NH 543 is starts at Shahdol (Madhya Pradesh) and ends at Bramhapuri (Maharashtra) and it passes through Shahdol-Mandla-Balaghat-Gondia-Deori-Korchi-Bramhapuri. Project site is approachable from Nandali to Sohale village road at a distance of 1.5 km (E). Proposed project site is at a distance of 45 km from District Headquarter, Gadchiroli. Barabhati railway station is the nearest railhead at a distance of 45 km (NW) from the proposed project site. Barabhati railway station is on the Gondia to Balharshah railway line which is connecting Chhattisgarh to south part of the India. Dr. Babasaheb Ambedkar International Airport, Nagpur is the nearest airport at a distance of 153.0 km (NW) from the proposed project site. Visakhapatnam Sea Port is the nearest sea port at a distance of 450 km (SE) from the proposed project site.

### **1.13 Planning Brief:**

#### **1.13.1 Land Use Planning:**

The project is located in 8.0 Ha. of Govt. non forests revenue land. Land use indicating the area likely to be degraded due to quarrying, dumping, roads, workshops, processing, plant tailing ponds/dam etc. There will be change in land use as the Iron ore will be excavated from the mine lease area.

#### **1.13.2 Assessment of Infrastructure Demand (Physical & Social):**

On the basis of the preliminary site visit, the infrastructure demand in the villages was assessed on the basis of need and priority.

#### **1.13.3 Amenities/Facilities:**

First aid box and drinking water facility will be made available at the project site. Rest shelter will be provided at the project site. Mines office and other statutory constructions like rest shelter, first aid, work shed and drinking water as required in the mine lease area will be provided. Drinking water will be supplied to the workers by the water tankers from the surrounding villages.

#### **1.14 Proposed Infrastructure & Environment Management Plan:**

##### **1.14.1 Residential Area (Non-Processing Area):**

As the local persons of surrounding villages will be given employment, no residential area/ housing is proposed within the mining lease area.

##### **1.14.2 Water Management:**

The total water requirement is 16 KLD. There are no chances for changes in quality of surface water or ground water. The mining operations will be carried out on slopes of the rocky terrain. Hence, neither the ground water table nor the general surface drainage pattern will be affected. No water will be discharged from the mine.

Following measures shall be taken:

- PP will ensure that good quality potable water is provided for drinking purposes. Good sanitation facilities (toilets with septic tank followed by soak pits) will be provided and maintained for good hygienic conditions.
- The spillages from fueling of machinery shall be avoided and in case of any spillage the same shall be handled properly. Likewise, the spent lubricating oils etc., shall be safely collected and properly disposed off.

##### **1.15 Sewerage System:**

Domestic waste will be disposed in to septic tank followed by soak pit.

##### **1.16 Solid Waste Management:**

No waste generation is envisaged from the mine.

##### **1.17 Baseline Environmental Studies:**

Baseline environmental studies were conducted in the area within 10 km radius of the proposed project site to assess the existing environmental scenario in the area. Baseline environmental studies were carried out in the months October to December 2022 i.e.; post monsoon season. The baseline environmental quality data for various components of environment, viz. Air, Noise, Water, Land were monitored during October to December 2022 in the study area covering 10 km radius around the project site.

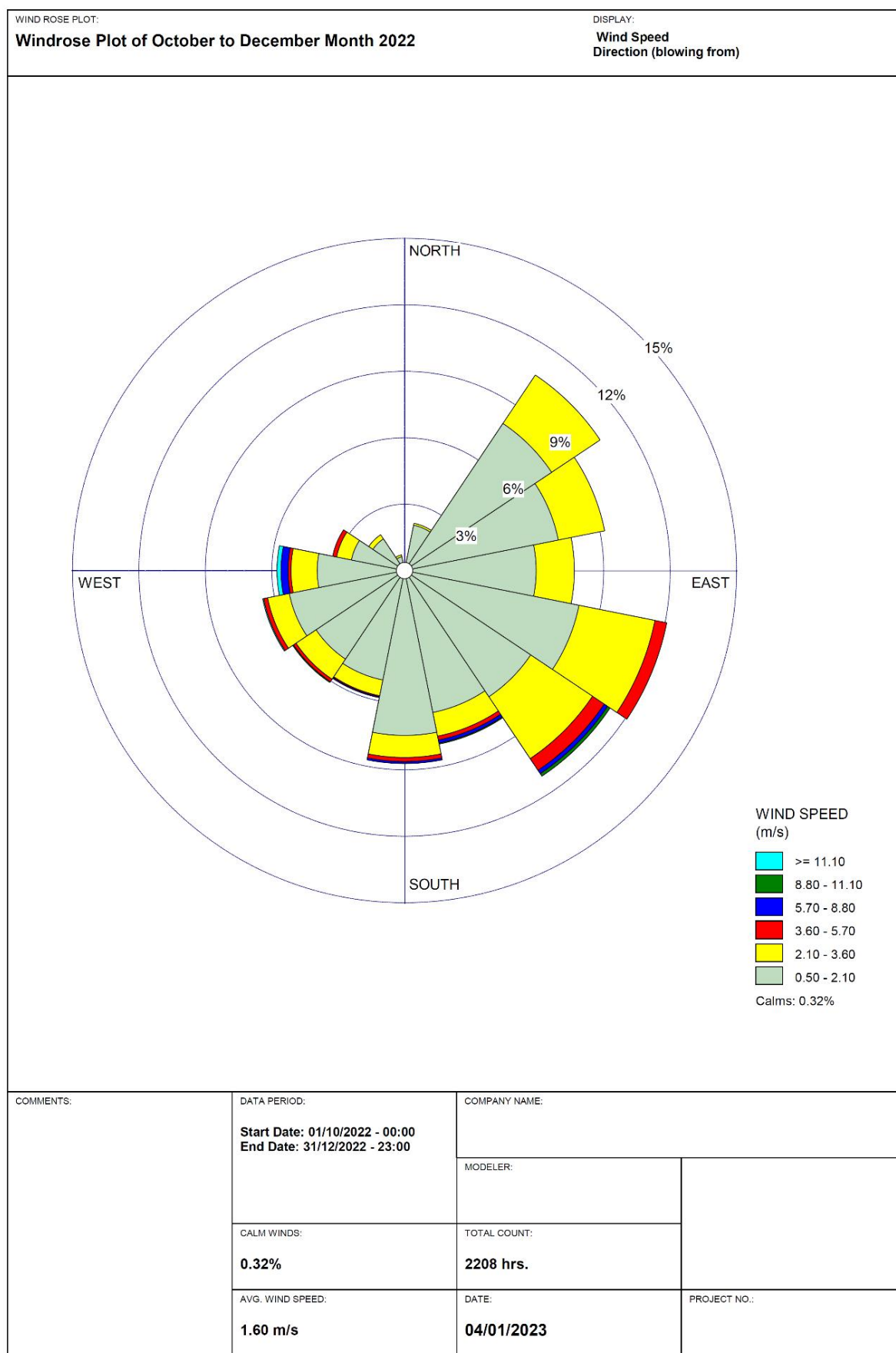
##### **1.17.1 Meteorology:**

##### **Summary of the Meteorological Data Generated at Site**

The site-Specific meteorological data is given in **Table 6** and wind rose diagram is given in **Figure 4**.

**Table 6: Site Specific Climatological Data**

S. N.	Month	Temperature (°C)		Relative Humidity (%)		Rainfall (mm)
		Min.	Max.	Min.	Max.	
1	October 2022	19	34	30	98	39
2	November 2022	21	32	78	95	8
3	December 2022	11	30	20	95	7
	<b>Total</b>					<b>54</b>



**Figure 4: Wind Rose Diagram – October to December 2022 (IMD Specific)**

### 1.17.2 Ambient Air Quality Status:

The status of ambient air quality within the study area was monitored for the period of during October to December 2022 at 8 locations including the project site and in 10 km study area villages. Total 8 sampling locations were selected based on the meteorological conditions considering upwind and downwind directions. The levels of Respirable Particulate Matter (PM<sub>10</sub>), Fine Particulates (PM<sub>2.5</sub>), Sulphur Dioxide (SO<sub>2</sub>) and Oxides of Nitrogen (NO<sub>x</sub>) were monitored. Based on the above, the AAQ stations have been identified and locations of ambient air quality stations are presented in **Table 7**. The minimum and maximum values of monitoring results are summarized in **Table 8 A, 8 B, 8 C, & 8 D**.

**Table 7: Ambient Air Quality Monitoring Stations**

Code	Sampling Location	Distance w.r.t Project	Direction w.r.t Project
A1	Project Site	--	-
A2	Zendevar Village	3.5 km	E
A3	Bharitola Village	2.5 km	S
A4	Bondena Village	1.5 km	SW
A5	Jamnara Village	3.5 km	SW
A6	Rajatola Village	4.5 km	W
A7	Maseli Village	2.5 km	NW
A8	Kaimul Village	4.5 km	N

**Table 8: Summary of Ambient Air Quality Results**

**Table 8 A: Particulate Matter – PM<sub>10</sub>**

Location Name	A1	A2	A3	A4	A5	A6	A7	A8
Minimum	45.70	45.20	46.20	45.10	45.20	48.20	47.20	48.10
Maximum	50.60	51.80	51.30	51.90	51.90	51.40	53.40	52.90
Average	47.99	48.89	48.70	48.27	47.84	50.05	50.53	50.67
98 <sup>th</sup> Percentile	50.40	51.62	51.26	51.58	51.58	51.40	53.26	52.81
<b>CPCB Standards</b>	<b>100</b>							

All Values are in µg/m<sup>3</sup>

**Table 8 B: Particulate Matter – PM<sub>2.5</sub>**

Location Name	A1	A2	A3	A4	A5	A6	A7	A8
Minimum	11.30	11.70	12.30	15.30	10.60	13.30	12.60	12.30
Maximum	16.20	17.80	16.60	21.30	16.80	17.40	18.30	17.90
Average	13.75	14.97	14.99	18.23	13.36	15.59	15.60	15.08
98 <sup>th</sup> Percentile	16.11	17.57	16.55	21.21	16.71	17.31	18.21	17.81
<b>CPCB Standards</b>	<b>60</b>							

All Values are in µg/m<sup>3</sup>

**Table 8 C: Sulphur Dioxide - SO<sub>2</sub>**

Location Name	A1	A2	A3	A4	A5	A6	A7	A8
Minimum	2.20	2.70	2.30	2.60	2.80	2.50	2.60	2.40
Maximum	5.80	6.30	5.80	6.00	5.90	6.40	6.60	6.20
Average	4.49	4.60	4.31	4.32	4.49	4.63	4.65	4.34
98 <sup>th</sup> Percentile	5.80	6.30	5.80	5.91	5.85	6.35	6.51	6.15
<b>CPCB Standards</b>	<b>80</b>							

All Values are in µg/m<sup>3</sup>

**Table 8 D: Oxides of Nitrogen – NO<sub>x</sub>**

Location Name	A1	A2	A3	A4	A5	A6	A7	A8
Minimum	4.80	5.20	4.90	5.10	4.90	4.90	5.00	5.30
Maximum	8.50	9.30	8.90	9.00	8.90	9.40	9.50	9.00
Average	6.84	7.76	7.52	7.45	7.37	7.70	7.75	7.50
98 <sup>th</sup> Percentile	8.41	9.30	8.85	9.00	8.81	9.40	9.41	8.95
<b>CPCB Standards</b>	<b>80</b>							

All Values are in µg/m<sup>3</sup>

**Table 8 E: Carbon Monoxide – CO**

Location Name	A1	A2	A3	A4	A5	A6	A7	A8
Minimum	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Maximum	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Average	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
98 <sup>th</sup> Percentile	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1

All Values are in µg/m<sup>3</sup>



The analysis of ambient air quality data for three months consequently indicates good ambient air quality conditions at site as well as around the site upwind as well as downwind. Particulate matter PM<sub>10</sub> as well as PM<sub>2.5</sub> is within prescribed limits. SO<sub>2</sub> and NO<sub>x</sub> levels are well below the limits prescribed hence overall picture as far as ambient air quality concerned is positive. As per the baseline data collection, the maximum value of the PM<sub>10</sub> was recorded at Maseli Village – 53.40 µg/m<sup>3</sup> and minimum value at Zendevar & Jamnara village – 45.20 µg/m<sup>3</sup>. As per the baseline data collection, the maximum value of the PM<sub>2.5</sub> was recorded at Bondena Village – 29.30 µg/m<sup>3</sup> and minimum value at Jamnara village – 10.60 µg/m<sup>3</sup>. As per the baseline data collection, the maximum value of the SO<sub>2</sub> was recorded at Maseli village – 6.60 µg/m<sup>3</sup> and minimum value at Project Site – 2.20 µg/m<sup>3</sup>. As per the baseline data collection, the maximum value of the NO<sub>x</sub> was recorded at Maseli Village – 9.50 µg/m<sup>3</sup> and minimum value at Project Site – 4.80 µg/m<sup>3</sup>.

### 1.17.3 Ambient Noise Levels:

Ambient noise level monitoring was carried out at the 8 monitoring locations; those were selected for ambient air quality monitoring. The noise recording stations are shown in **Table 9**. The monitoring results are summarized in **Table 10**.

**Table 9: Ambient Noise Quality Monitoring Stations**

Code	Location	Distance w.r.to Project	Direction w.r.to Project
N1	Project Site	--	-
N2	Zendevar Village	3.5 km	E
N3	Bharitola Village	2.5 km	S
N4	Bondena Village	1.5 km	SW
N5	Jamnara Village	3.5 km	SW
N6	Rajatola Village	4.5 km	W
N7	Maseli Village	2.5 km	NW
N8	Kaimul Village	4.5 km	N

**Table 10: Summary of Ambient Noise Level Monitoring Results**

Equivalent Noise levels	N1	N2	N3	N4	N5	N6	N7	N8
Ld (Max)	56.4	52.4	52.9	54.8	48.9	53.8	57.6	57.9
Ld (Min)	43.5	44.6	42.2	43.2	36.8	43.2	44.6	44.9

LN (Max)	52.2	48.5	48.2	50.2	43.8	48.1	54.1	50.8
LN (Min)	38.1	40.8	38.6	40.2	34.6	40.2	41.7	42.1
Leq (Day)	51.1	48.6	48.2	49.9	43.8	50.3	54.6	52.7
Leq (Night)	41.8	42.4	40.9	43.5	36.4	42.7	43	44.2
<b>CPCB</b>	<b>75</b>	<b>55</b>	<b>55</b>	<b>55</b>	<b>55</b>	<b>55</b>	<b>55</b>	<b>55</b>
<b>L</b>	<b>70</b>	<b>45</b>	<b>45</b>	<b>45</b>	<b>45</b>	<b>45</b>	<b>45</b>	<b>45</b>

**\*All values in dB(A)**

$L_{min}$  : Minimum Noise Level Recorded

$L_{max}$  : Maximum Noise Level Recorded

$L_d$  : Day Equivalent

$L_n$  : Night Equivalents

$L_{dn}$  : Day-Night Equivalents

## Conclusion

The Maximum Noise (day) value was observed 57.9 dB (A) at Kaimul Village (N8) and the Minimum Noise (day) value was observed 36.8 dB (A) at Jamnara Village (N5). The Maximum Noise (night) value was observed 54.1 dB (A) at Maseli Village (N7) and the Minimum Noise (night) value was observed 34.6 dB (A) at Jamnara Village (N5).

The maximum and minimum day time equivalent noise levels were found in the range of 54.6 to 43.8 dB (A) and the maximum and minimum night time equivalent noise levels were found in the range of 44.2 to 36.4 dB (A).

### 1.17.4 Surface and Ground Water Quality:

#### Ground Water Sampling Locations:

Ground water sampling locations were selected surrounding the mine site within 10 km study area. Total eight ground water samples were collected and analyzed from the study area. The locations of ground water sampling with its distance and direction w.r.to the project site are given in **Table 11**.

**Table 11: Ground Water Sampling Locations**

Code	Location	Distance w.r.t Project	Direction w.r.t Project
GW1	Project Site	--	-
GW2	Zendevar Village	3.5 km	E
GW3	Bharitola Village	2.5 km	S
GW4	Bondena Village	1.5 km	SW

GW5	Jamnara Village	3.5 km	SW
GW6	Rajatola Village	4.5 km	W
GW7	Maseli Village	2.5 km	NW
GW8	Kaimul Village	4.5 km	N

#### Conclusion:

#### Ground Water Samples within 10 km Study Area:

- pH of the ground water samples collected was in the range of 7.02 – 7.97.
- Total Dissolved Solids in the samples was in the range of 260.0 – 505.0 mg/l.
- Hardness was found to vary between 120.0 – 280.0 mg/l.
- Chlorides concentration was found to vary between 25.16 – 78.02 mg/l.
- Sulphates concentration was found to vary between 15.97 – 57.95 mg/l.
- Heavy metal concentrations in all the samples were found to be well within the limits.

#### Surface Water Sampling Locations:

Surface water sampling locations were selected surrounding the mine site within 10 km study area. Three surface water samples were collected from the study area. Two surface water samples were from downstream and one from upstream of the project site. The locations of surface water sampling with its distance and directions w.r.to the project site given in **Table 12**.

• **Table 12: Surface Water Sampling Locations**

S. N.	Code	Location	Distance w.r.t Project	Direction w.r.t Project
1	SW1	Khursipar Village Talav, Khursipar Village	6.0 km	Upstream – North-East
2	SW2	Jambhali Waterfall, Jambhali Village	8.0 km	Downstream - South

#### Conclusion:

#### Surface Water Samples within 10 km Study Area:

Sampling was carried out at 2 locations during the study period. Sampling and analysis were carried out, as per standard methods and frequency of the sampling was thrice/stations. The summary of the results is presented below:

- pH of the surface water samples collected was in the range of 7.20 - 7.49.
- Total dissolved solids in the samples were in the range of 160.0 – 455.0 mg/l.
- Chlorides concentration was found to vary between 17.61 – 98.16 mg/l.

- Sulphates concentration was found to vary between 11.03 – 48.07 mg/l.

#### 1.17.5 Soil Quality:

##### Location of Soil Sampling Sites:

The soil samples were collected from 8 sampling locations within an area of 10 km radius around the proposed project for analysis of the physico-chemical characteristics of the soil quality. Soil samples were collected from three different types of land i.e.; agriculture, waste (mine site) and barren land. The locations of soil sampling are given with its distance and direction w.r.to project site in **Table 13**.

**Table 13: Soil Sampling Locations**

S. N.	Code	Location	Distance w.r.t Project	Direction w.r.t Project
1	S1	Project Site	--	-
2	S2	Zendevar Village	3.5 km	E
3	S3	Bharitola Village	2.5 km	S
4	S4	Bondena Village	1.5 km	SW
5	S5	Jamnara Village	3.5 km	SW
6	S6	Rajatola Village	4.5 km	W
7	S7	Maseli Village	2.5 km	NW
8	S8	Kaimul Village	4.5 km	N

##### Conclusion:

Sampling was carried out at 8 locations during the study period. The summary of the results is presented below:

The summary of the results is presented below:

- pH in soil sample was observed to be in the range 6.69 to 7.54.
- Organic Carbon was observed in the range of 0.47 – 1.21 %.
- Available Nitrogen as N was observed in the range of 139.48 – 194.72 Kg/ Hac.
- Available Phosphates as P was observed in the range of 30.39 – 46.19 Kg/ Hac.
- Available Potassium as K was observed in the range of 159.48 – 391.47 Kg/ Hac.

#### 1.17.6 Land Use Land Cover Classification:

The Land Cover classes and their coverage are summarized in **Table 14**.

**Table 14: Land Use Pattern of the Study Area**

S. N.	Land Use Class (Level-I)	Land use/Land cover Classes (Level – II)	Area in (Sq. Km) 314	Area in (%) 100
1	Forest	Forest	137.63	43.83
2	Water bodies	Waterbody	2.07	0.66
3	Agricultural Land	Crop Land	21.61	6.88
		Fallow Land	149.10	47.48
4	Built-up Land	Built-up Land	1.89	0.60
5	Waste Land	Waste Land	1.69	0.54
		<b>Total</b>	<b>314.00</b>	<b>100.00</b>

#### **1.17.7 Ecology & Biodiversity in 10 km Study Area:**

##### **Rare and Endangered Flora in the Study Area:**

On the basis of literature survey, from red data books of Indian plants, detailed list rare and Endangered plant genera of Chhattisgarh particularly with reference to Rajnandgaon district reveals that there are no endangered, threatened, rare plant species or endangered, threatened, most threatened, vulnerable plant species observed or recorded during study period and this plant species are commonly present in the Chhattisgarh state.

Flora and fauna studies have been carried out in 10 km radius study area and no any endangered species were found out in the study area.

##### **Presence of Protected Areas as per Wildlife Protection Act, 1972 in Study Area:**

As per MoEF&CC and Forest department of Government of Chhattisgarh state notifications reveals that there are no biospheres, tiger reserves, elephant reserves, national parks, wildlife sanctuaries, conservation reserves and community reserves in 10-km radius from mine lease boundary.

#### **1.18 Socio-Economic Environment:**

Information on socio-demographic status and the trends of the communities in the 10 km radius was collected through primary social survey and secondary data from census 2011 & village directory 2011. Summary of the socio-economic status of the study area is given in **Table 15**.

**Table 15: Distribution of Population in the Study Area as per 2011 Census**

S. N.	Particulars	0-3 km	3-7 km	7-10 km	0 – 10 km
1	No. of Households	649	3400	7487	11536
2	Male Population	1439	7601	17170	26210
3	Female Population	1464	8083	17758	27305
4	<b>Total Population</b>	<b>2903</b>	<b>15684</b>	<b>34928</b>	<b>53515</b>
5	Scheduled Castes	428	1184	3785	5397
6	Scheduled Tribes	2053	10995	21306	34354
7	% of Males to Total Population	49.56	48.46	46.94	49.0
8	% of Females to Total Population	50.43	51.54	53.06	51.0
9	Average Household Size	4.47	4.61	4.66	4.63
10	Sex Ratio	1017	1063	1034	1041
11	Male Literates	1082	5661	12626	19369
12	Female Literates	841	4838	10160	15839
13	<b>Total Literates</b>	<b>1923</b>	<b>10499</b>	<b>22786</b>	<b>35208</b>

*Source: District Primary Census Hand Book, Gadchiroli, Gondia and Rajnandgaon, 2011*

### **1.19 Anticipated Environmental Impacts and Mitigation Measures:**

#### **1.19.1 Air Environment:**

The air borne particulate matter is the main air pollutant contributed by opencast mining. Predictions have been carried out for the worst-case scenario considering all the operations of the mine will be under simultaneous continuous operation of 12 hours for the proposed emissions.

The air quality modeling has been done and the details of incremental emission load due to Iron Ore mining activity contributing in existing baseline values is given in **Table 16**.

**Table 16: Incremental Emission Load due to Mining Activity Contributing in Existing Baseline Values**

Pollutants	Baseline Concentration ( $\mu\text{g}/\text{m}^3$ )	Incremental ( $\mu\text{g}/\text{m}^3$ )	Resultant ( $\mu\text{g}/\text{m}^3$ )	CPCB Norms
PM <sub>10</sub>	53.40	--	53.40	100 (24 hourly)
SO <sub>2</sub>	6.60	0.25	6.85	80 (24 hourly)
NO <sub>x</sub>	4.80	0.19	4.99	80 (24 hourly)
CO (mg/m <sup>3</sup> )	< 0.1	--	< 0.1	4 (1 hour)

#### 1.19.2 Air Pollution Control Measures:

The following air pollution control measures will be implemented in the mine to control the impact of air pollution.

- In order to minimize the dust emanating from the mining operations water sprinkling is proposed at the mine pit, waste dump and also on the haulage roads to suppress the dust.
- Dust masks will be given to the mineworkers.
- Regular grading of haul roads will be done to clear the accumulation of loose materials on the roads.
- Transport vehicles are maintained regularly in order to minimize the emissions from them.
- Overloading of tippers will be avoided to prevent the material spillage on the roads.
- Loaded tippers will be covered with tarpaulin before they are allowed on to the main roads.

The air pollution impacts on the nearby villages will be negligible with this small-scale mining after adoption of the above air pollution control measures.

#### 1.19.3 Noise Environment:

Noise levels in the proposed mine will be produced due to movement of vehicles by transportation of Iron Ore and mining operations like blasting and drilling. But the pronounced effect of noise is felt only near the active working area.

Since the proposed mine will adopt open cast semi mechanized method for mining, there will not be much impact on the surrounding villages due to the mining operations. Also, habitations are away from the proposed project activity and the area is surrounded by thick and dense forest which will reduce the impacts of generated noise due to the proposed project activity. Hence, there will be no any noise impact on surrounding habitations of the proposed project site.

#### **1.19.4 Noise Pollution Control Measures:**

The following are the noise pollution control measures proposed in the mine.

- Ear plugs will be provided to the mine workers whenever needed.
- Vehicles used for transportation will be regularly maintained.
- Greenbelt will be provided all along the mine in 7.5 m barrier zone to reduce the noise levels.
- Speed of the vehicles entering or leaving the mine will be limited to 25 kmph to avoid undue noise from empty trucks.

#### **1.19.5 Impact due to Ground Vibrations:**

The proposed mine will adopt opencast semi mechanized with Category A method for mining with drilling and blasting. Hence, the impact on ground vibrations due to mining will be negligible.

#### **1.19.6 Water Environment:**

The total water requirement for the above operations will be 16 KLD and domestic water requirement will be met by water tankers at the mine site. Waste water generation from the above consumption is from domestic consumption i.e., 6.71 KLD. Wastewater generated from the Domestic front will be mainly from toilets. This waste water will be treated in septic tank followed by soak pit.

There are no natural drainage channels within the site. There are no chances for changes in quality of surface water or ground water. The mining operations will be carried out on slopes of the rocky terrain. Hence, neither the ground water table nor the general surface drainage pattern will be affected. No water will be discharged from the quarry. It is proposed to construct garland drains with sedimentation pits all along the mine pits to avoid erosion and sedimentation due to storm water. Only fresh water will be left into the nearby seasonal streams as after de-siltation.

#### **1.20 Greenbelt Development:**

Greenbelt will be developed for protection and improvement in the surrounding environment and to minimize the dust impact due to proposed mining activity. Planted saplings will be fruit bearing and native species having thick and broad leaves with canopy nature. Total mine lease area is 8.0 Ha. and 33% of the total mine lease area i.e.; 2.64 Ha. need to develop as a greenbelt. As the proposed project site is surrounded by thick and dense forest and there are already trees are available in the mine lease area. Almost, 2.0 Ha. area is available with good no. of trees which can be maintained as it is & vacant spaces in between these trees will be covered by planting trees. We need to develop 0.64 Ha. area as a greenbelt which is in the form pockets in between already available trees in the mine lease area. To improve the greenbelt coverage at the mine site,



plantation is proposed on 7.5 m safety zone. Also, greenbelt will be developed in other areas of mine lease such as administration office, beside of haulage roads etc.

The plantation work for green belt development will be carried in consultation with a horticulturist. By considering 2000 saplings per hectare, total no. of saplings with consideration of 75% rate of survival to be planted every year and balance assume mortality of 25% will be covered every year with applicable rate of saplings to be planted.

Details of Plantation area are as given below:

Total Mine Lease Area = 8.0 Ha.

Applicable 33% Greenbelt Area = 2.64 Ha.

Already Developed Greenbelt Area as of now = 2.00 Ha.

Area to be covered by Greenbelt in future = 0.64 Ha.

Plants proposed per Hectare as per MoEF&CC recommendation = 2000 Nos.

Total no. of plants to be planted in Greenbelt Development (For 0.64 Ha.) = 1280 Nos.

#### **1.21 Occupational Health & Safety Management:**

- Periodical Medical Examination (PME) of all workers before recruitment and during mining operations is carried out.
- Total workers in the mine – 80 immediate workers after 5 years it will be 149 Nos.
- First aid facility will be provided at the project site.
- Mine operators will be provided with personal protective equipment (PPEs) includes safety helmets and footwear, in addition to ear, eye, and hand protection devices.
- Dust masks will be provided for workers.
- Potable drinking water & shelter for mine workers will be provided.

#### **1.22 Environment Management Plan (EMP):**

In order to implement an effective environmental management plan for mitigating the adverse impacts on the environment, regular monitoring of various environmental components is necessary. Mine manager with the support of Safety and Env. Officer and other workers will monitor the environment management plan of this area.

#### **Budget for Implementation Environment Management Plan:**

Environment management plan is for the proposed project activity divided into two parts i.e.; one is capital cost & one is recurring cost. Total fund earmarked for EMP is Rs. 41.34 Lakhs (Rs. 0.41 Crores) in which capital cost is Rs. 32 Lakhs and recurring cost is Rs. 9.34 Lakhs. Detail budget for Environmental Management Plan is given in below **Table 17**.

**Table 17: EMP Budget**

S. N.	Item	Capital Cost (Rs. In Lakhs)	Recurring Cost (Rs. In Lakhs)
1	Air Pollution Control	4.0	1.0
2	Rain Water Harvesting System	4.0	1.0
3	Water Pollution Control	5.0	0.5
4	Noise Pollution Control	1.0	0.5
5	Environment Monitoring and Management	4.0	2.34
6	Occupational Health	2.0	1.0
7	Greenbelt Development	10.0	2.0
8	Safety Management	1.0	0.5
9	Renewable Energy System	1.0	0.5
	<b>Total Amount</b>	<b>32.0</b>	<b>9.34</b>
	<b>Total Amount (Capital Cost &amp; Recurring Cost)</b>	<b>41.34</b>	
	<b>Total Amount (Capital Cost &amp; Recurring Cost)</b>	<b>0.4134 Crores</b>	

### 1.23 Corporate Environment Responsibility:

The proposed project would proactively promote the public interest through provision of basic amenities such as roads, transportation, electricity, education, sanitation and healthcare facilities. Proposed project is a greenfield project and CER budget is calculated based on its category as prescribed in office Memorandum of MoEF&CC Dated: 01/05/2018. The CER budget allotted based on the capital cost of the proposed project shall be Rs. 16.0 Lakhs (2% of the Project Cost of Rs. 8.24 Crores). The details break up and activities considered under CER activities are given in below **Table 18**.

**Table 18: Proposed CER Activities and its Budget**

S. N.	Planned Activities under CER as per specific needs	Amount in Rs.
1	<b>Community Health Improvement</b> <ul style="list-style-type: none"> <li>Sanitary facilities for project surrounding villages</li> </ul>	2,00,000.00
2	<b>Community Education Facilities</b> <ul style="list-style-type: none"> <li>Providing desktop computers to schools</li> </ul>	2,00,000.00

3	<b>Infrastructural Development</b> <ul style="list-style-type: none"> <li>Maintenance/ Repair of Hand Pumps/ Bore wells</li> </ul>	9,00,000.00
4	<b>Afforestation Programs</b> <ul style="list-style-type: none"> <li>Plantation of trees in villages road side/ Panchayat House/ Public Health Center/ schools</li> </ul>	1,00,000.00
5	<b>Community Welfare Activities</b> <ul style="list-style-type: none"> <li>Solar Street Lights for common community area and village main approach roads as per the instruction of respective Gram Panchayat</li> </ul>	2,00,000.00
<b>Total Amount in Rs.</b>		<b>16,00,000.00</b>
<b>Total Amount (Rupees in Lakhs)</b>		<b>16.00</b>

#### 1.24 Project Benefits:

It is proposed to employ about 149 persons for carrying out mining operations and the lessee proposed to give preference to the local people in employment. In addition, there will be indirect employment to many people in the form of contractual jobs, business opportunities, service facilities etc. this will enhance the economic status of the local people. Local peoples may have a choice to purchase a vehicle and engage their vehicle for transportation activity of Iron Ore. This will generate new source of income to local peoples as it is remote area which is surrounded by forest and there are very less alternatives are available with them to enhance their life style.

The impact of mining activity in the area will be positive on the socio- economic environment of the region. The employment directly and indirectly will be increased and better infrastructure and communication facilities will be provided.

Shri. R. M. Rajurkar would be required to initiate the following measures to minimize the possible negative impacts:

- Implemetation of adquate dust control measures to check air pollution.
- Organize six monthly health camps in the area to check the incidence of any respiratory and other related disorders.
- Conduct Entrepreneurship Development Camps to nurture entrepreneurial talents among the local youth.

#### 1.25 Conclusion:

Based on the EIA study, it is observed that there will be a marginal increase in the dust pollution, which will be controlled by sprinkling of water and transportation of Iron Ore in trucks by covering the material with Tarpaulin.

There will be negligible impact on ambient environment & ecology due to mining activities, more over the mining operations will lead to direct and indirect employment generation in the area. Hence, it can be summarized that the mining of minerals from the proposed Iron Ore mine of Shri. R. M. Rajurkar Mine will have a positive impact on the socio-economic environment of the area.

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