

**EXECUTIVE SUMMARY
ENVIRONMENT IMPACT ASSESSMENT/
ENVIRONMENT MANAGEMENT PLAN**

Vide para 2.2 Appendix IV of S. O. 1533 dated 14 September 2006

OF

ZENDEPAR IRON ORE DEPOSIT

Village: Zende par District : Gadchiroli, Maharashtra
(Area 12.0 Ha)

**Submission for
PUBLIC HEARING**

PROJECT PROPONENT

M/S ANUJ MINES MINERALS & CHEMICALS PVT. LTD

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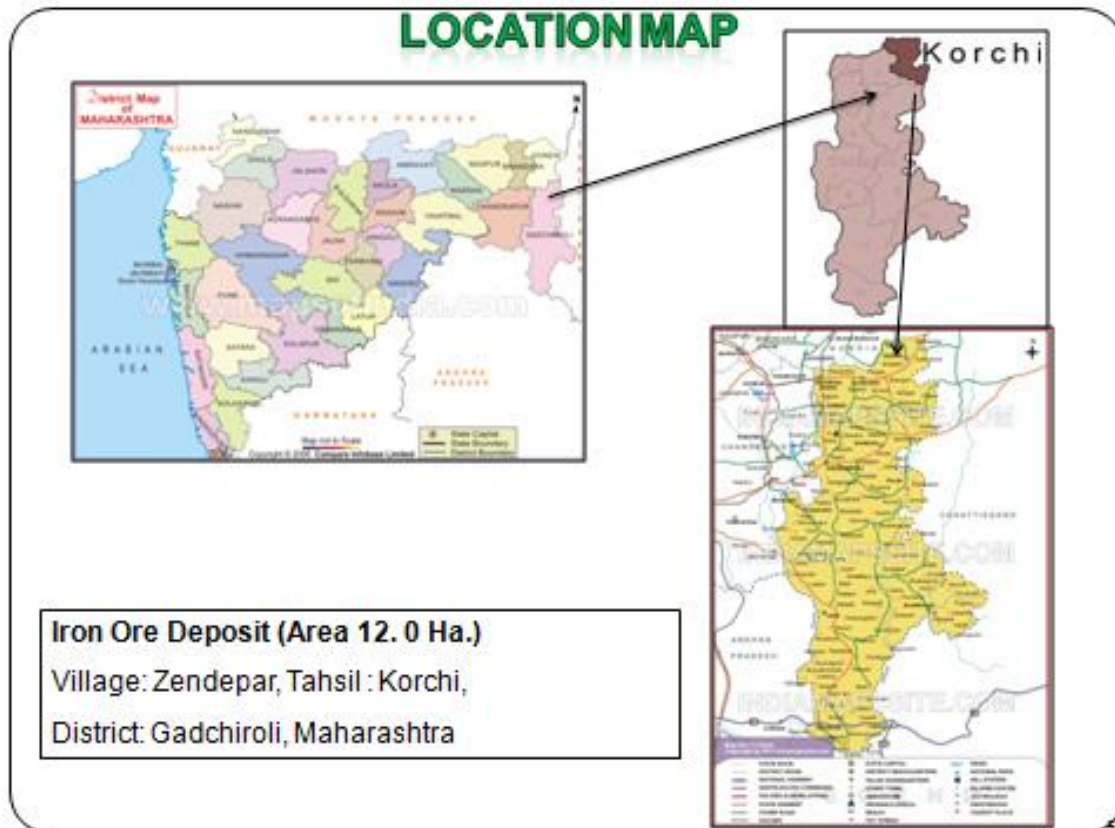
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EXECUTIVE SUMMARY

INTRODUCTION : M/S Anuj Mines Minerals & Chemicals Pvt Ltd. have been granted Iron ore mine located at Village -Zendepar, District-Gadchiroli , by State Government on 2nd January 2006. The Iron ore mine (12.0 Ha) is having approved capacity @ 50000 TPA of Iron. The proposed production will be achieved by developing this mine by Opencast with bench pattern method. The modified mining scheme has been approved by IBM. A report is prepared in the form of draft EIA/EMP.

The project was appraised during 40th SEAC meeting held on 15th February 2011 the Honourable Committee had issued a Terms of Reference (TOR). Accordingly the EIA/EMP was submitted to the Maharashtra Pollution Control Board. However, the Public hearing could not be arranged and hence it was requested to SEAC-1, Mumbai again to reconsider TOR during SEAC-1 128th meeting held on 02.06.2016. The honorable committee has approved the TOR and has exempted from conducting fresh baseline environmental data collection.



Location Details & Accessibility : The location of mine is given in adjacent figure above. It falls in Survey of India Toposheet no. 64 D/5 It lies at latitude $20^{\circ} 46' 15''N$ and longitude from $80^{\circ} 30' 53''E$. The area can be approached from District Headquarter, Gadchiroli to Korchi by a State Highway which is 7 km from Korchi and 110 Km from Gadchiroli and 2 km from village Zende par connected by kuchha road.

The site for the proposed mine is located near Zende par village in Korchi tehsil of Gadchiroli district in the State of Maharashtra. Ballarshah is the nearest railhead (120 km from Etapalli and 151 km from the proposed site), situated on the Ballarshah-Nagpur-Itarsi section of the Central Railway (Broad Gauge) on Madras-New Delhi trunk route. The nearest airport is at Nagpur (330 km). The National Highway (NH)-7 passes through Jam at about 260 km from the proposed site. The State Highway (SH) passes through Allapalli at about 55 km. The nearest airport is at Nagpur (330 km). The nearest National Park is located at Navegaon, 30 km from the proposed mine site

Land Requirement -The proposed production will be achieved from the 12.0 Ha mining lease. No additional land is required.

Geological formations & Ore Reserves The mine lease area falls in the south western end of the famous, Proterozoic iron ore belt, comprising the Rajhara-Dalli; Rowghat and Bailadilla deposits of Madhya Pradesh. The rock types exposed in the region as reported by the Geological Survey of India (GSI) are of Archaen and Lower proterozoic ages. The proposed area comprises a hillock with lateritic capping with Banded Hematite Quartzite body exposed at places. The major part of the area on the surfaced is covered with Lateritic dolerite and Limonite, At places outcrop of iron ore is exposed on surface The trend of the ore bodies appears to North-South Float ore is also seen in the trend in the area. The analysis shows that Fe content is 38.26% to 60.23% and 54.98% to 67.17%. Total geological reserves is 555,800 tonnes and proved reserves is 1,32,300 tonnes.

Mining Method: The mining operation will be done by opencast manually operated mining by developing benches. Drilling will be done by compressed operated jack hammer and blasting by gelatin and detonators. All the operation are manual. It is proposed to develop the deposit from the top from northern side to southern side following the outcrop. It is proposed to open the pit from the northern side following the outcrop and length will be 50 m and width will be 20.0 m.

There will be two benches will be having height of the benches be 3.0 each and this operation will continue till fifth year as it advances towards southern side. For transportation of ore and overburden it is proposed to use tippers.

Blasting - There is sideburden in the area the iron ore deposit is covered with overburden in places. The side burden and the iron ore is hard and it can not be removed without drilling and blasting.

Transport of Mineral- Material will be transported mostly by road from the mine to the consumer industries as it is economical and speedy for short distances.

Waste Generation and Management: The iron ore is mostly outcropping , the waste/rock sideburden will consist of mainly banded haematite quartzite. There will be generation of sideburden and dumping site od sideburden will be in the lease boundary. There is no generation of overburden as the iron ore is mnostly outcropping the area for and whatsoever will be generated in five years will be dumped in the boundary having spread of not more than 7.5 m and height of 2.5 m.

Drainage: : The topography area is undulating and it is observed that iron ore is existing at the top of the hilly terrain slopping down wards. During monsoon season, the rain water that falls in the mine will be drained off by gravity. However, as the mine gets deepened, there will be accumulation of rain water in the mine pit during monsoon season.

Ground water: The proposed excavations are not going to touch the ground water table. Thus, there will not be any contamination of the ground water because of this mining. The water requirement for the mine will be met from the bore well / dug well. There will be no discharge of waste water from the mine.

Arrangement for Dewatering: Water requirement for dust suppression, plantation and vehicle washing will be met from rainwater collected in mining pit.

Employment Potential: Around 78 labourers will be required for this mine. It is proposed to deploy local manpower meeting the eligibility criteria required for the job under consideration.

Industrial activity like mining will benefit people residing in the nearby villages within the buffer zone by direct and indirect employment opportunities. People will also be beneficiaries for the facilities developed due to mining activity.

BASELINE ENVIRONMENTAL STATUS:

The total project area (12.0 Ha) of the **Zendepar Iron ore Mine** is considered as Core Zone while the 10 km surrounding area of core zone is considered as Buffer Zone. Baseline environmental data was collected for all the components of environment like meteorology, air, water, noise, soil, geology, hydrogeology, flora-fauna, demographic and socio-economics, industries, places of archeological and historical importance etc. Standard guidelines prescribed by Ministry of Environment & Forests and Central Pollution Control Board were used for this study. The EIA report incorporates the baseline data generated through primary surveys for three months during March 2011 to May 2011 representing summer season.

Landuse of the Buffer Zone: The landuse is classified into four types . viz. forest, area under cultivation, culturable waste and the area not available for cultivation. The land under cultivation is further divided into two types . irrigated and unirrigated. Forest land constitutes about 23%, Irrigated land 22%, Unirrigated land 22% and Area not available for cultivation is 17 % and culturable waste land is 16 % .

Water Quality: Water samples were collected from **four** sampling locations. These samples were analyzed for various parameters to compare with the standards for drinking water as per IS: 10500 for ground water sources.

Ground Water : pH values are observed to be in the range of 7.35 to 8.65 and are slightly exceeding the prescribed limits (IS : 10500). Total dissolved solids, which impart palatability to drinking water, are in the range of 440-1400 mg/l. At three sampling locations, these values are more than the standards prescribed for drinking, but all the concentrations are observed to be below extended limits. This may be due to the presence of dissolved salts in the ground water and the local geological formations. This is equally evident and reflects higher hardness levels, in the range of 160-730 mg/l.

Inorganic Constituents : Concentrations of inorganic constituents are presented in Table-3.12. Chlorides are observed to be in the range of 42.55-333.00 mg/l. The values are within the

permissible limits except at two location. The sulphates are observed to be within the permissible limits (2-106 mg/l). Fluorides are in the range of 0.90-1.20 mg/l.

Heavy Metals : It is observed that metals like Hg, CN, B, Pb, Se, As, Cr+6 and Al were either nil or within the permissible limits. Other metals like Copper, Manganese and Zinc are observed to be within the permissible limits. Total iron content in the samples is observed to be in the range of 0.05 to 1.6.

Air Quality: The monitoring was carried out for 13 continuous weeks beginning from March 2011 to May 2011, as per norms stipulated by the Central Pollution Control Board Notification No. B-33014 dated 11 April 1994. In present case, most of the mining operations will be opencast. Five stations were selected for monitoring ambient air quality. The parameters monitored were Suspended Particulate Matter (PM₁₀), Respirable Particulate Matter (RPM), Oxides of Nitrogen (NO_x) and Sulphur Dioxide (SO₂) using high volume samplers

Air Quality: The PM₁₀ PM_{2.5} SO₂, NO_x values for all 5 stations were below.

Particulate Matter 10 (PM₁₀) : The maximum PM₁₀ concentration at the five Stations A₁, A₂, A₃, A₄, A₅, are 28.4, 26.8, 29.4, 28.0, 31.4, µg/m³ respectively below the prescribed limit of 100 µg/m³ for rural / residential areas.

Particulate Matter 2.5 (PM_{2.5}): The 24 hourly max values of PM_{2.5} for the all five stations A₁, A₂, A₃, A₄, A₅, are 28.4, 26.8, 29.4, 28.0, 31.4, µg/m³ below the prescribed limit of 100 µg/m³ for rural / residential areas.

Sulphur-Di-Oxide (SO₂):. The max 24 hourly values for all five stations are 9.5,10.2, 11.1, 9.9, 10.7, µg/m³ respectively below the prescribed limit of 60 µg/m³ for rural / residential areas.

Oxides of Nitrogen: The 24 hourly max values of NO_x for the all five stations A₁, A₂, A₃, A₄, A₅, were 14.8, 18.2, 22.4, 17.7, 20.3, µg / m³ respectively below the prescribed limit of 60 µg/m³ for rural / residential areas.

Noise Levels: Noise monitoring has been undertaken at 4 locations for 24 hr at each location. The monitoring was carried out during 23rd and 24th March 2011. The results were in the range of 37.8-46.0 dB at four sampling location.

Soil Quality: Soil samples were collected at 2 selected locations in the study area to assess the existing soil conditions around the mine. S1 from agricultural land from, Zende par village and other from barren land near Zende par village .Overall soil from agricultural land is moderately suitable for cultivation of arable crops and have moderate fertility.

Biological Environment: The core and buffer zones include the village settlements with their cultivated fields, forest/natural vegetation areas as well as vast areas reduced to wasteland. The detailed inventory of floral and faunal assemblage of the core and buffer zone has been prepared. The details of flora and fauna are provided in EIA/EMP. There are no ecologically sensitive areas such as Biosphere Reserves/National Parks/WL Sanctuaries/ Elephant Reserves, migratory corridors of fauna, and areas where endangered fauna and plants of medicinal and economic importance found in the buffer zone.

Human Settlement and Demography: Population is distributed among 1932 households in the study area. The 19 inhabited villages have a population of 8,907 comprising of 4409 (49.50%) males and 4498 (50.50%) females. The number of females per 1000 males is 1020 in study area. The overall literacy in the villages of the study area was 78.66%.

Proposed Social Responsibility Measures: A systematic approach for the implementation of the peripheral area development in selected villages in the buffer zone starting from the nearest village will be drawn up with the help of local community based organization & in consultation with the villagers. Assistance in the field of health and sanitation, environment conservation, water conservation, literacy, self-help groups, development of infrastructure. A budgetary provision of Rs15 lakhs per annum as annual recurring expenses is proposed on this account.

Risk Assessment & Disaster Management Plan: In any mining project, work safety is taken care of as per provisions in the Mines Act, Rules framed there under. Inundation, fly rocks during blasting operations, risks associated with handling and use of explosives, during operations of equipment and movement of vehicles has been dealt. The risk management plan as per the directives of competent authorities will be Implemented strictly.

ENVIRONMENT MANAGEMENT PLAN

Air Pollution Management :

- a) Haulage roads will be frequently sprinkled with water for which truck mounted water tankers with sprinkler arrangement have been provided.
- b) During transport ore shall be covered by tarpaulins to prevent spread of dust from it during transportation.
- c) Regular maintenance of vehicles and machineries will be carried out in order to control emissions.
- d) Green belt development will be carried out at various places.
- e) The dust respirators will be provided to all the workers.
- f) Good housekeeping and proper maintenance will be practiced which will help in controlling the pollution.

Water Pollution Management: The mining project will require continuous supply of water for various purposes during mining, plantation etc. apart from drinking water supply. The main source of water pollution in opencast mining is the surface run-off due to rainfall. There will not be any mine discharge during dry weather seasons. There may be surface runoff during monsoon season, which contains fine silt. This will be treated in settling tanks of adequate dimensions. The treated water (overflow) will be used for plantation and dust suppression.

Noise & Vibration Management

- < Noise is best abated at source by choosing machinery and equipment suitably, by proper mounting of equipment & ventilation systems and by providing noise insulating enclosures or padding where practicable.
- < Proper maintenance of vehicles will be done which keeps the noise level within limits.
- < At the boundary of mining lease green belt of local trees will be planted which will act as acoustic barriers. Planting of bushy trees of rich canopy in and around the mine area to intercept noise transmission. A 7.5 m wide belt of trees of different heights will be useful to act as noise attenuator in the mining areas.
- < Blasting will be occasionally carried out and if at all it is required. Delay detonators millisecond delay interval will be used, for keeping the vibrations minimum.

Land Reclamation Measures: The mining will be by slicing the slope and removing all the ore available in that bench and similarly continue in subsequent lower benches; hence question of

formation of pit does not arise. The ore reserves will long last even after the ML period expires, the same will be renewed for further period, hence question of back filling /reclamation does not arise at this stage.

Plantation: The Company has proposed to plant about 80 sapling per year surrounding lease boundary in five years. It is proposed to select the local tree species in order to control dispersion of fugitive dust from the mining lease.

The mitigation measures suggested above shall be implemented so as to reduce the impact on environment due to operations of proposed mining activities. In order to facilitate easy implementation, mitigation measures are phased as per the priority implementation. A separate budgetary allocation of the funds is made for the environmental protection measures. The monitoring of the pollution to know the effectiveness of the applied control measures will be carried out at regular interval. A budgetary provision of Rs. 2 lakhs as capital cost.

AN EPILOGUE

In compliance with the environmental procedure the environmental clearance application is made. Necessary scientific studies have been undertaken as per the guidelines set by the Ministry of Environment and Forests (MoEF). The suggestions/recommendations of experts, competent authorities, and government officials are being sought for the impacts of the proposed project. Views and guidance from the local residents, community based organizations, social organizations are extremely important in order to devise a foolproof Environment Management Plan for the proposed mining project and also mitigate the damages caused due to the project. Allocation of necessary funds, manpower and machinery will be made to for the protection and conservation of all the components of environment. It is ensured that all mandatory clearances will be sought from respective competent authorities before operating the proposed Zendepar Iron Ore Mine(12.0 Ha) We are committed to implement the suggestions for the improvement of the environment and assure that every attempt will be made for the conservation and protection of the natural resources to the maximum extent.
