

PRE-FEASIBILITY REPORT

PROJECT: REDI IRON ORE MINE

LOCATED AT

**REDI (MHARTALE, KANYALE AND BOMBADOJIWADI) VILLAGE, TALUKA
VENGURLA, SINDHUDURG DISTRICT, MAHARASHTRA STATE**

PROJECT PROPONENT

**M/s. GOGTE MINERALS
146, TILKAWADI, BUDHWARPETH, BELGAVI, KARNATAKA-590006**

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PRE-FEASIBILITY REPORT

(Prepared for Obtaining TORs under Environmental Clearance)

1. Executive Summary

Redi Iron Ore Mine (Block- I) of M/s. Gogte Minerals (having its registered office at Belgavi, Karnataka), situated in the Redi (Mhartale, Kanyale & Bambadojiwadi) Village, Vengurla Taluka, Sindhudurg District, Maharashtra.

The mining lease is valid up to 11-01-2056. The total extent of the mining lease area is 94.7060 Ha which is a private land.

The mine is well connected by road and rail. Village Redi located at about 2km distance in NWW direction and is connected to Ajsaon - Terekhol Road. The nearest Railway Station is Sawantwadi Road located at a distance of 20Km and the nearest airport is Dabolim Airport, Goa at a distance of 70 Km from the Mining Lease. Redi port is located at about 1.15 Km in NNW direction from the Mine Lease Boundary.

The topography of the area is undulating having the main ridge running almost east-west and sloping towards north and south, north western end of the lease ends in a valley. Shiroda creek is beyond 520m from the lease boundary. A water reservoir is located at south eastern part of the lease area, called Kanyal tank at a distance of 0.25Km from the Mine Lease Boundary.

The Environmental Clearance (EC) was granted for a production of 0.368 MTPA of iron ore from the mine vide letter no. J-11015/1045/2007-IA.II(M) dt 22nd April 2010 and the operations started after obtaining all the other necessary approvals/permissions.

The small area of Mining Lease towards western part falls under CRZ (Coastal Regulation Zone). The Lessee has obtained the CRZ clearance from Maharashtra Coastal Zone Management Authority (MCZMA), Mumbai vide letter no, and MCZMA 2009 / CR 73/TC-3 dated 06.01.2010. As per the condition in the said CRZ clearance the mining operations are restricted to Non-CRZ area only. Copy of the Environmental Clearance and MCZMA is annexed as Annexure I.

The Lessee intends to increase the production capacity from its present level of 0.368 Million Tonnes per annum to 1.1 Million Tonnes per annum and also the annexation of an area of 12.9628Ha falling in Survey No. 49 (Mhartale Village) and 45B (Kanyal Village), solely for the purpose of dumping the waste/overburden. The additional land of 12.9628Ha area is granted by the Industry, Energy and Labor Department, Govt. of Maharashtra, vide letter dated 20/04/2018 for the waste/overburden dumping. Further, the Lessee is also in process of obtaining additional areas by way of annexation from Government of Maharashtra for the purpose of dumping of waste/overburden. Copy of the order is attached as Annexure II.

This enhancement is considered expedient because of increase in operating cost and changes occurring in the business environment. By enhancement of the production capacity the overall cost of the said mine will be reduced and thus, the resources will be optimized.

Opencast mechanized mining method is adopted for the purpose of exploitation of mineral. The mining operations are fully mechanized by deploying Heavy Earth Moving Machineries like Rippers and Dozers, shovels, dumpers, wheel loaders, and tippers. As the ore body is consistent at Redi mine, there is less probability of the ore getting mixed with the overburden or inter-burden while mining. No processing loss, as Iron ore produced is dry screened by deploying mobile dry screening plants and products are lumps(+10/40mm),and fines (-10mm), and hence the ore recovery is considered as 100%.

All the recommended environmental protective measures including dust suppression, water treatment, water conservation, soil conservation and afforestation are being undertaken to mitigate with the impacts caused by mining activities. Modern techniques in pit dewatering, dust suppression, waste management, afforestation, backfilling, and land mitigation are carried out.

Assessment of the economic viability for this mine with a production target of 1.1 Million Tonnes per annum of iron ore is done and is found to be highly remunerative with a net profit of Rs. 23.7 Crores/annum. There will be maximum demand for iron ore in foreign as well as in domestic market. The project proponent wishes to contribute to socioeconomic upliftment of the area. The Workers and surrounding villagers are not exposed to any extreme or hazardous environment. This project contributes to the State Government with Royalty and other taxes and to the Central Government with income tax and export duty, etc.

The rapid expansion of the steel sector is resulted into increase in domestic demand for iron ore. The lessee has planned to contribute to meet this demand to the extent possible. This will add to the overall economic growth of the region and the country and thereby reduce the demand & supply gap in the country

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.

M/s Gogte Minerals is a Partnership Firm, having its corporate office at 146, Budhawarpeth, Belagavi – 590006, Karnataka, Phone Number: (office) 0831-2407755, 2407756, 2426187,2468917, Mobile Number :9448191587,

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Redi Iron ore Mine of M/s. Gogte Minerals, over an extent of 94.7060 ha which is a private land located in the Redi Village (Mhartale, Kanyale & Bambadojiwadi), Vengurla Taluka, Sindhudurg District, Maharashtra.

The Lessee intends to increase the production capacity from its present level of 0.368 Million Tonnes per annum to 1.1 Million Tonnes per annum and also the annexation of area of 12.9628Ha falling in Survey No. 49 (Mhartale Village) and 45B (Kanyal Village), solely for the purpose of dumping waste/overburden. The additional land of 12.9628Ha area granted by the Industry, Energy and Labor Department, Govt. of Maharashtra, vide letter dated 20/04/2018 for the waste/overburden dumping. Further, the Lessee is also in process of obtaining additional areas by way of annexation from Government of Maharashtra for the purpose of dumping of waste/overburden.

The copy of the Mining Lease deed is attached as Annexure III.

(ii) Brief description of nature of the project.

Mining operations is by way of **mechanized opencast method without drilling & blasting complying with all the statutory requirements.**

Out of the entire lease area of 94.7060 Ha., about 37.6854Ha is mineralized. Out of this mineralized 37.6854Ha.area, 28.6556 Ha has been covered under G1, 3.5714 Ha under G2 and 5.4584 Ha under G3 scale of exploration. The Mining lease is

already been explored by drilling 94 nos. of boreholes with cumulative depth of 7619.91m. We have proposed 7 no of boreholes for further augmentation of mineral reserves & resources during the Plan Period. Based on the exploration results further drilling will be planned. Reserves have been updated after incorporating data of already drilled core boreholes and recently updated geological plan. The total Mineral Resources estimated as on 01.01.2020 is 22.205 Million Tonnes. With the rate of production of 1.1.MTPA, the expected life of the mine will be 21yrs.The life of the mine may get extend with the increase in resources by future exploration to be carried out. The overall ore to waste ratio is about 1:2.5.

The mining operations is fully mechanized with the use of Heavy earth moving machineries like Rippers and Dozers, shovels, dumpers, wheel loaders, and tippers. The mining operation is carried out in two shifts. Rippers and 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 bucket capacity of 2.45 cubic meter and hauling by 25 to 35 Tonnes capacity dumpers and 10 tonner tippers. Water tankers of capacity of 8000 to 10,000 liters are used for dust suppression. Redi Port is at a distance of about 1.15 km by road from the lease boundary. Finished product (Lumps & Fines)/ROM is sold to the domestic buyer for further export or domestic consumption. The ore transportation by the buyer is being done by tippers with the capacity of 10Tonnes as well by dumpers with higher capacity.

As per the recommendations in the geotechnical slope stability study conducted by the National Institute of Rock Mechanics, an autonomous research institute under the aegis of Ministry of Mines, Government of India, that mine will be worked by forming systematic benches in ore and overburden maintaining a maximum optimum pit slope 26°-30°.

The height of the benches maintained will be 6 meters and width will vary between 8 to 11 meters. Based on size and capacity of the machinery, mine approach road and mine haulage road with a width of 11 meters and with an average gradient of 1:16 will be maintained. The mining operations will be carried out in two shifts.

During the plan period of 01-12-2019 to 31-03-2021, mining activities will be confined carried out in the existing working pit upto -66 m RL. As per the recommendations in the geotechnical slope stability study, the ultimate working pit limit will be in existing pit with lateral expansion upto Pit level -90m RL.

Redi Iron ore Mine (block I) of M/s Gogte Minerals shares common boundary along its Northern side of the Mining Lease with the iron ore Mining Lease of M/s Minerals & Metals. Lessee has an understanding with M/s Minerals and Metals for obtaining common boundary working permission from DGMS to extend workings up to the respective Mine boundaries.

The existing waste dumps within the Mining Lease occupy about 28 Ha. area. During the plan period of 01-12-2019 to 31-03-2021, the 2.3 Million Tonnes of waste will be generated which will be dumped extending the existing dumps. During the next five years plan period, the rejection will be dumped extending existing dumps as well as in the area annexed for dumping. Each stage will be of 10 meter height and width of 10 meter, overall dump slope of 25° will be maintained.

There is no change proposed in mining methodology. Heavy earth moving machineries like shovels, dumpers, wheel loaders, tippers along with Rippers and Dozers will be used.

Present existing Land use and Proposed Land use at the end of the Plan period is as given below in Table No.1

Table No.1
Land Use Pattern

Sr. No.	Land Use Category	Present land use as on 01-12-2019 (area in Ha)	Land use at the End of Plan Period As on 31-03-2021 (area in Ha)
1	Area under Mining (Open Pit Area)	30.4080	32.2176
2	Waste dump site	28.4352	31.3824
3	Backfilling	-	-
4	Mineral Storage	03.2278	3.0636
5	Infrastructure (workshop, administrative building etc.)	02.2024	2.2024
6	Roads	02.1186	1.8279
7	Others : environment protection measures	3.1782	2.7755
8	Un utilized area	25.1358	21.2366
	Total	94.7060	94.7060

The land use shown above is planned considering the available reserves. The future land use will be planned considering the results of the exploration.

At the conceptual plan period, it is proposed to reclaim and restore the mined out land with backfilling and afforestation of the suitable local fruit bearing species. The Environmental Protective Measures like rubble wall, Series of settling tanks, trenches etc. will be undertaken. The part of the open pit will be kept as water reservoir as a source of water for the Villagers for drinking as well agriculture purpose.

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. Exports of iron ore decreased considerably to 5.4 Million Tonnes in 2015-16 from 7.30 Million Tonnes in the 2014-15.

In spite of the current turmoil, Indian GDP is expected to grow in multitudes and reach around \$ 27 trillion by 2050. Infrastructural development will play an instrumental role in achieving this GDP level It is an undeniable fact that steel plays a pivotal role particularly in reference to the infrastructural sector In this context, the production of 500 MT of steel is an imperative by 2050 and for this 640 MT of iron ore per annum is required India will need at least 200 MT of Steel by 2020. This calls for wise use of our limited resources and to strategically plan for the future to meet the imminent demand, when it finally arrives In India, the per capita steel consumption of 55 kgs remains very low, compared to the international average of 190 kgs and China's average of 400 kgs. There exists a great prospect for a much higher investment into capacity addition in the country Increase in steel capacity addition will fuel up the demand for iron ore in the country. Rural per capita steel consumption set to rise Steel to drive Construction & Infrastructure sector. In Maharashtra State, the total Iron Ore Resources are 294103000 Tonnes. There are

8 working mines in Sindhudurg District which have produced 868328 Tonnes in the year 2016-17.

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. This mine shall provide employment for about 1000 people by both direct employment which include mine officials, skilled, semi skilled and unskilled labour and indirect employment, in contractual works for the local villagers. The lessee shall extend social benefits like drinking water health care measure, educational benefits to the neighboring villagers in addition to his own employees. Further, this project is expected to yield a positive impact on the socio-economic environment of the region. It helps in sustainable development of this area including further development of physical infrastructural facilities.

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

(iv) Demand-Supply Gap.

IRON ORE SUPPLY DEMAND SCENARIO IN INDIA (2000 -2040)

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 1.15Km 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.

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 toposheet No. 48 E/10 covering Latitude N 15°38'18.59" to 15° 38'54.08" and Longitude E 73°52' 29.7" to 73° 53'16.046". Details on location of mine is furnished under item 2 (i) above. Location Plan showing project area is enclosed as Annexure IV.

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

This is an existing working mining lease. 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 at a rate of 0.368 MTPA. We have proposed for the expansion in production from 0.368MTPA to 1.1MTPA and also the annexation of area of 12.9628Ha falling in Survey No. 49 (Mhartale Village) and 45B (Kanyal Village), solely for the purpose of dumping waste/overburden. The additional land of 12.9628Ha area granted by the Industry, Energy and Labor Department, Government of Maharashtra vide letter dated 20/04/2018 for the waste/overburden dumping.

Based on the present geological mapping and exposed geology and considering 94 nos. of boreholes drilled with cumulative depth of 7619.19m, the reserves has been estimated 22.205 MT which likely to be enhanced with the additional exploration proposed in the Mining Plan.

With the rate of production of 1.1.MTPA the expected life of the mine will be 21yrs. The life of the mine may get extend with the increase in resources by future exploration to be carried out. The ore to waste/overburden ratio will be maintained as 1:1.15 for the first year and thereafter overall ratio will be maintained as 1:2.5.

Based on the available reserves resources and considering the proposed rate of production, the conceptual production has been planned accordingly and the same is as given below in Table No.2:-

Table No.2
Production and Development Plan

Period	ROM (Million Tonnes)	Waste/Overburden (Million Tonnes)
2020-21	1.1	1.266
Block 2021-2026	5.5	13.75
Block 2026-2031	5.5	13.75
Block 2031-2036	5.5	13.75
Block 2036-41	4.605	11.5125
Total	22.205	54.0285

(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 handling shall be about 3.85 Million Tonnes per Annum. Considering the quantum of work and adopted environmental protective measures, the concentration of air pollutants level projected at any one time, shall be within the permissible limits.

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

1. Regular water spraying by water tankers on mine haul roads and other dust prone area.
2. Development of plantation along the roads, dead slope of waste dumps, around the building etc.
3. Prevent overloading of ore carrying tippers to avoid spillage on the road. Also transport tippers are ensured covered with tarpaulin, free board is maintained above the line and the leak proof tailgate is provided.
4. The regular Air quality is monitored as per the CPCB/MoEFCC guidelines.
5. Regular check and maintenance of mining machinery and equipment as per manufactures norms with regular Pollution Under Control Certificate (PUC) for transport vehicles
6. Avenue plantation and state of art of machinery, enclosure to the mobile screening plants, reduces the noise pollution. Drilling and blasting operations are replaced with ripper and dozer.

Drilling & blasting operation is replaced with Ripper and Dozer to avoid noise pollution and the blast induced ground vibrations. The state of art of machinery is used for the mining operations. The regular maintenance of the machinery is of

prime importance, thus the maximum noise produced from operation of Heavy Earth Moving machineries & movement of dumpers at source is within the permissible limits. No negative impacts due to noise pollution are anticipated on the nearest villages.

The plantation is carried out in the monsoon. The dead dumps are stabilized with the plantation. From the year 2010-11 to till date about 49530 saplings have been planted covering an area of about 19.1Ha. The local species and fruit bearing species such as Cashew, Jamun, kokum are planted. Also about 11000 slips of the *vetivera* grass are also planted on dump slopes. The dead dumps are covered with geotextile before the monsoon. Grass seeds of *Styranthus hamata* are spread over these dead dumps covered with geotextile. At some places embankment of the dead dumps are planted with vetiver grass slips. In the monsoon 2019, about 10000 saplings of fruit bearing and local species are planted. Sustained scientific post plantation care such as regular manuring & other improvised practices will be adopted for maximum survival of the plant.

Ground water level is regularly monitored establishing the network of piezometers along the periphery of the Mining Lease. The ground water level of the open dug wells located around the Mining Lease is also monitored periodically. The results reveal that there is no major fluctuation in Ground water level. Ground water level observed in the core zone is at 5.93 mRL during pre-monsoon season and 4.72 mRL in post monsoon as per the observations made season-wise. Mining operations will not be carried-out during monsoon.

We have obtained the NOC from the Central Ground Water Board vide its letter no. CGWA/NOC/MIN/ORIG/2019/5865, dated 13/08/2019 for the withdrawal of groundwater from the open Mine pit. The approved quantity for the discharge of ground water is 4010m³/day.

During monsoon, entire rain water is diverted to open mine pit. The rain water accumulated into the pit along with ground water will be pumped out with three

electrical and two diesel pump of 500 m³/hr capacity each pumps to enable to work below the ground water level. The pit acts as ground water recharge pit and also used to supply the water to the villagers.

On request of the villagers and the Village panchayat, water from the pits is pumped out and supplied during the fair season to the farmers for agriculture and to the villagers for drinking purpose. The lessee has set up the state of art water treatment plant outside the mining lease area to treat the pit water and to supply safe drinking water to the villagers. The part of accumulated water also used for dust suppression and ground water recharge purpose. The details are given below in Table No.3:

Table No.3
Gainful Utilization of Water

Sr. No.	Particulars	Water utilization M ³
1	R. O. Plant	168000
2	Green belt	9600
3	Dust suppression	108000
4	Agriculture	1559807
5	Ground water recharge (Kanyal tank)	960000
6	Evaporation 5%	147653
	TOTAL	2953060

Balance pumped out water is let out into the natural drain after passing through the series of settling tanks. Lime and flocculants are added in the settling tanks at regular intervals. By adopting the above precautionary measures, majority of silt is settled/arrested in the settling ponds and clean water is discharged from the mine. The discharged water quality is monitored regularly. All the parameters are found well within the permissible limits as per the EPA 1986 standards.

(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 1.6 Km by road with the help of tippers having 10 Tonne capacity. Further it is sold to local buyers or exported to Japan, China and other prospective buyers with grades as desired by the buyers. Domestic

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

As the ore body is consistent at Redi mine, there is less probability of the ore getting mixed with the overburden or inter-burden while mining. No processing loss, as Iron ore produced is dry screened by deploying mobile dry screening plants and product is lumps(+10/40mm) , and fines (-10mm). Hence, the ore recovery is considered as 100%.

(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 project area. The total monsoon water is allowed 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 is run by diesel. About 12 KL of HSD per day is required.. Diesel Fuel is used by Heavy Earth Moving Machineries, like excavator, loader and transport vehicles etc. DG sets are used for Mine office. Solar lights are used for street lighting near the office and workshop premises.

(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) & 2(vi).

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

The project details on production and development is given in detail at Para no 3.

4. Site Analysis

(i) Connectivity.

The mine is well connected by road and railway. Village Redi located at about 2km distance in NWW direction and is connected to Ajgaon - Terekhol Road. The nearest Railway Station is Sawantwadi Road located a distance of 20Km and the nearest airport is Dabolim Airport, Goa at a distance of 70 Km from the Mining Lease. Redi port is located at about 1.15 km in NNW direction from the Mine Lease Boundary.

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

Most of the area is already broken up and utilized for mining and allied activities. Present existing Land use is already furnished under item 2 (ii).

Major portion of the lease area is already taken on lease surface right holders and the remaining area required for plan period and the conceptual period is in process.

(iii) Topography (along with map).

The altitude of the ore bearing area is between 6 to 55 meters above mean sea level and the lowest elevation is the pit bottom at – 54 m below mean sea level. Village Redi is located at about 2km distance in NWW direction is at about 15m above MSL. Redi port is located at about 1.15 km in NNW direction is almost at 2m above MSL. The topography of the area is undulating having the main ridge running almost east-west and sloping towards north and south, west northern end of the

lease ends in a valley.

(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.

Existing land use in the study area has been studied through satellite image Processing. The data used for analysis is RESOURCESAT-2 LISS IV with satellite data of 5.8 m resolution dated 29.12.2014. Existing land use in the study area is shown in Table no.4

Table No.4
Land Use in the Study Area

Sl. No.	Land Use	Area (Ha)	Percentage (%)
1	Roads major & minor	9.0	0.115
2	Water bodies including the creeks	2990.0	38.065
3	Fairly dense mixed jungle	505.0	6.429
4	Cashew plantation Orchard	232.5	2.960
5	Cultivated land	764.0	9.726
6	Mud	40.0	0.509
7	Salt pans	33.0	0.420
8	Settlement area	395.0	5.029
9	Open scrub & Industrial area	2886.5	36.747
	TOTAL	7855.0	100.00

(v) Existing Infrastructure

It is an operating mine and required infrastructural facilities are already existing and sufficient for expansion.

(vi) Soil classification

The major crops are Paddy and sugarcane, grown only along river banks. The orchards consist of cashew, coconut & Mango. As these areas are adjacent to perennial water courses and because of the heavy rainfall in this area, the productivity and their yield are very good.

The predominant soils in the district are lateritic soils. They vary in color from bright red owing to the preponderance of hydrated iron oxides. They are fairly well supplied with nitrogen and organic matter. They are porous and not retentive of moisture. These soils are found in several grades. Soils are neutral in nature with high permeability and low water holding capacity. The results show that the soils are with pH varies from 6.84 to 7.33 , texture varies from Clay loam to silty clay, water holding capacity varies in between 25 to 45%. The nutrient content is low and need slight addition of fertilizer for good yield.

Soil pH plays an important role in the availability of nutrients. Soil microbial activity is also dependent on pH. In the study area the soil pH is moderately saline and slightly alkaline/sodic alkaline. Electrical conductivity (EC) is a measure of the soluble salts and ionic activity in the soil. In the collected soil samples the conductivity ranged from 0.068 to 0.558 μ S/cm. Electrical conductivity (EC) is a measure of the soluble salts and ionic activity in the soil.

Phosphorus and Nitrogen are limiting nutrients. In the tested soil samples, availability of phosphorus nitrogen are low to medium.

(vii) Climatic data from secondary sources,

The study area being a coastal area the variation of temperature during the day and throughout the seasons is not large. Owing to the proximity of the sea, the climate in general is moist and humid. The year may be broadly divided into three seasons namely, winter (November to February), summer (March to May) and Monsoon (June to October). The average relative humidity varies between 64.5 – 92%. The temperature ranges from 17.2 to 35.8°C. Major rainfall occurs by SW monsoon with maximum rainfall occurring in the month of July. The average annual rainfall in the area is 3500 mm and number of rainy days in a year is around 120 days. The mean wind speed of the area varies from 8.4 to 15.6kmph with an annual average of 12.28kmph. Calm period (wind speed<1/6kmph) varies from 1.0 to 3.5% with an annual average of 2.1%.

(viii) Social Infrastructure available.

There exists no human settlement within the core zone i.e., mining lease area. Within the buffer zone of 10 km radius around this mining lease, there are 2 Census towns and 15 villages with a total population around 30,038 as per census of 2011. The infrastructure and amenities available in the study area denotes the economic well being of the region. It is observed that good infrastructure facilities are available in the project study area, which consists of education, health care, drinking water facilities, communications, transportation, etc. A review of infrastructure facilities available in the area has been done based on the field visit observations and available secondary data. The infrastructure facilities available in about 15 villages and 2 census towns are covered within the study area

Educational Facilities

In all the Village Panchayats education facilities are available upto 10th standards. For higher education the students of this area go to Shiroda, Vengurla and Sawantwadi Taluka or District Headquarter.

Health Facilities in rural area

The types of health facilities includes, hospitals, dispensaries and clinics are available in the study area. There are number of private practitioners to meet the requirement in the villages. Apart from medical and health care rendered to the mine workers, there is also a Govt. Hospital at Sindhudurg to meet the medical requirement of miner workers, staff and buffer zone villages. Overall, one primary health center, one Primary Health Sub Centre, one Maternity and Child Welfare Centre, two Dispensaries, one Hospital Alternative Medicine one Veterinary Hospital exist in 0-10 km study area.

Drinking Water Supply:- In the villages a number of wells are situated from where potable water drawn. Some of the villages have public water supply. Also, M/s Gogte Minerals has established 'Water Supply scheme' dedicated to the village of Redi, with the construction of a Reverse Osmosis water treatment plant; the modern 'Thermax' with the delivery capacity of 12, 00,000 litres of water per day.

Transport Facilities

All the villages in the buffer zone are well connected by tar roads and public transport facility.

Post and Telephone facilities

Postal and telephone facilities are available in major villages where as other small villages have only postal facilities.

Electrification

Almost all villages in the study were electrified. Electricity was supplied for domestic, agricultural and public lighting purposes. Subsequently the electric connections have been given to many other villages

Marketing Facility:-

All the villagers and village Panchayats have regular marketing facilities. But the villagers for their marketing go to the nearest town such as Shiroda, Vengurla and Sawantwadi.

The job opportunity in this area is mainly increased by the new mining projects that are going to come up. The increase in production will further increase the job opportunities for different categories of workers and technicians.

(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 villagers depend upon agriculture of Paddy, the areca consists of cashew, coconut & areca nut. As these areas are adjacent to perennial water courses and also the mining authority is supplying the water for irrigation to the nearby villages through PWD, the productivity and their yield are very excellent. The main occupation is agriculture and fishing. Additionally, many people depend upon mining and related activities such as transportation of ores and waste. The main workers are cultivators, agricultural labourers, household industry and other workers forming 23.18%. Marginal workers are around 20% & about 57% are non-workers.

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

Since it is already a working mine and no increase in production is proposed therefore there shall not be any appreciable increase in employment or population in the nearby villages. The mining industry will improve the economic status of the people in and around the lease area, with the direct and indirect employment opportunities created and the CSR benefits provided. There are 1000 families

depend on this mine directly and indirectly. The increase in production will certainly increase in employment and it is expected that almost 4000 persons will be depending on this mine in direct and indirect. The following CSR benefits shall be continued to be provided.

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

Present existing Land use and Proposed Land use at the end of the Plan period is as given below in Table No.5:-

**Table No.5
Land Use Pattern**

Sr. No.	Land Use Category	Present land use as on 01-12-2019 (area in Ha)	Land use at the End of Plan Period As on 31-03-2021 (area in Ha)
1	Area under Mining (Open Pit Area)	30.4080	32.2176
2	Waste dump site	28.4352	31.3824
3	Backfilling	-	-
4	Mineral Storage	03.2278	3.0636
5	Infrastructure (workshop, administrative building etc.)	02.2024	2.2024
6	Roads	02.1186	1.8279
7	Others : environment protection measures	3.1782	2.7755
8	Un utilized area	25.1358	21.2366
	Total	94.7060	94.7060

The land use shown above is planned considering the available reserves. The future land use will be planned considering the results of the planned exploration.

At the conceptual plan period, it is proposed to reclaim and restore the mined out land with backfilling and afforestation of the suitable local fruit bearing species. The part of the open pit will be kept as water reservoir to continue supply of water to Villagers for drinking as well agriculture purpose.

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

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

(v) Amenities/Facilities.

Facilities for road transport and power supply 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 are provided.

6. Proposed Infrastructure

(i) Industrial Area (Processing Area).

The Mining Lease area is 94.7060 Ha. The Lessee has also obtained permissions from the Government of Maharashtra for annexation of an area admeasuring 12.9628 Ha falling in Survey No. 49 (Mhartale village) and 45B (Kanyal village), solely for the purpose of dumping waste/overburden. The additional land of 12.9628Ha area granted by the Industry, Energy and Labor Department, Government of Maharashtra vide letter dated 20/04/2018 for the waste/overburden dumping.

(ii) Residential Area (Non Processing Area).

No residential area is proposed within ML area.

(iii) Green Belt.

The plantation of native and local species shall leave a congenial environment for immigration of avi-fauna by including the fruit and flower bearing shady trees. It shall improve aesthetic beauty of the area.

(iv) Social Infrastructure.

The mining industry will improve the economic status of the people in and around the lease area, with the direct and indirect employment opportunities created and the CSR benefits provided. There are 1000 families depend on this mine directly and indirectly. The increase in production will certainly increase in employment and it is expected that almost 4000 persons will be depending on this mine in direct and indirect. The following CSR benefits shall be continued to be provided.

- Water for irrigation to villages : through pipelines

- Potable Water supply to villages Health, safety and medical facilities: First aid and basic medicines provided from Redi & Vengurla dispensary.
- Education & Training: Supply of school uniform, notebooks, bags etc for school students.
- Recreation facilities: Donations to sports, social and cultural organizations, Infrastructural facilities.

Iron ore reserves of this area form mineral wealth, as, the iron ore is major raw material for the manufacture of steel. Since, the iron ore reserves of this area are economically viable, their proper utilization will improve the economic status of the people and the Country. Apart from cess & royalty, Govt. will be getting many indirect taxes like Road tax, dead rent, sales tax etc. More over if permitted Country will also be earning valuable foreign exchange from the export of Iron ore.

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

Being a working mine, it is well connected by road to mine, jetty and the railway station.

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

Drinking water to office and canteen is being supplied by drawing it from well water in the nearby areas through contractor. The Surface runoffs and dump runoffs are diverted to the open pits. There is one worked out pit which is water logged. Water from this pit is used to supply to the villagers for the irrigation. Part of the water from the working pit is sent to the other worked out pit. This accumulated pit water is taken to the Reverse Osmosis Water Treatment Plant and such treated water is supplied to villagers for drinking purpose.

(vii) Sewerage System.

No sewage is generated from the mine. The drainage water from toilet are treated in the soak pit. The waste water in the canteen will be treated and reused for

garden purpose. The waste water generated during washing and maintenance of the machineries will be treated and recycled.

(viii) Industrial Waste Management.

No industrial waste is generated from the mine.

(ix) Solid Waste Management.

The existing waste dumps within the Mining Lease occupy about 28 Ha. area. During the present mining plan block period (01-12-2019 to 31-03-2021), about 2.3 million tonnes of waste will be generated which shall be accommodated within the ML area. Each stage will be of 10 meter height and width of 10 meter, overall dump slope of 25° will be maintained. The hard material (lateritic material) will be generated during the plan period (01-12-2019 to 31-03-2021) will be utilized for environmental protective measures like creation of bunds, covering on dump, soling of mine road. The size of the dump at end of block period shall be about 31 Ha. built-up to a max height of 60 m above GL.

(x) Power Requirement & Supply / source.

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

Fuel:12KLD

Energy: ----23KWH /day

Out of this required 23.00KWH/day, about 5.0 KWH/day is sourced from the solar energy, rest is sourced from the DG sets.

To pump out the rain accumulated pit water, three electrical and two diesel pump of 500 m³/hr capacity each pumps are in use.

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 labour (A brief outline to be given)

No Rehabilitation or Resettlement is involved in this project.

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 a working mine, with Environmental Clearance for the production of 0.368 MTPA of iron ore. As proposed the present project involves increase in production from the existing capacity of 0.368MTPA to 1.1MTPA. The present extent of Mining Lease is 94.7060Ha. The additional land of 12.9628Ha area granted by the Industry, Energy and Labor Department, Government of Maharashtra, vide letter dated 20/04/2018 for the waste/overburden dumping.

The Mining Operations with increase the production capacity from its present level of 0.368 Million Tonnes per annum to 1.1 Million Tonnes per annum and also the annexation of an area of 12.9628Ha falling in Survey No. 49 (Mhartale Village) and 45B (Kanyal Village), solely for the purpose of dumping the waste/overburden shall commence on obtaining EC from MoEF& CC and other necessary permissions/approvals from all the concerned Authorities.

The total reserves and resources available at this mine as on today are 22.205Million Tonnes. With the rate of production of 1.1.MTPA, the expected life of the mine will be 21yrs.The life of the mine may get extend with the increase in resources by future exploration to be carried out.

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

The total capital cost for the project is furnished below:

i. Building (office & statutory buildings& rents)	Rs.335 Lakhs
ii. Plant & machinery including transport vehicles and Crushing & screening plant	Rs. 1120 Lakhs

Total	Rs. 1455Lakhs

ECONOMIC VIABILITY FOR 'REDI IRON ORE MINE', OF M/S. GOGTE MIENRALS MINING LEASE LOCATED IN REDI VILLAGE (MHARTALE, KANYALE AND BOMBADOJIWADI) VENGURLA TALUKA, SINDHUDURG DISTRICT, MAHARASHTRA

Parameters:

- 1) Reserves & Resources : 22.205 Million Tonnes
- 2) Nature of ore : Iron Ore
- 3) Production : 1.1 MTPA
- 4) Average ore to waste ratio : 1 : 2.5
- 5) District Mineral Fund : 30% of Royalty
- 6) National Mineral Exploration Trust : 2.0% of Royalty
- 7) Mining Royalty : 15% of Ex. Mine Price

A. Tentative direct costs:

Sl. No	Particulars	Cost / Tonne Rs.
1	Exploration	0.11
2	Production & development	658.00
3	Processing cost	71.00
4	Environment cost	7.00
5	CSR cost	40.00
6	Depreciation & other Cost	81.00
7	Working Capital Cost	15.00
	Sub Total	872.11

B. Other Cost

Sl. No	Particulars	Cost / Tonne Rs.
1	Mining Royalty	225
2	National Mineral Exploration Trust	4.5
3	District Mineral Fund	67.5
	Sub Total	297

Total Pit Head Cost per tonne :	Rs.1169
Pit Head realization for 55 to 62% Fe:	Rs1500/tonne
Profit/tonne :	Rs 331
Gross Profit /annum for 1.1Million tonnes :	36.4 Cr
Net Profit After Taxation @35% :	23.7 Cr

Considering the above cost profit ratio, the proposed expansion in production from 0368MTPA to 1.1MTPA with additional land of 12.970Ha. in 'Redi Iron Ore Mine', located at Redi (Mhartale, Kanyale & Bambadojiwadi) Village, Vengurla Taluka, Sindhudurg District, Maharashtra 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 M/S GOGTE MINERALS
SERVICES

V. Narayan Prasad

Mine-Agent

For MINERAL ENGINEERING

M.S. Raju

EIA Consultant

Place: Redi
Date: 22.01.2020