PRE-FEASIBILITY REPORT

OF

PROJECT: REDI IRON ORE MINE

LOCATED AT

REDI VILLAGE, VENGURLA TALUKA, SINDHUDURG DISTRICT,
MAHARASHTRA STATE
OVER AN EXTENT OF 27.452 Ha

OF

PROJECT PROPONENT

MINERALS AND METALS

STREET 34, ASHUTOSH, NEPENSEA ROAD, MUMBAI-36

EIA CONSULTANT

MINERAL ENGINEERING SERVICES

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PRE-FEASIBILITY REPORT

(Prepared for Obtaining TORs under Environmental Clearance)

1. EXECUTIVE SUMMARY

The Lessee, 'MINERALS AND METALS', was granted Mining Lease 'Redi Iron Ore Mine', having an area of 27.4520 Ha., located at Village Taluka Vengurla, District Sindhudurg, State Maharashtra for a period of 30 years from 21/08/1979, i.e. upto 20/8/2009 and in terms of the recent amendment to the Mines and Minerals (Development & Regulation) Act, 1957 in the year 2015, the period of the lease in the respect of the said mine is now valid up to 20/8/2029.

The entire mining lease admeasuring an area of 27.4520 Ha, is Private land. There is no forest land involved in the said Mining Lease.

The lease is in three blocks namely Block 1 (consisting of Block 1A and Block 1B), Block 2 and Block 3. The Block 1 (consisting of Block 1A and Block 1B) forms part of CRZ area, wherein mining activity is prohibited. Block 2 and Block 3 are outside the CRZ area. The area wise detail of the three blocks is as mentioned below:-

Block No	Survey no	Extent In Ha	Remarks
1A	19,20,21	5.840	Falling in CRZ
1B	8	2.531	Falling in CRZ
2	228,224,221, 232(p), 231, 229	11.847	Falling outside CRZ
3	201(p),188,189,196(p)	7.234	Falling out side CRZ
	Total	**27.4520**	

It is pertinent to mention that as per the Coastal Regulation Zone Notification 2011, SO (19), dated 6th January 2011, of Ministry of Environment and Forests, all the mining activities are prohibited in the CRZ area. The Government of Maharashtra is in the process of deleting the CRZ area falling within the Mining Lease.

Geology:

Entire lease area is more or less covered with a thick cap of Laterite. The succession of litho units occurring in the lease area is mentioned below:

Soil	- 0 to 0.3 m (in patches)
Laterite	- 8to 10 m
Limonitic clay	- 4 to 5 m
Iron Ore (Friable and Powdery ore)	- 10 to20 m
Footwall(BHQ/Phyllite)	- Not ascertained

Hematite is the main iron ore bearing mineral. The trend of the ore body and its associated formations are as below:

General strike	:	N 50 -60 ° W
Dip	:	20° to 30° due west in Block 2 and almost flat in Block 3
Thickness of ore	:	True thickness varies from 10 to 20 meters.
Nature of ore	:	The ore in Friable and powdery in nature

Based on surface geological mapping, geological structures and considering existing exploration data the total Reserves and Resources of 3.18 Million Tonnes have estimated with the lease area, out of which around 0.92Million Tonnes Reserves and Resources fall under CRZ (Block 1A and Block 1B). Therefore, the total available Reserves and Resources are 2.26 Million Tonnes (Outside CRZ area) which is further likely to enhance based on the proposed exploration.

Considering annual production capacity of 0.2MTPA and the total available Reserves and Resources of 2.26 Million Tonnes (outside CRZ area) which is further likely to enhance based on the proposed exploration, the life of the mine is estimated around 11 years.

Assessment of the economic viability for this mine with a production target of 0.2 Million Tonnes per annum of iron ore is done and is found to be highly remunerative. There will be maximum demand for iron ore in domestic as well as in foreign market. The project proponent wishes to contribute to socio economic upliftment of the surrounding societies.

All the Environmental protective measures will be undertaken to minimize the impact on soil, air and water due to mining activities. This project will contribute to the State Government in the form of Royalty, District Mineral Fund as well as the other statutory levies and to the Central Government contribution to National Mineral Exploration Trust income tax and Export duty, etc.

2. INTRODUCTION OF THE PROJECT/ BACKGROUND INFORMATION

(i) Identification of project and project proponent. In case of mining project, a copy of mining lease/ letter of intent should be given.

'MINERALS AND METALS' is a partnership firm having its office at Street 34, Ashutosh, Nepensea Road, Mumbai-36. The Lessee was granted Mining Lease 'Redi Iron Ore Mine', having an area of 27.452 Ha., located at Village Redi, Taluka Vengurla, District Sindhudurg, State Maharashtra. The entire mining lease admeasuring an area of 27.452 Ha, is Private land. There is no forest land involved in the said lease.

The Government of Maharashtra was pleased to grant iron ore mining lease for a period of 30 years from 21/08/1979, i.e. upto 20/8/2009 and in terms of the recent amendment to the Mines and Minerals (Development & Regulation) Act, 1957 in the year 2015, the period of the lease in the respect of the said mine is now valid up to 20/8/2029.

Copy of the executed Lease deed is enclosed as Annexure No. I.

(ii) Brief description of nature of the project.

Mining operations will be carried out by the way of mechanized opencast method without drilling & blasting complying with all the statutory requirements. The mining operation is fully mechanized with the use of Heavy earth moving machineries like shovels, dumpers, wheel loaders, tippers along with Rippers and Dozers. The mining operation is carried out during daylight. Rippers & Dozers are being used for ripping of hard material and wheel loaders are used for loading and levelling. The excavation is done by hydraulic excavators of bucket capacity 1.1 to 2.5 cubic meter and hauling of ore and overburden using tippers and dumpers of 10

to 35 Tonnes capacity. Water tankers of capacity of 8000 to 10,000 liters are used for dust suppression. Run off Mine (ROM) is subject to benificiation and only fines and lumps will be sold as per the user requirement. Ore will be transported to Redi port located at a distance of about 4.0 Kms by road with the help of tippers having 10 Tonne capacity.

The overall ore to waste ratio is about 1:2.5 during the Lease period. With the proposed production of 0.2 Million Tonnes per annum, the life of the mine is estimated to about 11 years.

Heavy earth moving machineries like excavators, dumpers, wheel loaders, tippers along with Rippers and Dozers will be used. It is proposed to mine the ore and overburden by forming systematic benches with optimum pit slope of 28-30°. Bench height of 6m and width of 8 to 10m will be maintained. Based on size and capacity of the machinery used, mine approach road and mine haulage road will be maintained with a width of 10-12m. The wastes as well as ore generated are non-toxic and no leachable heavy metals are found. Total waste generated is about 0.5Million Tonnes per annum.

Present Land use is as given below:-

Sr. No.	Head	Present Land Use Pattern (Ha) As on 01/08/2018
1	Area under mining	--
2	Storage for Top Soil	--
3	Overburden dump	-
4	Mineral Storage	Nil
5	Infrastructure (workshop, administrative building, plant etc.)	0.1000
6	Roads	0.5000
7	Railways	Nil
8	Green belt	Nil

9	Tailing pond	Nil
10	Effluent treatment plant	Nil
11	Mineral separation plant	Nil
12	Township area	Nil
13	Others –Balance area	26.852
	Total	**27.4520**

(iii) Need for the project and its importance to the country and or region.

The major usage of iron ore in India is for the manufacturing of steel. The major iron ore producing states are Odisha, Jharkhand, Chattisgarh, Karnataka and Goa. India is world's 4th largest iron ore producer and 3rd largest exporter after Australia and Brazil. As per UNFC system, as on 1.4.2015, India possesses hematite resources of 22487 million tonnes of which are 5422 million tonnes are under 'Reserves' category and the balance 17065 Million Tonnes are under 'Remaining Resources' category. Major resources of haematite are located in Odisha (7559 Million Tonnes or 34%), Jharkhand (5286 Million Tonnes or 23%), Chhattisgarh (4858 Million Tonnes or 22%), Karnataka (2,467 Million Tonnes or 11%) and Goa (1189 Million Tonnes or 5%). The balance 5% are spread in Andhra Pradesh, Assam, Bihar, Madhya Pradesh, Maharashtra, Meghalaya, Rajasthan, Telangana and Uttar Pradesh. Magnetite is another principal iron ore that also occurs in the form of oxide, either in igneous or metamorphosed banded magnetite-silica formation, possibly of sedimentary origin. Iron ore in the Goan region being of low grade, this iron ore is mostly export oriented. Presently the export demand for these ores is slightly lowered, it is only a temporary phenomenon and the export is likely to pick up in the immediate future. Exports of iron ore decreased considerably to 5.4 Million Tonnes in 2015-16 from 7.30 Million Tonnes in the 2014-15. The total demand of iron ore will be around 290 Million Tonnes by 2019-20.

For the present project area the main revenue generating resources are agriculture and iron ore mining. The state will get revenue in terms of taxes and royalty, DMF and the country will be benefited in terms of income tax and export duty and NMET. This will definitely improve the socioeconomics of the region and the country.

The continuation of this mine will boost the economy of the State and improve socio-economic status of the region.

(iv) Demand-Supply Gap.

Years	2000	2010	2020	2040
Finished steel consumption	28	61	120-150	400-530
FSC per capita (kg)	30	50	90-110	260-340
Iron ore requirement	43	100	200-250	700-900
Iron ore exports	33	120	?	?
Iron ore expansion needed	-	-	20-70	480-680

The current mining capacity of iron ore in the country is around 160 Million Tonnes. This capacity can be enhanced, through consolidation of leases, increase in mechanized mines in Maharashtra and other states and improvement in the operating practices of existing mines.

(v) Imports vs. Indigenous production,

India has emerged as the fourth largest miner and the third largest exporter of iron ore. India has currently estimated iron ore resource of about 31000 Million Tonnes. The Iron Ore & Steel Derivatives Association (hereafter referred as IOSDA) expects

India to definitely strengthen its position as a major ore producer. However, it foresees moderation in iron ore exports from India going forward. With a number of steel projects coming on stream in the next one year, IOSDA anticipates a steep increase in internal demand for iron ore. It also opines that India needs to invest in infrastructure in order to develop the industry from a long term perspective. This project has the unique advantage so far as transportation of ore production is considered. It is located at a distance of 4.0Km by road ways to Redi Port. The transportation by sea route will reduce the possible environmental pollution. This area is well connected by road, rails and sea route.

(vi) Export Possibility.

The iron ore produced in the region is of low grade and more moisture content, therefore it is always necessary to export as it cannot be directly used in Indian steel industry. The treatment for up gradation of such ore is always costly. The blending of this low grade ore with high grade ore is also not economical due to the high transport cost. Therefore, export of ore is always promoted.

(vii) Domestic / export Markets.

Due to 30% increase in export duty and higher freight rates on iron ore, the iron ore exports have come down sharply. According to Barclays Research, India's iron ore production is likely to fall at a Compound Annual Growth Rate CAGR of 3.8% over FY15-16. As the demand is set to grow at 8% during the same period, India is positioned as a net importer of iron ore from being the third-largest player in the global seaborne market.

(Viii) Employment Generation (Direct and Indirect) due to the project

The mining establishment presents opportunities of employment to the numerous people under various cadres (Highly skilled, skilled, semiskilled & unskilled). The qualifications of various technical personnel will be in accordance with the various statutory stipulations applicable to the mines.

The details of personnel proposed to be deployed directly for mining operations are as given below:-

Sr. No.	Category	No of Manpower
1	Highly Skilled	06
2	Skilled	15
3	Semi-Skilled	30
4	Un-Skilled	10
	Total	61

In addition to above direct employment about 150 person shall be employed indirectly, thus a total of about 1000 persons will be beneficiary of this project.

3. PROJECT DESCRIPTION

(i) Type of project including interlinked and interdependent projects, if any.

Project description is already furnished under item 2(ii) and it is not an interlinked project.

(ii) Location (map showing general location, specific location, and project boundary & project site layout) with coordinates.

The project area falls under Topo sheet No. 48 E/9. Latitude: 15° 45′ 00″

Longitude: 73° 40′ 00″ . Details of location of mine is furnished under item 2 (i) above. Toposheet. plan showing project area is enclosed as **Annexure II.**

(iii) Details of alternate sites considered and the basis of selecting the proposed site, particularly the environmental considerations gone into should be highlighted.

Mining, being always a site specific project, selection of alternate site for the project is not applicable.

(iv) Size or magnitude of operation.

Present production capacity of the project is 0.2 Million Tonnes/annum of iron ore with a stripping ratio of 1:2.5. till the end of the lease period and same will be maintained throughout the plan period. Proposed production and development will be carried out as per the Approved Mining Plan by concerned authorities.

(v) Project description with process details (a schematic diagram/ flow chart showing the project layout, components of the project etc. should be given)

Project description is furnished under item 2 (ii).

(vi) Environmental Protection

Mining activities such as excavation, loading, unloading and haulage of ore and waste, lead to the generation of dust. Expected total waste handling shall be about 0.5 Million Tonnes Per Annum. Considering total material handling vis-a-vis environmental protective measures undertaken, the concentration of air pollutants at any given time, shall be within the permissible limits.

The following preventive measures are being undertaken and will be continued in future.

1. Regular water spraying by water tankers on mine haul roads and other dust prone areas.
2. Development of plantation along the roads, dead slope of waste dumps etc.
3. Prevent overloading of tippers to avoid spillage on the road. Also transport tippers are covered with tarpaulin, free board is maintained above the line and leak proof tailgate will be provided.
4. Air quality will be monitored regularly as per the CPCB/ MoEF & CC guidelines.
5. Regular check and maintenance of mining machinery and equipment as per manufactures norms with regular PUC for transport vehicles.

6. Avenue plantation and use of state of the art of machinery and enclosure to the mobile screening plants reduces the noise pollution. Drilling and blasting operations are replaced with use of ripper dozer.

Drilling & blasting operation will be replaced with Ripper Dozer to avoid noise pollution and blasting induced ground vibrations. The state of the art machinery will be used for the mining operations. Regular maintenance of the machinery is of prime importance, thus maximum noise produced from operation of Heavy Earth Moving Machineries & movement of dumpers at source will be within the permissible limits. No negative impact due to noise pollution are anticipated on the nearest villages.

Ground water levels are regularly monitored from the open wells located in the vicinity of the Mining lease.

Hydrological study will be carried out for this mine. Also, the ground water and surface water will be regularly monitored to know the impact of mining on ground water in buffer zone.

By adopting the above precautionary measures, majority of silt is settled/arrested in the settling ponds and clean water will be discharged from the mine. The discharged water quality will be monitored regularly.

Suspended solids are the major water pollutant generated due to the mining activities and to control the suspended particulate matter in the water following measures are adopted.

1. garland drains, laterite bunds to arrest silt going out of the lease area will be constructed and maintained
2. Series of filter beds will be made across the trenches

3. Dumps will be made with appropriate slopes and heights.
4. Whenever necessary dumps will be covered with silpaulin to prevent runoff.
5. Retention ponds will be constructed wherever necessary along the water course.

In Redi Village and surrounding areas, the main revenue generating sources are agriculture and mining. With the reopening of this mine, financial status of villagers, improvement in literacy rate by improving the schooling facility, improvement in the health status by establishing health care units, & health camps in the villages improvement in infrastructure by repair & maintenance of village roads, establishment of business center near to the project site are expected.

The mining lease does not have any thick vegetation and the flora and fauna present within the lease is not of significant. The area could not be used for breeding, nesting, foraging, resting, over wintering, migration for breeding, nesting, foraging, resting, over wintering, migration. Shrubs and bushes grow sparsely.

Anacardium occidental (Cashew) plantation, being cash crop, is observed in abundance in the buffer zone. The other predominant trees seen are *Acacia Catechu* (Khair), *Casurinaequsitefollia.* Casurina and Acacia species in the unbroken core zone area. In the buffer zone, cultivation of banana, Cashew, Coconut, Paddy are seen. Other predominant tree species are Mango, Coconut, *Bombax ceiba, Ficus bengalensis,* Phanas, Terminalia species.

The fauna observed were house lizard, garden lizard, lizard, cobra, Kraits, Pit viper, Fresh water snake, Frog, Honey bee, ants, spiders, king vulture, house crow, Rock pigeon, Indian oriole, Bhramy myna, Weaver bird, Indian cukoo & little egret etc., which are common fauna.

Since the flora & fauna observed within the Mining lease are all common varieties and the forest area is far-off separated by cultivated land, water courses and residential villages, there shall be no loss of native species or genetic diversity. The locally identified tree, grass & shrub species will be rehabilitated as far as possible and there shall be no negative impact over these forest areas.

The protective measures, e.g. trenches, garland drains will be constructed to arrest the silt during the monsoons. Afforestation will be carried out for the stabilization of the dumps. About 500 sapling are proposed to be planted every year. The actual location of proposed plantation will be decided at the time of plantation depending upon the survival rate at earlier planted area.

(vii) Raw material required along with estimated quantity, likely source, marketing area of final product/s, Mode of transport of raw Material and Finished Product

Project involves extraction of iron ore and no raw material is required. Run of Mine(ROM) is subjected to dry processing and only finished product is transported to Redi Port located at a distance of about 4.0 Kms by road with the help of tippers having 10 tonne capacity. Further it is sold to national buyers or exported to internationally to prospective buyers with grades as desired.

(viii) Resource optimization/ recycling and reuse envisaged in the project, if any, should be briefly outlined.

Entire Run of Mine (ROM) is subjected to beneficiation and finished product will be sold to local buyers or exported to different countries as per market conditions.

(ix)Availability of water its source, Energy/ power requirement and source should be given.

There are no perennial water streams or nallahs existing within the lease area. Major quantity of the monsoon water will be diverted to collect in the pit and same is pumped out and used for mining operations such as dust suppression, afforestation and other auxiliary activities. The machinery used in the mine are run by diesel. About 3000 KL of HSD per month is required.

(x) Quantity of wastes to be generated (liquid and solid) and scheme for their Management/disposal.

Quantity of Wastes to be generated are furnished under item 3.0(iv) Further details on waste management is already furnished under items 2(ii).

(xi) Schematic representations of the feasibility drawing which give information of EIA purpose.

A Surface plan of mining lease period is enclosed as **Annexure III.**

4. SITE ANALYSIS

(i) Connectivity.

The mine is located at a distance of 20 kms from the Vengurla, major Town in the area. The District Headquarter, Oros is at a distance of 60Km. The nearest Railway station 'Sawantwadi Road' is about 20 km (by road) away in the Konkan Western Railway Zone.

(ii) Land Form, Land use and Land ownership.

Present existing Land use is already furnished under item 2 (ii).

(iii) Topography (along with map).

The said Mining Lease is in three blocks namely Block 1(consisting of Block 1A and Block 1B), Block 2, and block 3. Out of the three blocks, Block 1(consisting of Block 1A and Block 1B) is falling under CRZ and the other two blocks falls outside the CRZ. The western and eastern part is relatively flat, while the central part is along the slope of the plateau. The area is about 28m above the MSL. The highest contour is 28m and the lowest is 8m. No specific drainage pattern is observed in the area.

(iv) Existing land use pattern (agriculture, non-agriculture, forest, water bodies (including area under CRZ), shortest distances from the periphery of the project to periphery of the forests, national park, wild life sanctuary, eco sensitive areas, water bodies (distance from the HFL of the river), CRZ. In case of notified industrial area, a copy of the Gazette notification should be given.

The entire mining lease admeasuring an area of 27.4520 Ha, is Private land. The lease is in three blocks namely Block 1(consisting of Block 1A and Block 1B), Block 2 and Block 3. The Block 1 (consisting of Block 1A and Block 1B) forms part of CRZ area, wherein mining activity is prohibited and Block 2 and Block 3 are outside the CRZ area. There is no forest area or Eco Sensitive area are located within the Mining Lease area.

It is pertinent to mention that as per the Coastal Regulation Zone Notification 2011, SO (19), dated 6th January 2011, of Ministry of Environment and Forests, all the mining activities are prohibited in the CRZ area. The Government of Maharashtra is in the process of deleting the CRZ area falling in the Ming Lease.

Present existing land use is as given below.

Sr. No.	Head	Present Land Use Pattern (Ha) As on 01/08/2018
1	Area under mining	--
2	Storage for Top Soil	--
3	Overburden dump	-
4	Mineral Storage	Nil
5	Infrastructure (workshop, administrative building, plant etc.)	0.1000
6	Roads	0.5000
7	Railways	Nil
8	Green belt	Nil
9	Tailing pond	Nil
10	Effluent treatment plant	Nil
11	Mineral separation plant	Nil
12	Township area	Nil
13	Others -Balance	26.852
	Total	**27.4520**

(v) Existing Infrastructure

The existing road will be utilized for the transportation of ore to the jetty.

(vi) Soil classification

Most of the mineral bearing area is rocky area, hence presence of top soil is within the proposed mining area will be negligible.

(vii) Climatic data from secondary sources,

Tropical conditions prevail in the area. The area experiences three seasons viz. Summer (March to May), Rainy season (June to October) and Winter (November to February). The temperature varies from a minimum of about 20°C during winter to a maximum of 36°C during summer. Relative humidity has been seen between a minimum of 51% to a maximum of about 96% during the year. Average wind velocity has been observed around 0.3 Km/hr with the predominant wind direction being in the NW-SE.

(viii) Social Infrastructure available.

There exists few houses on the North eastern corner of the lease. Within the buffer zone of 10 km radius around this mining lease, there are 18 villages with a total population around 30038 (Census 2011). The main occupation here is agriculture. Additionally, majority of the people depend upon mining and related activities such as direct employment, transportation, garage, shops etc.

With this proposed opening of the mine there will be slight increase in employment opportunities and other auxiliary service industries indirectly there by increasing the financial status of villagers, improvement in literacy rate by improving the schooling facility, improvement in the health status by establishing health care units, & health camps in the villages, improvement in infrastructure by

repair & maintenance of village roads, establishment of business center near to the project site are expected.

(ix) Cultivation

Entire mining lease area is a private land and most of the area is utilized for mining and allied activities. Shrubs and bushes grow sparsely on the unutilized areas. In and around the buffer zone there are a few other mining leases. The villagers are mainly cultivators, agricultural labourers, household industry and other workers. The buffer zone of the Mining Lease is found to contain mainly plantations of cash yielding crops like cashew, coconut, jackfruit, Mango, etc., a typical characteristic landscape of coastal area.

5. PLANNING BRIEF

(i) Planning Concept (type of industries, facilities. transportation etc) Town and Country Planning/Development authority Classification

Project description is furnished under item 2 (ii).

(ii) Population Projection

This mine shall provide employment for about 150 people by both direct and indirect employment.

(iii) Land use planning (breakup along with green belt etc).

Proposed Land use at the end of the Plan Period is given below.

Sr. No.	Head	Present Land Use Pattern (Ha) As on 01/08/2018	Conceptual Land Use
1	Area under mining	--	7.336
2	Storage for Top Soil	--	-
3	Overburden dump	-	1.5788
4	Mineral Storage	Nil	Nil
5	Infrastructure (workshop, administrative building, plant etc.)	0.1000	0.1000
6	Roads	0.5000	0.5000
7	Railways	Nil	Nil
8	Green belt	Nil	Nil
9	Tailing pond	Nil	Nil
10	Effluent treatment plant	Nil	Nil
11	Mineral separation plant	Nil	Nil
12	Township area	Nil	Nil
13	Others (to be specified)	26.852	17.9382
	Total	**27.4520**	**27.4520**

Due to the restrictions on dumping outside the Mining Lease area, the temporary dumping/backfilling of waste will be carried out within the Lease.

(iv) Assessment of Infrastructure Demand (Physical & Social),

The road facility is already available which shall be used and maintained. The labor requirement is drawn from the nearby villages. Housing complex is not required as the staff and the labor stay at nearby villages. Other infrastructure like office, rest room etc are already existing.

(v) Amenities/Facilities.

Facilities for road transport is available. Communication facilities with Mobile telephone service are available at site and landline service is provided. Other amenities for workers and staff like canteen, dispensary, drinking water facility, toilets, First Aid Room will be provided.

6. PROPOSED INFRASTRUCTURE

(i) Industrial Area (Processing Area).

The present project of the mining lease area of 27.452 Ha. The lease is in three blocks namely Block 1(consisting of Block 1A and Block 1B), Block 2 and Block 3. The Block No. 1 (consisting of Block 1A and Block 1B) forms part of CRZ area, wherein mining activity is prohibited and Block 2 and Block 3 are outside the CRZ area. There is no forest area located within the Mining Lease area.

The mine will be operated by means of opencast fully mechanized method. Rippers & Dozers are being used for ripping of hard material, loading the broken material by heavy machinery like hydraulic excavators.

The Run of Mine (ROM) produce will be subjected to beneficiation and the finished products, fines and lumps will be sold as per the user requirement and tippers are used for transporting the Iron Ore.

(ii) Residential Area (Non Processing Area).

There exists some houses along the northern boundary of the Mining Lease area. However, the mining operations are not planned in this area.

(iii) Green Belt.

During the lease period the proposed afforestation will be carried out to fill up the gaps in the areas of existing plantation and also along the 7.5m safety barrier wherever feasible. About 500 saplings are proposed to be planted every year.

(iv) Social Infrastructure.

This mine provide employment for about 150 people by both direct employment and indirect employment. The lessee shall extend social benefits like drinking water, health care measure, HIV awareness programs, promotion of cultural & religious activities, sports and training in self-employment scheme, to the neighboring villagers in addition to his own employees. Employment of local people – preference will be given to local people for employment. Repair & maintenance of the transportation roads, maintenance of school buildings, awarding scholarships for higher studies to meritorious students, supply of free books & uniforms to the students shall be taken up.

(v) Connectivity (Traffic and Transportation Road/ Rail/Metro/Water ways etc)

The existing mining lease is well connected by road to mine and port.

(vi) Drinking Water Management (Source &Supply of water)

Drinking water to office and canteen will be supplied by drawing it from well water in the nearby areas through contractor.

(vii) Sewage System.

No sewage is generated from the mine. The waste water generated during the washing and maintenance of machineries will be treated in Eco Tanks and will be recycled for washing. The domestic waste water will be treated in the septic tank and soak pit.

(viii) Industrial Waste Management.

No industrial waste is generated from the mine.

(ix) Solid Waste Management.

The wastes as well as ore generated are non-toxic and no leachable heavy metals are found. Total waste generation will be about 0.5 million tonnes per annum. Due to the restrictions on dumping outside the Mining Lease area, the temporary dumping/backfilling of waste will be carried out within the Lease. Based on the result of the future exploration data, during conceptual plan period, backfilling may be carried ou,t after fully exhaustion of the ore body.

The worked out pit at the end of plan period shall be 7.366 ha.

(x) Power Requirement & Supply / source.

DG sets are used for Mine office. Solar lights are used for street lighting is within the office and workshop premises. Diesel Fuel is used by Heavy Earth Moving Machineries, like excavator, loader and transport vehicles etc.

Fuel:3,200 liters/day

Energy: 15.00KWH /day

Out of this required 19.00KWH/day, about 3.635KWH/day shall be sourced from the solar energy, rest will be sourced from Government Power Supply.

7. REHABILITATION AND RESETTLEMENT (R&R PLAN).

(i) Policy to be adopted (Central/State) in respect of project affected persons including home oustees, land oustees& landless labor (A brief outline to be given)

There exists some houses along the northern boundary of the Mining Lease area. However, the mining operations are not planned in this area.

8. PROJECT SCHEDULE AND COST ESTIMATES

(i) Likely date of start of construction and likely date of completion (Time schedule for the project to be given).

'Redi Iron Ore Mine' is valid upto 20/08/2029. Mining operations shall commence on obtaining EC from MoEF& CC and other statutory clearances.

(ii) Estimated project cost and along with analysis in terms of economic viability of the project

Existing project

The total capital cost for the project is furnished below:

i. Building (land, office & statutory buildings& rents) .....Rs. 50 lakhs

ii. Plant & Machinery including transport vehicles and

Screening plant ..... Rs. 600lakhs

Total ..... Rs. 650 lakhs

(ii) Estimated project cost along with analysis in terms of economic viability of the project:

It is proposed to produce 0.2 MTPA of iron ore from this project. The estimation of project cost along with economic viability of the project is given as below

Parameters:

1) Mineable resources : 2.26 million tonnes of iron ore reserves of proved & probable category
2) Nature of ore : Iron ore (Haematite) (45 to 62 % Fe)
3) Production : 0.2 Million Tonnes/ annum
4) Ore to waste ratio average : 1 : 2.5

Parameters	Unit	Values
Production of Iron Ore per annum	Tonnes	2,00,000
FOB Price (Average for the Year)	USD / DMT	33.00
Moisture		13%
Exchange Rate (Average for the Year)	INR/USD	68.00
FOB Price		
FOB Price [USD / DMT]	:	33.00
FOB Price [INR / DMT]	:	1952.28

COSTS CALCUALTIONS (INR/MT)		
Particulars		Values (In INR/MT)
District Mineral Fund	:	60.0
National Mineral Exploration Trust	:	4.0
Mining Cost	:	750.0
Mining Royalty	:	200.0
Transportation Cost	:	150.0
Jetty handling costs	:	75.0

Barge Freight	:	100.0
Ship loading costs	:	174.1
Sampling and Analysis	:	15.0
Safety and Environment		80.00
R& R		40.00
CSR		50.00
Misc Costs	:	103.0
Handling loss		35.0
Total Costs (FOB)/MT	:	**1836.1**

Profit (Rs.) /Tonne = Revenue-Total Cost

=1952.0-1836.0

Profit (Rs.)/Tonne=116.0

Net Profit (after Taxation 35%)= Rs. 75.4/-

Net Profit for 0.2MTPA=1.5Cr.

The above shows that the proposed mining activity of production of 0.2 MTPA of iron ore for this mine is highly remunerative after meeting direct mining costs, environmental costs, cost on health & safety, socio economics, compensation for land, capital & R&D costs.

Considering the above cost profit ratio, the proposed mining in 'Redi Iron ore Mine', at the production rate of 0.2 Million Tonnes per annum of iron ore is remunerative after meeting all the expenditure towards the mining, environmental measures, Health and Safety, Socioeconomic affairs, Compensation of land, Capital costs and R & D costs.

FOR MINERAL ENGINEERING SERVICES

(M.S. RAJU)

EIA Consultant

Place:Bellary
Date: 29.04.2018