



RMML

EXECUTIVE SUMMARY
IYLI GURUNATH IRON ORE MINE

EXECUTIVE SUMMARY

of

Iyli Gurunath Iron Ore Mine

ML Area : 20.23Ha.

(20.35 Ha as per CEC Survey)

Ramgad - village of

Sandur-Taluk, Ballari - District,

Karnataka State

PROPONENT

M/s. RAMGAD MINERALS & MINING LIMITED

Hosapete, Ballari District

September, 2020

EIA Consultant

MINERAL ENGINEERING SERVICES

25/XXV, Club Road, BALLARI-583103, Karnataka

email : mes_msraju@yahoo.co.uk

Tel/Fax 08392-267421, Mob: 091-9448367421,

NABET CERTIFICATE No: NABET/EIA/1922/RA0158

(Accredited by QCI-NABET S.No.107 of QCI LIST-1 as on August, 2020)



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INTRODUCTION

The Iyli Gurunath Iron Ore Mine is owned by M/s.Ramgad Minerals and Mining Limited, Hosapete. This is an operating mine located in Ramgad village, Sandur taluk, Ballari district Karnataka. Ramgad Minerals and Mining Limited has always stood for the high quality and they obtained IS/ISO 9001:2015 (Quality Management certification).

Iyli Gurunath Iron Ore Mining Lease was granted 1st in the year 1966 and further renewed periodically and is valid upto 23.02.2026. The lessee has obtained all the required statutory clearances for an annual production of 0.5 MTPA of Iron Ore. This iron ore forms a feed for various steel /pelletisation plants through e-auction process

The lessee had obtained environmental clearance for the production of 0.5 MTPA under the provisions of EIA notification, 1994. But now the lessee has been asked to seek fresh Environmental Clearance under the provisions of EIA notification, 2006. Accordingly the lessee had applied for TOR from SEIA, Karnataka and obtained the same.

Iyli Gurunath Iron Ore Mine is located in Ramgad block of Sandur Range Forest over an extent of 20.35 Ha. The mining lease falls in topo sheet no. D43 E8 (OLD.No.57-A8), the latitude and longitude limits are N 15⁰ 09' 11" to 15⁰ 09' 34.6" and E 76⁰ 26' 30.4 " to 76⁰ 26' 51.4" respectively. Highest elevation of ML is 960 m above MSL and Lowest elevation is 850 m above MSL.The project is located at 15 kms from Sandur town and 23 kms from Hosapete. The nearest airport is at Vidhyanagar, Torangallu at a distance of 30 kms. The nearest State Highway between Sandur and Hosapete runs at a distance of 5 kms from the mine lease.

Geology

Regional Geology

The Ballari- Hosapete region covers part of highly folded metamorphosed Dharwarian formations (archean) of Karnataka state. The hill ranges and the valleys in the region constitute the "Sandur Synclinorium"with axial end of NW-SE to NNW-SSE. The strata have been tightly folded into isoclinals, anticlinals and synclines in the Synclinorium.

Local Geology

The various litho units exposed in the area are part of the Ramanamalai, Deogiri and Yashwanthnagar formation of lower units of the stratigraphic sequence of the Sandur Synclinorium.



The litho units are as given below

Laterite

Friable Iron ore

Shale/Phyllite

Banded Haematite Quartzite (BHQ)

The Iyli Gurunath lease hold has insitu ore deposit in the upper part of north eastern slope of the Ramgad hill range. The ore occurs generally below a capping of laterite in friable and siliceous form.

The friable ore extends over a length of 540 m, width varying from 20 to 150 m and average depth is 80 to 100 m which is proved by core drilling and RC drilling.

The lessee has conducted extensive exploration and proved about 10.378 million tonnes of reserves and 1.358 million tonnes of resources totaling 11.736 million tonnes. The life of the mine @ 0.5 MTPA shall be more than 23 years. The analysis of ore produced shall be ranging between 58 to 62 % Fe content with low silica. The ore to waste ratio at this mine is only 1:0.15 showing minimum waste handling. At present the lowest level of bench is at 886 m above MSL and at conceptual stage at the end of mining will reach 829 m above MSL. The water table in this area is encountered at 500 m above MSL. Therefore there is no possibility of intersecting of the same even at the conceptual stage. The mine is being operated using mechanized methods for drilling, loading, unloading and transportation.

MINING OPERATION TECHNOLOGY & MINING PROCESS

Mining Method: Open Cast Mining

The current Method of Mining, as explained below, will be continued for the future operations also.

Mining operation is carried out by fully mechanized opencast method with deep hole drilling and blasting utilizing Heavy Earth Moving Machinery (HEMM). The diameter of drill hole is 110 mm. The depth of the hole is 10m. Wagon drills in conjunction with Portable Diesel Air Compressor are used for drilling. Since the formations are soft, only 20% of the waste and ore require drilling.

**Description of Environment****Study Area**

The study area of 10 kms radius is considered around the mining lease as buffer zone, the study period for baseline data collection was from Mar-19 to May-19 which is the summer season.

Methodology of collection of baseline data

For Baseline data collection services of environmental laboratory of M/s. Mineral Engineering Services, Ballari have been engaged who are duly recognised by MoEF&CC , GOI, New Delhi.

Micro meteorology

Micro meteorology and Micro climatic parameters have been recorded by installing a Weather Monitoring Station.

Ambient Air Quality

For Ambient air quality 8 stations have been fixed covering 7 villages and 1 core zone covering all the directions, the frequency of monitoring is 2 days/ week for 3 months and the parameters covered were as per CPCB NAAQS guidelines.

The statistical analysis of Ambient Air Quality is as follows, the maximum values of **SO₂**, **NO₂**, **PM₁₀** & **PM 2.5** in the core zone are observed to be 13, 23, 77 & 44 ug/m³. All the parameters including CO, Pb, and O₃ as per NAAQS are monitored and monitoring results compared to AAQS are observed to be well within the limits. The maximum values in buffer zone villages also were well within the permissible limits.

Noise Levels

For noise quality 8 stations including one station in core zone and 7 in buffer zone villages were monitored and Leq during day & night are observed. The Leq value during day in the core zone is observed as 56.1 dB(A) and in night 41.0 dB(A) and monitoring results when compared to Noise Quality Standards are well within limits. The Leq values in buffer zone during day and night were found to be ranging from 48.3 dBA to 50.5 dBA and 41.2 dBA to 42.7 dBA respectively. Monitoring results when compared to Noise Quality Standards are well within limits.

Water quality

Water Quality Monitoring was done by grab sampling once in a season for 5 surface Water and 10 Ground Water samples. IS: 3025, APHA 21st Edition, & IS:1622 standards are used for analysis. Thus the analysis results are compared to IS standards IS:2296 & IS:10500:2012 and the results are to be within the permissible limits as per the standards.



SOIL QUALITY

Soil Quality Monitoring at 8 locations including one from the ML area and others from nearby village agricultural fields are collected and analysed, during the study period for Textural & Physical Parameters and the Nutrients. They are all observed to be within normal soil quality fit for cultivation.

LAND ENVIRONMENT

The existing land use of study area covering 10 km radius is Forest area 62%, 14% settlement, mining area 9.7 %, Barren area 12.6%, water bodies 0.9 % and industrial area 1.16 %.

Land Use - ML Area

PARTICULARS	AREA (Ha)			Mode of Rehabilitation
	EXISTING	PLAN PERIOD	LEASE PERIOD	
AREA UNDER MINING	11.30	9.96	8.66	Plantation
OVER BURDEN				
IN ACTIVE DUMP (AD-1, ID-1 TO ID-3)	2.54	2.39	1.99	Reclaimed with Plantation
BACKFILLING	1.83	3.80	5.50	Plantation
OTHERS				
INFRASTRUCTURE	0.21	0.21	0.21	Plantation
ROADS	0.28	0.28	0.28	Avenue Plantation
GREENBELT(7.5M)	1.44	1.44	1.44	Plantation
UNBROKEN AREA	2.25	1.77	1.77	-
BIO-DIVERSITY	0.50	0.50	0.50	-
GRAND TOTAL	20.35	20.35	20.35	

BIOLOGICAL ENVIRONMENT

A detailed biological study report of the study area core zone and 10 km buffer zone with details of flora and fauna, endangered, endemic and RET Species is furnished. A total of 72 plant species were recorded in 10-km radius buffer region; out of which 70 species were found in bufferzone and 2 species found in core zone. The dominant species were were *Acacia nilotica*, *Azadirachta indica*, *Ficus benghalensis*, *Pongamia pinnata*, and *Prosopis juliflora*. There are 15 species of mammals were recorded of which one arboreal mammal – Squirrel, Bonnet Macaque, and Hanuman Langur and remaining were ground dwellers. The carnivorous’ Leopard, omnivorous Mongoose and Jackal, wolf were hinted by rural communities. The most common species sighted by us and local communities are Indian hare, Rats, Wild boar. 18 reptile species were recorded within the buffer areas, of which, 11 species of snakes and 7 species of lizards were recorded. 4 species of frogs were reported within various habitats ranging from Agricultural field, scrub jungle, totally, 49 species of birds



were recorded within habitats ranging from Agricultural field to scrub thorny forest about 47 species were resident locally. Out of these, 1 species were locally migratory and 1 were vulnerable species.

SOCIO -ECONOMIC STATUS

No Rehabilitation or Resettlement is involved and it is a forest land and there are no human settlements or PAPs within the ML areas which require Rehabilitation and Resettlement. There are 17 main villages which fall within the buffer zone with a total population of 56,465 . Due to the proposed mining activity, no significant adverse changes are visualized in the traditional way of life of the people residing in the villages of buffer zone.

This mine shall provide employment for about 300 people by both direct employment which include mine officials, skilled, semi skilled and unskilled labour and indirect employment, in contractual works & transport. Preference is given to local people for employment.

During the period between 2011-12 to 2019-20 the lessee spent Rs.584.2 lakhs towards health care, sanitation, safe drinking water, education, gender equality, empowering women, environmental sustainability, ecological balance, public infrastructure, support for sports , NGO's and animal welfare activities. The same activities shall continue and annual budget of Rs.144.39 lakhs

ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**GENERAL**

The Iyli Gurunath Iron Ore Mine is an operating Mine and it is operated taking all precautionary measures to reduce the impact of mining operations on Air, Water, Noise and Soil and ensuring all control measures to comply with the prescribed standards.

The proposed production of iron ore @ 0.5 MTPA within the exiting ML Area will be carried out, the open cast conventional type of mining, which involves drilling and blasting. The precautionary and control measures are practiced. The impact of change on land use will be positive only, as portion of abandoned pit is partly backfilled and afforested and balance portion is left as water reservoir beneficial to local villagers. Development of green belt along the boundary of ML Area, will ensure a better environment compared to the one that existed at pre-mining stage.

AIR ENVIRONMENT

The maximum uncontrolled PM₁₀ emission level due to proposed mining operations like production and transport of iron ore & waste generation, predicted by using the software are



observed to be well within the limits and does not exceed $100 \mu\text{g}/\text{m}^3$. The dust is not containing harmful free silica. The sources of dust emissions are drilling, blasting, loading, transport operations. To minimize dust deposition, roads will be graded and maintained regularly. All the loaded trucks will be covered with tarpaulin to avoid spillage enroute and speed limits are enforced. Dust suppression measures are undertaken through regular water spray, wet drilling, low density explosives with controlled blasting giving heaving effect than explosion. Iron ore is transported from mine to buyers with high capacity dumpers which reduces the number of trips. Wide green belts shall be developed surrounding the mining area. Regular maintenance of equipment as per manufacturer's specification is done to minimize the fugitive emissions. PUC is undertaken for the transport vehicles.

WATER ENVIRONMENT

There is no perennial surface water source passing through the lease area or nearby. The estimated quantum of water requirement shall be $50 \text{ m}^3/\text{day}$, met by bore well water.

The wastes and ore generated are nontoxic, no heavy metals are present. The possible pollutants in the water are the suspended solids which are derived from erosions within the mining areas, dumps controlled by sedimentation.

Oil spillage from maintenance of machinery controlled by grease trap. Rainwater directly falling over the pit area will be allowed to settle in the settling tank thereby helping in groundwater recharge. During rainy season, the water is collected in the settling tank provided to remove the solid suspensions in the runoff water. Under R & R scheme approved by ICFRE the lessee has constructed 60 numbers of Brush wood check dams , 46 nos of Logwood check dams, 54 nos of Loose boulder check dams to allow settling of solid particles. In addition the lessee has completed 2 Nos of Gabion Check Dams and one Stone machinery check dam and 3 nos of Loose boulder check dam outside the ML area.

NOISE ENVIRONMENT

Maximum noise is produced from operation of earth moving m/c's & movement of dumpers and operation of drilling machines. Noise levels are reduced during blasting by the use of low density explosives with maximum charge per hole as 40 Kg to give a heaving effect than an explosion and by adopting Controlled blasting technique, Restricting the blasting operations to noon times, Ensuring higher stemming column than the burden, avoiding secondary blasting with proper design of spacing & burden, Limiting the speed of trucks within the mine



boundary to 20 Kmph. By following controlled blasting technique, ground vibrations, noise levels, fly rock ejections and air blasts are minimized. Regular maintenance of mining equipment, machinery & all vehicles as per the manufacturers recommendations to minimize the Noise generation and providing wide green belt surrounding ML boundary.

IMPACT DUE TO GROUND VIBRATION EFFECTS FROM BLASTING OPERATIONS & CONTROL MEASURES

Possible impacts due to vibrations are on the nearest habitation located at 3200 m distance, Blasting vibration studies have been conducted to know the ground vibration levels and air blast. It has been found that the vibration levels even at 100m distance from blast site the values are within permissible limits.

IMPACT ON BIOLOGICAL ENVIRONMENT

There are no wildlife sanctuaries and National wildlife parks within the study area. The ML area is a forest land. Since there exists some schedule 1 fauna in this forest, a wildlife conservation plan with budgetary provisions of Rs 5.0 lakhs per year is prepared by the lessee to assist local forest department. In the green barrier of 7.5 m along the ML boundary, three rows of tree saplings are to be planted within the dugout pits filled with a mixture of manure and soil.

For the surface dumps which shall be re-handled and backfilled only mulching with plantation grasses, leguminous plants, shrubs/bush variety of species shall be used. During the scheme period of 5 years, under each year, 500 tree saplings shall be planted for gap filling in inactive dumps.

10.3.8 IMPACT ON SOCIO ECONOMIC ENVIRONMENT

This mine shall provide employment for about 300 people by both direct employment and indirect employment, in contractual works & transport. The mining activities help in sustainable development of this area including further development of physical & social infrastructural facilities.

Also by this mining activity, the country achieves the revenue in terms of taxes on iron ore production and exchequer revenue for State in terms of royalty etc. The project proponent shall assess the health conditions of the workers as per the DGMS guidelines. Noise, air, water quality will be maintained well within the limits.



Corporate Environmental Responsibility (CER)

For Corporate Environmental Responsibility the lessee has allocated a sum of Rs.46.27 lakhs/ annum as detailed below.

Table.No.10.2 Annual Budget for Corporate Environmental Responsibility

Sl. No	Particulars	Expenditure (Rs. in Lakhs)
1	Air Quality- water sparying	9.30
2	Environmental Monitoring	6.16
3	Afforestation	4.61
4	De-silting of silt settling tank and channels	0.50
5	Forest fire prevention works	17.89
6	Forest security works	1.87
7	Engineering works	5.94
	Total	46.27

Corporate Social Responsibility (CSR)

Annual budget to be provided for socio-economic development of the area shall be Rs.144.39lakhs.

Table No.10.3- Recurring expenditure shall be involved for further improvement of socio-economic status :

Sl. No	Particulars	Expenditure (Rs. in Lakhs)
1	Education	8.38
2	Water supply to villages	4.65
3	Health & Sanitation	80.96
4	Village Plantation	4.20
5	Skill development & Self help groups	5.20
6	Infrastructure development	35.50
7	National Hertiage	5.00
8	Support for sports	0.50
	Total	144.39

10.4 ENVIRONMENTAL MONITORING PROGRAM

Regular environmental monitoring will be conducted during life of the mine covering the study area to maintain the pollutants level from the mining activity within the permissible limits by engaging the services of External Environmental Monitoring Lab, which is recognized by MoEF&CC. Environmental Monitoring is being done as per National Ambient Air Quality Standards, CPCB Notification, New Delhi, the 18th November, 2009. For Water Quality Monitoring and Analysis shall be done using IS methods.



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10.5 CONCLUSION

There shall be no major impact on environmental status of the area by continuing the production of iron ore from this mine. Besides export potential there is large demand for iron ore in the next coming years in India. Thus production of iron ore proposed @ 0.5 MTPA is viable and helps in providing employment for 300 people from the neighbouring villages for various activities. This project also helps in socio economic improvemnet of the neighbouring villages. Also this project helps in meeting the demand of raw material for the steel plants located in the neighbourhood.



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Oil spillage from maintenance of machinery controlled by grease trap. Rainwater directly falling over the pit area will be allowed to settle in the settling tank thereby helping in groundwater recharge. During rainy season, the water is collected in the settling tank provided to remove the solid suspensions in the runoff water. Under R & R scheme approved by ICFRE the lessee has constructed 60 numbers of Brush wood check dams , 46 nos of Logwood check dams, 54 nos of Loose boulder check dams to allow settling of solid particles. In addition the lessee has completed 2 Nos of Gabion Check Dams and one Stone machinery check dam and 3 nos of Loose boulder check dam outside the ML area.

NOISE ENVIRONMENT

Maximum noise is produced from operation of earth moving m/c's & movement of dumpers and operation of drilling machines. Noise levels are reduced during blasting by the use of low density explosives with maximum charge per hole as 40 Kg to give a heaving effect than an explosion and by adopting Controlled blasting technique, Restricting the blasting operations to noon times, Ensuring higher stemming column than the burden, avoiding secondary blasting with proper design of spacing & burden, Limiting the speed of trucks within the mine



boundary to 20 Kmph. By following controlled blasting technique, ground vibrations, noise levels, fly rock ejections and air blasts are minimized. Regular maintenance of mining equipment, machinery & all vehicles as per the manufacturers recommendations to minimize the Noise generation and providing wide green belt surrounding ML boundary.

IMPACT DUE TO GROUND VIBRATION EFFECTS FROM BLASTING OPERATIONS & CONTROL MEASURES

Possible impacts due to vibrations are on the nearest habitation located at 3200 m distance, Blasting vibration studies have been conducted to know the ground vibration levels and air blast. It has been found that the vibration levels even at 100m distance from blast site the values are within permissible limits.

IMPACT ON BIOLOGICAL ENVIRONMENT

There are no wildlife sanctuaries and National wildlife parks within the study area. The ML area is a forest land. Since there exists some schedule 1 fauna in this forest, a wildlife conservation plan with budgetary provisions of Rs 5.0 lakhs per year is prepared by the lessee to assist local forest department. In the green barrier of 7.5 m along the ML boundary, three rows of tree saplings are to be planted within the dugout pits filled with a mixture of manure and soil.

For the surface dumps which shall be re-handled and backfilled only mulching with plantation grasses, leguminous plants, shrubs/bush variety of species shall be used. During the scheme period of 5 years, under each year, 500 tree saplings shall be planted for gap filling in inactive dumps.

10.3.8 IMPACT ON SOCIO ECONOMIC ENVIRONMENT

This mine shall provide employment for about 300 people by both direct employment and indirect employment, in contractual works & transport. The mining activities help in sustainable development of this area including further development of physical & social infrastructural facilities.

Also by this mining activity, the country achieves the revenue in terms of taxes on iron ore production and exchequer revenue for State in terms of royalty etc. The project proponent shall assess the health conditions of the workers as per the DGMS guidelines. Noise, air, water quality will be maintained well within the limits.



Corporate Environmental Responsibility (CER)

For Corporate Environmental Responsibility the lessee has allocated a sum of Rs.46.27 lakhs/ annum as detailed below.

Table.No.10.2 Annual Budget for Corporate Environmental Responsibility

Sl. No	Particulars	Expenditure (Rs. in Lakhs)
1	Air Quality- water sparying	9.30
2	Environmental Monitoring	6.16
3	Afforestation	4.61
4	De-silting of silt settling tank and channels	0.50
5	Forest fire prevention works	17.89
6	Forest security works	1.87
7	Engineering works	5.94
	Total	46.27

Corporate Social Responsibility (CSR)

Annual budget to be provided for socio-economic development of the area shall be Rs.144.39lakhs.

Table No.10.3- Recurring expenditure shall be involved for further improvement of socio-economic status :

Sl. No	Particulars	Expenditure (Rs. in Lakhs)
1	Education	8.38
2	Water supply to villages	4.65
3	Health & Sanitation	80.96
4	Village Plantation	4.20
5	Skill development & Self help groups	5.20
6	Infrastructure development	35.50
7	National Hertiage	5.00
8	Support for sports	0.50
	Total	144.39

10.4 ENVIRONMENTAL MONITORING PROGRAM

Regular environmental monitoring will be conducted during life of the mine covering the study area to maintain the pollutants level from the mining activity within the permissible limits by engaging the services of External Environmental Monitoring Lab, which is recognized by MoEF&CC. Environmental Monitoring is being done as per National Ambient Air Quality Standards, CPCB Notification, New Delhi, the 18th November, 2009. For Water Quality Monitoring and Analysis shall be done using IS methods.



BALDOTA

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10.5 CONCLUSION

There shall be no major impact on environmental status of the area by continuing the production of iron ore from this mine. Besides export potential there is large demand for iron ore in the next coming years in India. Thus production of iron ore proposed @ 0.5 MTPA is viable and helps in providing employment for 300 people from the neighbouring villages for various activities. This project also helps in socio economic improvemnet of the neighbouring villages. Also this project helps in meeting the demand of raw material for the steel plants located in the neighbourhood.