

238A/14/1997

Mining Plan



OF

PROPOSED IRON ORE MINE

In the Ramgad Village,
Sandur Taluk, Bellary Dist., Karnataka.

Under Rule 22(4) of MCR - 1960
(Category A / Mechanised)
Extent-5.90 Hectares

in favour of

Sri. D. Ramesh
BELLARY

May, 2006

by

John A Aloysius
B E(Mining)

RQP/BNG/157/2001/A



10th May, 2006

C E R T I F I C A T E

This is to certify that the provisions of MCDR-1988 have been observed while preparing the Mining plan of Proposed Iron ore Mines of Sri D. Ramesh, Bellary, having an extent of 5.90 Hectares and in the Ramgad Village, Sandur Taluk, Bellary District, Karnataka and wherever specific permissions are required, the applicant will approach the concerned authorities of the Indian Bureau of Mines for granting the permission.

It is also certified that the information furnished in this Mining Plan is true and correct to the best of my knowledge.

Date: 10.05.2006

Place: Bellary

John A. Aloysius

Recognised Qualified Person

(RQP/BNG/157/2001/A)



10th May, 2006

C E R T I F I C A T E

This is to certify that all the provisions of Mines Act, Rules & Regulations made there under have been observed in the Mining plan with respect to Proposed Iron ore Mines having an extent of 5.90 Hectares and in the Ramgad Village, Sandur Taluk, Bellary District, Karnataka of Sri D. Ramesh, Bellary, and whenever specific permissions are required, the applicant will approach the Director General of Mines Safety, Dhanbad.

The information furnished in this Mining plan is true and correct to the best of my knowledge.

John A. Aloysius

Recognised Qualified Person

(RQP/BNG/157/2001/A)

C E R T I F I C A T E



This is to certify that I have understood the contents of the Mining Plan of Proposed Iron ore Mines, in the Ramgad village, Sandur Taluk, Bellary District, Karnataka, having an extent of 5.90 Hectares and the same has been prepared in consultation with me. I agree to implement the same in accordance with Law.

A handwritten signature in dark ink, appearing to read 'D. Ramesh'.

D. Ramesh

Applicant



Certificate

The Mine Closure Plan complies with all the Statutory Rules, Regulations, orders made by the Central or State Governments, Statutory organizations, Courts etc, have been taken into consideration and wherever any specific permission is required the Applicant (the undersigned) will approach the concerned authorities.

All the measures proposed in the progressive mine Closure Plan will be implemented in a time bound manner as proposed.

Place: Bellary

Date : 10th May., 2006


(Sri D. Ramesh)
Applicant

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Sri D. Ramesh has applied for grant of M.L. for mining of Iron ore over an area of 5.90 hectares adjoining the M.L. Area of M/s Sri Srinivasa Minerals, Hospet, that falls in Ramgad Village, Sandur Taluk, Bellary Dist., Karnataka. The applicant hails from Bellary and has rich experience in Mining of Iron ore in the Bellary district in varied capacities.

The applicant aspires for grant of Mining Lease for mining Iron ore for a period of 20 years & wishes to name this area as Ramgad Iron ore Mines.

This Mining Plan is approved subject to the conditions / stipulations indicated in the Mining Plan approval letter No. MP/ELR/EE-119-CZ
Date: 17/5/2006

Sri D. Ramesh
City Press Compound
Behind Sangam Theatre
BELLARY - 583 101.

The applicant is an individual.

ಪ್ರಾದೇಶಿಕ ಗಣಿ ನಿರ್ದೇಶಕರು
ಲಾಂಚ್ವಾರಿ ಅಧಿಕಾರಿ (ಪ.ವ.)
ಕ್ಷೇತ್ರ ಕಛೇರಿ, ಬೆಂಗಳೂರು
ಅಥವಾ ಕಾರ್ಯಾಲಯ (ದ.ಜಿ.)
Regional Controller of Mines
In-charge - South Zone Office

2.3 Mineral or Minerals which the applicant intends to mine :

The applicant would like to mine Iron ore & allied minerals.

2.4 Name, Address and Registration Number of the recognized person who prepared the Mining plan.

Name : John A. Aloysius
Address: No. 728, Mission Road
Robertsonpet
K.G.F – 563 122
Regn. No.: RQP/BNG/157/2001/A
Validity : 14.02.2011



2.5 Name & Address of the prospecting Agency:

The ore body is considerably exposed to its full depth towards North as the adjoining M.L Areas owned by M/s Sree Srinivasa Minerals, Hospet & M/s Zeenat Transports, Bellary have been in operation for a long time(> 30 years) and the depth of the ore body is fully proved and the same ore body runs into this M.L. Area as well. The exposures have been duly studied by the RQP along with another veteran Geologist and Geological mapping has been done by them.

2.6 Details of the Area:

- a) Area applied is demarcated in the topo-sheet No. 57 A/8 and enclosed vide plate No.1. The area falls at longitude 76°24' and latitude 15°16'.
- b) Details of the land covered in the 'Area'

District & State	Taluk	Village Range	Block /Area in Hect.	Ownership
Bellary Karnataka	Sandur	Ramgad village Non Forest	5.90	Private Ownership Pattaland



Surface / Land Details:

- A. Total extent = 5.90 Hectares
- B. Total Length of the Boundary of Proposed M.L. Area for Mining = 972 meters
- C. Ore bearing zone = 5.90 Hectares

Ore zone	Avg. Strike Length	Avg. Width	Area/ extent
Roof Area	355 mtrs	166 mtrs	5.90 hectares.
Total			5.90 hectares

- D. Non-ore bearing zone = Nil
- E. Highest elevation = 987 meters
- F. Lowest elevation = 978 meters

2.7 Period for which the mining lease is required:

The applicant wants that M.L. be granted for 20 years.

2.8 Infrastructure

The mine is situated at a distance of 10 kms. from Sandur in the North West direction. There is a mining road from the lease block upto Sushilanagar Village situated at a distance of 5 kms. All the ore produced from this mine will be

transported via Shusilanagar Village to Ranjithpura Railway station or Yeshwantnagar Railway station and consequently the Iron ore can even be shipped from Ramgad Rly station which is the closest Rly station from the Mine



3.0 GEOLOGY AND RESERVES:

The Iron ore deposit runs along the peak of the slopping range within the lease block. The latitude and longitude are $15^{\circ} 16'$ and $76^{\circ} 24'$ respectively (Topo sheet No. 57 A/8). The rock formations form part of the Sandur Schist Belt in the Dharwar system of Indian stratigraphy.

3.1 **Physiography & Accessibility.**

The terrain is hilly, rugged and flat forming a plateau. The highest and lowest elevations are 987 m. above M.S.L. and 978 m. above M.S.L. respectively. Sushilanagar village is situated at 5 kms. on the Eastern side and Ramgad village is situated at 1 km. distance from the block towards south. The road is an all terrain road and is used all through.

3.2 **Geology:**

3.2.1 **Regional Geology**

The Iron ore formations of Hospet-Bellary-Sandur sector in toto make the sandur schist belt of Dharwar system of rocks in Indian Stratigraphy.

The entire Iron ore belt is divided into the following for Geological convenience

- i. The Ramanadurg Range
- ii. The Kumaraswamy Range

- iii. The Donimalai Range
- iv. The Thimmappanagudi Range
- v. The N E B Range
- vi. The Cooper Mountain Range



The Iron ore that is found in this sector is very narrow in widths and perenniennly associated with its parent rock BHQ /BHJ with Shaly intrusions.

The Iron ore formations going by the physical characteristics can be broadly classified into two types of Deposits in this sector

- Massive &
- Friable Deposits

Massive deposits are known for their consistency in grade (high grade + 65% Fe) and greater depths of more than 150 meters, whereas friable deposits are very erratic in grade and are normally low grade deposits (- 65% Fe) and very shallow in depths.

The occurance of Iron ore in this sector is always at an altitude of about 850 – 900 meters above the mean sea level.

3.2.2 Local Geology

The proposed M.L. Area falls in Ramandurg Iron ore range and the formations observed in the locality as Laterite, Lateritic ore.

General Strike is NW-SE following the trend of hillock, as it is capped with laterite/ lateritic ore no confirmation of strike and dip can be taken. However in

M/s Sri Srinivasa Minerals (SSM) M.L. Area towards north - NW - S35° E.



Rock formation are given below

Recemented ore

Laterite / Lateritic ore / Canga

Friable ore

BHQ

After 45 meters in M.L. Area of SSM, entire friable zone is intercalated with Shale. As the thickness of Shale is very thin (below 2 to 5 cms), it cannot be removed in Mechanised Mining but it can dilute the grade.

It is belived that the BHQs are the host rocks and the Iron ore mineralization has taken place from this source rock due to leaching and redeposition process at favourable Eh & pH conditions. The strike continuity of the BHQs emerged as Iron ore reef.

Ore zone	Avg. Strike Length	Avg. Width	Area/ extent
Reef Area	355 mtrs	166 mtrs	5.90 hectares.
Total			5.90 hectares

Except capping of Laterite / Lateritic ore, the Iron ore in the Reef area is very much friable in nature with grades varying between + 62% Fe and + 66% Fe and there is a possibility of ore touching below 62% Fe as we go deeper (after the plan period).

The ore body being friable in nature, fines generating will be to its maximum upto 85 to 90% & the over size (+10mm) will not have a good tumbler index.

The chemical properties of Iron ore are given in detail in Annexure 4.



3.3 Details of exploration:

Already carried out

No exploration, in reality has been carried out except surface mapping which indicates the whole lease area is mineralized i.e. Laterite, Lateritic ore is capping the lease area, but adjoining area towards north namely Sri Srinivasa Minerals & M/s Zeenat Transports which have gone more than 80 meters from the surface. All these Mines are in operation since early 60s. Orebody length, width and depth are proved to substantial extent however we are proposing for boreholes, pits & trenches.

Proposed to be carried out

There are 8 nos of boreholes proposed to be carried out (namely PBH - 1 through PBH - 8) and the description is given in the table attached below. Also 4 Pits (P1 to P4) of dimension 5 ft X 5ft X 5ft and 4 trenches (T1 to T4) having the following dimensions and depicted in the Geological Plan (Plate - 4) with a purpose of ascertaining Iron ore in the western side of ML Area, are proposed.

Trench T1 = 40 X 5 X 5 metres

Trench T2 = 30 X 5 X 5 metres

Trench T3 = 20 X 5 X 5 metres

Trench T4 = 20 X 5 X 5 metres

Proposed boreholes to be carried out within one year from the operational date of Mines



Sl. No.	Name of Borehole	Location	Bearing	Angle of Inclination	Depth (mtr)	Purpose
1	PBH - 1	N 050 E 225	—	90 ⁰	80	Depth & pre characteristics
2	PBH - 2	N150 E225	--	90 ⁰	80	-- do --
3	PBH - 3	N250 E225	—	90 ⁰	80	-- do --
4	PBH - 4	N350 E225	—	90 ⁰	80	-- do --
5	PBH - 5	N100 E125	--	90 ⁰	80	-- do --
6	PBH - 6	N200 E125	--	90 ⁰	80	-- do --
7	PBH - 7	N300 E125	—	90 ⁰	80	-- do --
8	PBH - 8	N225 E175	--	90 ⁰	80	-- do --

All proposed boreholes shall be drilled either by dry drilling or wet drilling, but it's advisable to adopt dry drilling only. Sludge / cuttings shall be collected at an interval of 1 meters and kept in Aluminium core boxes to preserve till the end of the life of the mine. Half of the sludge from each interval shall be analysed physically and chemically. All the above operations shall be completed in a years time from the operational date of the mines.

Total Meterage = 640 meters and all boreholes locations are depicted in Plate no 4.

In case the boreholes indicates the full depth of mineralization, second phase of drilling will be started which will increase the reserves and the Mining Plan will be reviewed.



3.4 Method of estimation of reserves:

Estimation of Reserves are done in proved and probable categories using Cross Sectional Methods.

Sectional area is calculated from all cross sections and influence of each section is obtained from longitudinal sections. Bulk density is taken as 3.00 tons per CUM.

Sectional Area X Influence X Bulk density X Recovery factor

Recovery factor is taken to be 90% on account of Mining loss caused by drilling, blasting, transportations and working near the contacts.

Proved category is taken upto 940 meters level and probable category is taken from 940 meters to 920 meters. Total depth for estimation is 67 meters from the surface.

Reserve Estimate:

United Nations Framework Classification of Reserves

<u>Sl. No.</u>	<u>Category</u>	<u>Tonnage</u>
1.	Mineral Resources	
	(a) Measured (331)	7,049,741
	(b) Indicated (332)	3,482,400
		<hr/>
		10,532,141

2.	Mineral Reserves	
	(a) Proved (111)	6,027,528
	(b) Probable (121 & 122)	2,977,452

		9,004,980



(Please refer Annexure – II for detailed calculations on Ore Reserve estimates)

Mineable Reserves (assuming no ML granted appurtenant to this proposed M L Area)

Proved (111)	3627227
Probable (121 & 122)	1777753

	5404980 Tons

Mineable Reserves (when MLs granted appurtenant to this proposed M L Area)

Proved (111)	4584040
Probable (121 & 122)	2377602

	6961642 Tons

It is a fact that all the surrounding areas of this ML Area has been applied for mining of Iron ore and are now at various stages of consideration for grant of ML under the relevant Mining Laws. In the near future all these areas will be taken up for Mining.

4.0 MINING :



Reef workings will be done mechanically, ore will be worked systematically by forming benches of 9 meters height & widths not less than 9 meters, sloping at about 70 degrees from the horizontal.

The ore will be removed with the help of Heavy Earth Moving Machinery (HEMM) coupled with 10 ton self propelled Tippers.

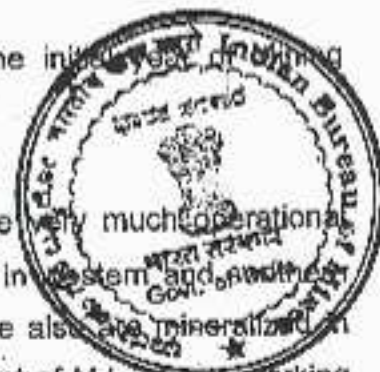
The ore being friable in nature, and the intercalations being very soft, can be excavated directly with the help of Hydraulic excavators, and hence drilling and blasting would be undertaken only where laterite and lateritic ore is encountered & any thickly laminated portion of ore body.

The ore excavated from the reef section will be loaded onto 10 ton Tippers for onward movement outside the lease area and the ore will be unloaded onto the gravity screen erected outside the Lease area and close to the bottom of mines to separate Fines (-10mm) and Lumpy (calibrated and other wise [+10 mm]) ore.

The lumpy ore (+10mm) will be further processed with the help of a processing plant depending on requirements of the market. However the Fines generated at the screening stage would be loaded and trucked out for Export, either by rail or by road.

The Laterite and Lateritic ore portion will be drilled and blasted with the help of Wagon drill by drilling 100 mm dia holes and blasting by conventional explosives like ANFO, Slurry Explosives and others and the same would be transferred to the Processing plant with the help of 10 ton tippers for further processing so that it can be used for blending and / or be sold to cement units. All the laterite and

lateritic formations will be completely excavated in the initial operations.



This mining block is situated next to 2 Mines that are very much operational towards north and is also surrounded by Patta Lands in western and southern side and towards the east is Reserved Forest which are also mineralized in nature and also the areas are being considered for grant of M.L. Hence working near the common boundary line is inevitable. As per statutory requirements (MMR-1961) a width of 7.5 meters should be left at the common boundary line, however amicably all the existing and proposed Lease holders on taking consent from the DGMS, could work into the 7.5 meters locked in area.

At the moment, none of the appurtenant lands except in its northern side is operational. So once the applicant obtains necessary clearances from the statutory authorities, all the parties will approach the DGMS for consent to work near the common boundary line.

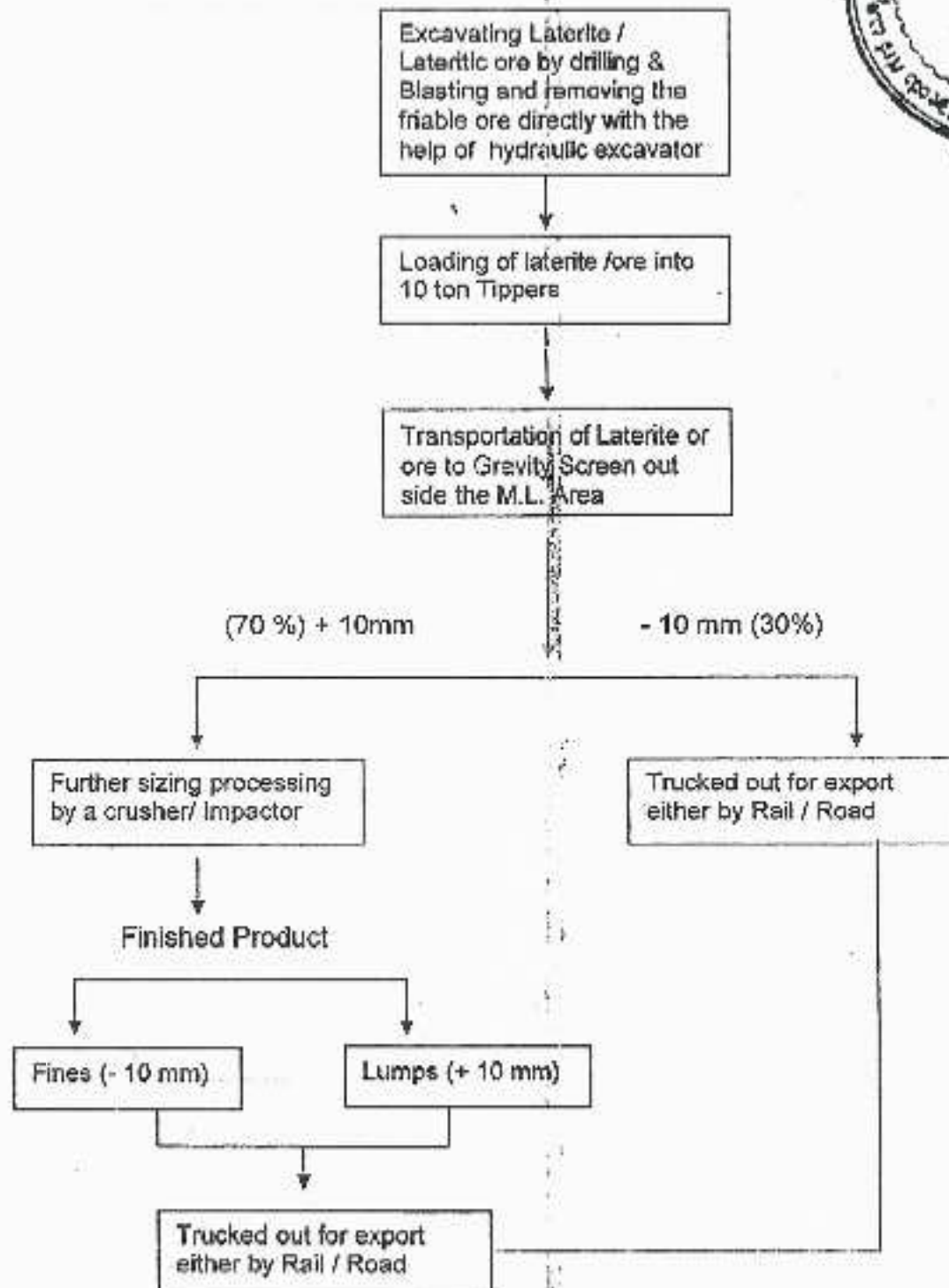
The applicant promises to submit the consent letter from DGMS, soon after getting the same.

Therefore, it is proposed to leave a barrier of 7.5 meters near the common boundary line in the initial year, and to maintain the same till the appurtenant lands are converted into MLs, and to excavate the same the after obtaining necessary permission from the DGMS.

In the interest of mineral development this is the only solution for all the existing Lease holders and also the potential lease holders.

The above process is depicted herebelow by way of Mining Process Flow chart diagram.

Mining Process Flow Chart



Land use Plan / Details

A. Total Lease Area	= 5.90 Ha.
B. Broken Area during Plan period	= 5.26 Ha.
C. Dumping Area	= --
D. Area for Afforestation	= --
E. Haul Roads (part of broken area)	= 0.30 Ha.
F. Statutory Buildings	= --
G. Unbroken Area	= 0.64 Ha.



4.1 YEAR WISE DEVELOPMENT / WASTE REMOVAL:

There is no appearance of any waste material be it Shale or BHQs on the surface of the proposed Lease Area except for little soil cover with intercalation in the western side. Even Laterite and Canga are marketable, but in the northern side where the 2 M.L. Areas are in operation no intercalation of Shale / Phyllite is observed upto 40 meter depth. Beyond 40 meter depth very thin intercalations of shale (not more than 5 cms) is occasionally observed which makes it impossible to excavate by mechanized operations and hence it also becomes part of Iron ore while mining operations are underway. The only waste is the soil cover at the top and intercalations at the western side. In mechanized operations intercalations are impossible to be worked and removed separately as waste and hence even these are lapped up whilst mining and would go along with the ore. The only effect would be a slight reduction in the grade of Iron ore.

4.2 YEAR WISE PRODUCTION OF IRON ORE:



Sl. No	Period	Grid lines	Reduced Level (m)	Volume (Cum)	Tonnage
1.	I year	N050 - N350 E100 - E 200	987 - 978	2,22,705	
2.	II year	N050 - N350 E100 - E 250	976 - 967	3,11,591	9,34,773
3.	III year	N050 - N350 E100 - E 200	967 - 958	2,38,525	7,15,575
4.	IV year	N050 - N350 E100 - E 200	958 - 949	1,67,517	5,02,551
5.	V year	N050 - N350 E150 - E 200	949 - 940	1,13,218	3,39,654
Total				10,53,556	31,60,668

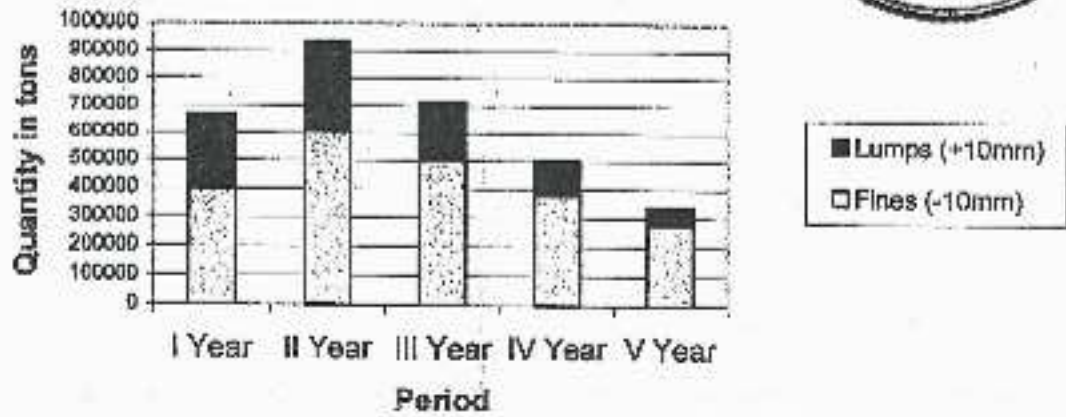
Note : Avg. Bulk density = 3.00 tons per cum

Year wise Iron ore production in terms of Fines & Lumps :

Sl. No.	Period	Production (Tons)	Fines (-10mm)	Lumps (+10mm)	Ratio Fines: Lumps
1.	I year	6,68,115	400869	267246	60 : 40
2.	II year	9,34,773	607802	327171	65 : 35
3.	III year	7,15,575	500903	214672	70 : 30
4.	IV year	5,02,551	376913	125638	75 : 25
5.	V year	3,39,654	271723	67931	80 : 20
Total		31,60,668	2158010	1002658	70 : 30



Year wise Production



Total Quantity of material to be handled

Sl No.	Period	Total Material to be handled (tons)
1.	I year	6,68,116
2.	II year	9,34,773
3.	III year	7,15,575
4.	IV year	5,02,551
5.	V year	3,39,654
Total		3180668

4.3 Proposed Rate of Production when the mine is fully Developed

In the first year 6,68,115 tons of Iron ore (Lumpy & Fines) will be produced and waste handled would be Nil and continuing this trend and going by the mining constraints a production of 52677 tons of Iron ore per month could be easily produced when fully developed.



4.4 Mineable Reserves

The mineable reserves are 69,61,642 tons (assuming that MLs will be granted appurtenant to this Lease area, so that the ore locked into the Buffer zone could also be worked). At an annual average Iron ore production rate (both Lumps and Iron ore fines) of 632134 tons / annum the life of the mine will be about 10 years (app.) at the moment, however accurate estimate of life of mine would be made after further proposed boreholes are drilled.

4.5 Proposed method of mining :

The entire deposit shall be worked by open cast method. Reef would be worked, by deploying HEMM such as Hydraulic Excavators for removal of ore and a Front End Wheel Loader for loading and dozing the material in the proposed area.

The height of the benches would be 9 meters and width not less than the height of the bench if not more as per norms specified under MMR - 1961, and the benches would be sloping at an angle of 70 degrees from the horizontal.

Drilling and Blasting would be done only in Laterite / Lateritic Ore which will be totally excavated in the first year of operation. Deep hole drilling and Blasting would be avoided as far as possible in the ore body and secondary blasting (if

any) would be undertaken to reduce size of boulders that arise after primary blasting and others.



4.6 Extant of Mechanisation:

The following machinery will be available with the applicant for mining operations:

<u>Sl No.</u>	<u>Machinery / Automobile</u>	<u>Nos.</u>
1.	Hydraulic Excavator Back -hoe, 0.9 cum capacity	2
2.	Front end Wheel loader 1.2 cum Bucket capacity	1
3.	10 Ton Tippers (Handl. waste /ore)	40
4.	Wagon Drill (pneumatically operated)	1
5.	Water Tanker	1
6.	Service Vehicle (Jeep)	1
7.	Ambulance	1
8.	Motor Van	1

The proposed Mine will operate from the dawn to dusk beginning at 6 am, every day.

The Mine will be operated in two shifts First shift and General shift with staggered timings. Therefore it would be safe to assume an effective working of 8 hours per day excluding Breakfast, Lunch and Rest hours.

Mine would operate for 300 days per annum i.e. 25 days in a month.

A hydraulic excavator of 0.9 Cum capacity can handle easily 200 Tons per hour.

Time available

= 8 hours per day

Excavator can handle

$$= 8 \times 200 = 1600 \text{ Tons per day}$$

Daily Avg. production
(9 lac tons p.a.)

$$= \frac{75000 \text{ Tons per month}}{25 \text{ days}}$$

$$= 3000 \text{ Tons per day}$$



Two hydraulic excavators would be deployed exclusively for iron ore production and allied activities.

In addendum a wheel loader will also be used in the mine for dozing, hoaping, cleaning and other miscellaneous works, apart from using it in the processing operations.

Tippers:

Lead from working faces to the screening plant

$$= 5000 \text{ mtrs.}$$

Total time of hauling (to and fro)

$$= 50 \text{ minutes}$$

Time taken for Cutting and Loading of
Tippers by excavator with tippers approaching
the machine

$$= 3 \text{ Minutes}$$

Unloading time

$$= 1 \text{ Minute}$$

Hence requirement of Tippers for ore production = $\frac{54}{3} = 18 \text{ nos}$

Carrying Capacity of each tipper

$$= 10 \text{ tons}$$

Each tipper can make

$$= 1 \text{ trip / hour}$$

Total tonnage that would be
transported to the screening plant

$$= 18 \text{ nos.} \times 1 \text{ trip/hour} \\ = 10 \text{ tons / trip}$$

$$= 180 \text{ Tons / hour}$$

Tonnage hauled per day with one Excavator

$$= 1440$$

The hauling capacity too matches with the excavation capacity.

At any point of the time all through the plan period at least 40 tippers of ten ton capacity would be engaged to truck material out side the M.L. Area (including spare trucks)

4.7 Conceptual Mining Plan



For a Mine, preparation of Conceptual Mine Plan amounts to foreseeing in totality and planning for mining and related activities throughout its life span, till such time all the usable mineral ores are exhausted to the economic limits and Lease area is reclaimed to the extent possible.

Apart from physico-chemical and mineralogical parameters which form primary basis for compilation of Conceptual Mine Plan, several other factors such as grade or sub - grade ores, marketability, availability (Demand and Supply) do play important roles. With ever increasing and changing needs of humanity coupled with technological advancement, low-grade ores have become marketable to day.

Therefore preparation of Ideal Conceptual Mining Plan for any mine is difficult.

4.7.1. Excess Area

As a first step towards this, the applicant has applied only for 5.90 hectares. This would be sufficient for his mining needs plus there is no waste encountered in the area, so no additional dumping area is required too.

4.7.2 Exploration

During the first five year period it is proposed to drill 8 boreholes for confirming the depth persistence besides pitting and trenching. This exercise along with removal of about 31.81 lakh tons of iron ore in the first five year period will fully establish the reserves that are estimated at the moment. And probably further exploration may not be required.

4.7.3 Production

Going by the current Reserve estimate and maintaining a production rate of atleast 52678 Tons per month Iron ore production for the life of the mine is as here under



1.	First Five Year period	3160668
2.	Second Five Year period	3801024
Total		6961692

However the grade will start diminishing as the mining progresses and the ore benches start melting. Iron ores even upto 55% Fe are in demand and are easily saleable and hence the entire estimated quantity could be extracted from this mine.

Experience of working in friable deposits of Bellary-Hospet-Sandur sector aids us in establishing one fact that in friable deposits the mineral could be fully excavated right upto its existing depth, encountering diminishing grade of ore as we go deeper and deeper and after the ore exhausts at the bottom hard BHQ is encountered signaling the end of the deposit, unlike massive deposits. A case in point could be "vyasanakere Iron ore Mines of M/s. MSPL Ltd., S.J. Harvi Iron ore Mines of M/s V.S. Lad & Sons of this sector where in the friable bands have been completely exhausted but massive deposits still continue to exist albeit the width of the ore body reduces as the depth goes on increasing.

This proposed iron ore mines is no different from other friable deposits and hence a definite proposal of land restoration could be made in the last plan period.

4.7.4 Development and Waste disposal

There is no appearance of any waste material like Shale or BHQs on the surface of the proposed Lease Area. Even Laterite and Conglomerate is available, but in the northern side where the 2 M.L. Areas are in operation no intercalation of Shale / Phyllite is observed upto 40 meter depth. Beyond 40 meter depth very thin intercalations of shale (not more than 5 cms) is occasionally observed which makes it impossible to excavate by mechanized operations and hence it also becomes part of Iron ore while mining operations are underway. Therefore there is no question of waste removal in this M.L. Area.



4.7.5 Dumps protection

Not Applicable.

4.7.6 Afforestation

Since no waste handling is envisaged in the proposed area, planting of trees & afforestation works cannot be undertaken on dumps. Afforestation programme will be taken up When the mineral is exhausted and comprehensive restoration works will be undertaken so as to return the land back to its ecological best.

4.7.7 Environmental Protection Measures

The applicant without any any deviation as discussed in the environment chapter will undertake all environmental protection measures.

4.7.8 Land use towards the end of final year or life of the mine

The land usage at the end of the life of the mine as spelled out above will be as hereunder

- | | |
|--------------------------|-----------------|
| (1) Total mined out area | = 5.64 Hectares |
| (2) Dumping area | = Nil |
| (3) Afforestation | = 5.90 Hectares |



5.0 DRILLING & BLASTING:

Drilling Parameters:

Drilling would be undertaken only for primary blasting purpose and will be carried out in laterite and lateritic ore formations only, and all the laterite and lateritic ore will be completely excavated in the first year of operation. The drilling specifications will be as hereunder:

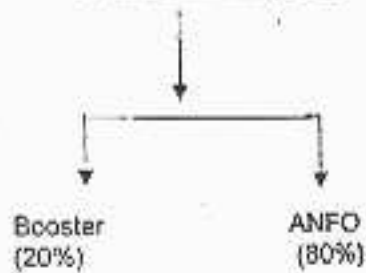
- | | |
|--|--|
| Hole diameter | = 100 mm |
| Hole depth | = 10 meters (including sub grade drilling) |
| Burden | = 2 - 3 meters |
| Spacing | = 3 - 4 meters |
| (burden & spacing will vary depending upon the type of strata) | |

Blasting Parameters : (grid pattern) for primary Blasting

$$\begin{array}{ccccccc}
 2 & \times & 3 & \times & 9 & \times & 3.0 = 162 \text{ tons/ hole} \\
 \downarrow & & \downarrow & & \downarrow & & \downarrow \\
 \text{Burden} & & \text{Spacing} & & \text{Depth} & & \text{Bulk density} \\
 \text{(M)} & & \text{(M)} & & \text{(M)} & & \text{(tons / m}^3\text{)}
 \end{array}$$

Explosives requirements:

Column Charge = 36 Kgs /hole (1.20 Kgs per foot)



Accessories:

Detonating cord
Cord relays
Plain Detonators (Zero Delay)

Note: No Electric detonators will be used & hence exploder will not be required

Powder Factor = 4.5

Secondary Blasting:

Plaster shooting will be adopted for secondary blasting in the Mines.

Explosive requirement for the Plan Period:

Sl. No.	Year	Primary Blasting (Tons)	Secondary Blasting (Tons)	Total (Tons)
1	I Year	156.734	7.837	164.571
2	II Year	--	--	--
3	III Year	--	--	--
4	IV Year	--	--	--
5	V Year	--	--	--
Total				164.571
Contingency (25%)				41.143
Grand Total				205.714

Note: Blasting would be undertaken majorly in Latorite or Lateritic ore. The ore being friable in nature can be easily removed with the help of hydraulic

excavator & therefore drilling & blasting in the ore body would be very negligible.

With experience we project that in this type of formation secondary blasting will be about 3% of primary Blasting & explosive requirement would be about 5% because of Plaster shooting.



The applicant would apply for explosive usage license soon after grant of his mining lease area and the applicant will submit the relevant permissions from the concerned authorities soon after grant of M.L.

There is also a possibility of exploring the option of using the services of Explosive dealers with regard to storage and transportation of Explosives in the Mine as the dealers are already equipped with Magazine and Explosive vans.

6.0 Mine Drainage:

All the water that is encountered in the lease is only from rain as the mine is situated much above the ground water level. The natural gullies that are formed drain the water through the valleys to the plains. The quarry faces are confined to a small area and it will be seen that all the rain water is coursed to the existing natural valley, however check dams and water courses around the mining area will be created to prevent wash offs getting onto the valley portion and also to avoid movement of hard and heavy particles outside the lease area. Drains shall be cut along the haul roads servicing the mine.

If need be soil and Water Conservation Experts and officials of Forest Dept., would be consulted to ensure least damage is inflicted on the surrounding areas.

7.0 DISPOSAL OF WASTE:

Not Applicable



7.1 Stacking of sub-grade Mineral:

No sub-grade mineral shall be available from this mine. All the iron ores produced are of saleable quality and have ready market.

7.2 Selection of site for Stacking:

The lumpy ore and fines produced are dispatched immediately out of the lease area, hence no separate stack yard need to be prepared.

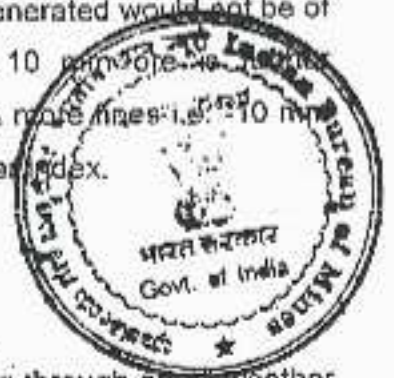
8.0 USE OF MINERAL:

The lumpy iron ore (+ 10 mm) and fines (- 10 mm) will be sold to indigeneous buyers for steel making activities and also to Exporters for exports to China, Japan and other countries. The detailed chemical and physical analysis of saleable iron ore is appended to this as Annexure - 4.

9.0 MINERAL BENEFICIATION:

The Iron ore that is produced in the mine is beneficiated only to meet the physical specifications of the Exporters. The ore is first put onto a single deck Gravity screen, to sort + 10 mm & - 10 mm size ore, after which + 10 mm ore would be subject to further crushing and screening. The entire processing will happen outside the M.L. Area.

Being a friable deposit i.e. powdery ore, the lumps so generated would not be of required Tumbler index specifications. Therefore + 10 mm ore is subjected to crushing / pulverizing so as to get more & more fines i.e. -10 mm ore which has a ready market with no hassles of Tumbler index.



10.0 SURFACE TRANSPORT:

Iron ores are transported by tippers to the railway siding through an all weather mine road. From Ramgad or Yeshwantpur or Ranjithpura Rly. stations the ore is dispatched by rail to the Madras Harbour / Goa. If sufficient rakes are not available, then the material is transported to buyer's stackyard for onward movement to sea shores by road for Export purpose. The distance from the mine to Ramgad Rly Station is 3 kms.

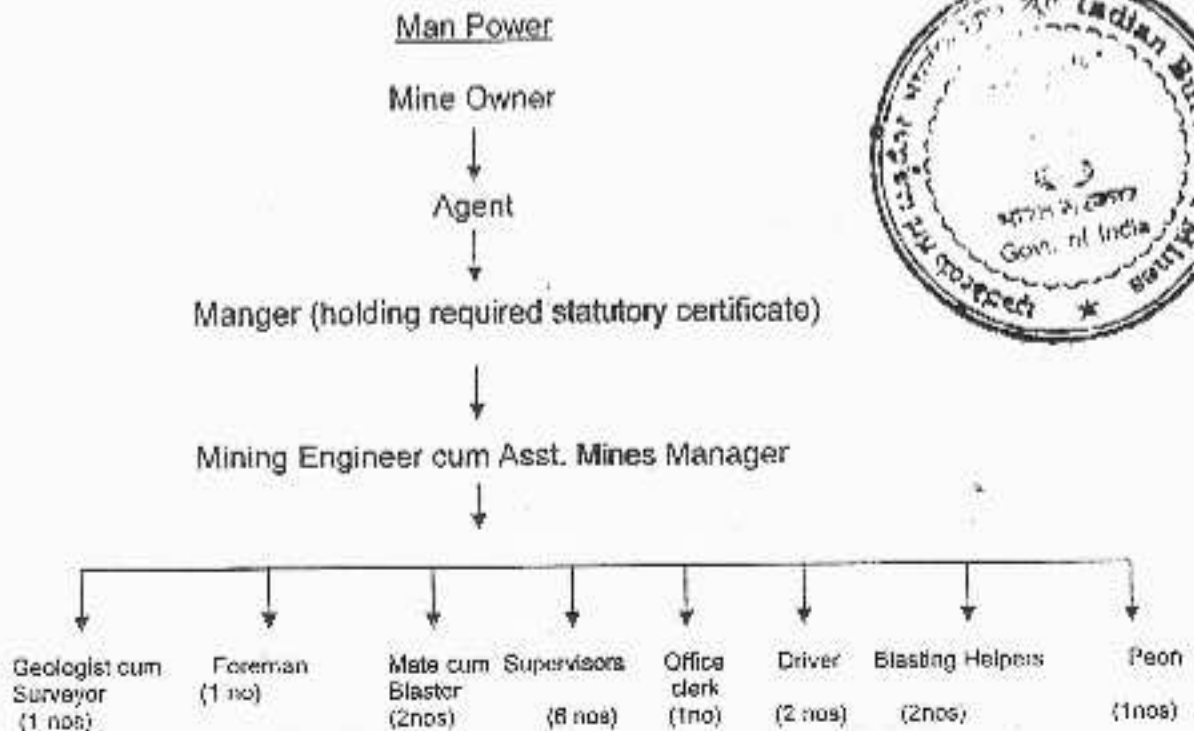
11.0 SITE SERVICES:

The applicant intends to have a portable Mines office & First Aid center. Rest shelter & Blasting shelter would be located in the lease area of the same applicant. Drinking water is supplied from Hospet for mine workers through a water tanker, which will also spray water on haul roads.

12.0 EMPLOYEMENT POTENTIAL:

An agent is in charge of the mining operations. As per the statutory requirement a Mines Manager, and other required mining personnel will be appointed by the Mine owner.

A Line diagram shows the manpower organization is as hereunder:



Note:

HEMM & Tippers will be taken on Hired basis, therefore Excavation and Transportation services will be outsourced, and so also the services of labor.

13.0 ENVIRONMENTAL MANAGEMENT PLAN:

The Applicant has monitored and has made Impact Assessment of various Environmental parameters and its EMP thereof for the months of March, April & May, 2005 all the details with regard to environmental aspects & its EMP thereof is explained as follows:

Baseline Environmental Status

This report is based on one season's data (Mar., 2005 through May, 2005). The methodology is based on guidelines outlined by MoEF/ CPCB. Existing environmental quality of the project area including Buffer zone has been

assessed based on primary and secondary data collected. Potential sources of pollution have been identified and anticipated pollution has been quantified. Environmental impacts have been identified and assessed qualitatively. EMP has been drawn to maintain and enhance environmental quality around the project site.

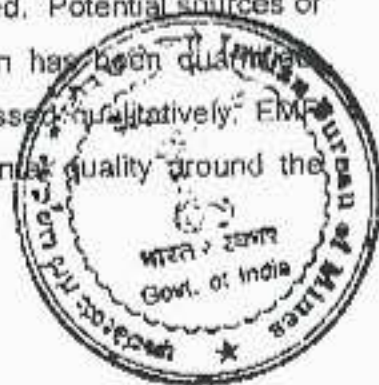


Table-13.1

MICRO METEOROLOGICAL STATUS

Period : Mar 2005 - May 2006

Sl. No.	Parameter	Summer
1	Predominant Wind Direction	E
2	Calm Condition (%)	0.13
3	Predominant Prevailing wind Range (kmph)	5-10
4	Wind Speed (kmph)	
	i. Minimum	0.7
	ii. Maximum	19.9
	iii. Average	6.3
5	Temperature	
	i. Minimum (degree celcius)	20.2
	ii. Maximum (degree celcius)	38.4
6	RH%	
	Average	47
7	Total Rainfall (cm)	8.64



AMBIENT AIR QUALITY & DUSTFALL MONITORING STATIONS

(LOCATION & BEARING)

Period : Summer 2005

Sl. No.	Location Code	Location Name	Bearing	
			Distance (km)	Direction
1	AA1	Venkeragiri Village	7.5	NW
2		Ramgad Village	1	S
3	AA3	Sushilnagar Village	3.5	SE
4	AA4	Siddapura Village	3	NE
5	AA5	Gunda Village	4	NW
6	AA6	Jaisinghapura Village	6	N

ABSTRACT OF METEOROLOGICAL DATA

Location : Mines Office



Date	Wind Speed Km/h		Wind Direction	Temp °C		R.H.%	Atm. Press (mm of Hg)	Rainfall (mm)
	Max	Min		Max	Min			
3/1/2005	10.8	1.3	E	33.8	16.0	45	726	0
3/2/2005	9.5	1.1	E	36.4	15.3	50		0
3/3/2005	11.6	2.1	E	35.2	14.6	42		0
3/4/2005	8.9	1.4	E	35.4	17.3	50		0
3/5/2005	8.7	2.7	S	35.8	16.1	48		0
3/6/2005	7.8	2.4	E	33.4	16.8	44		0
3/7/2005	7.8	2.2	E	34.4	17.3	47		0
3/8/2005	7.8	2.2	E	35.0	14.3	45		0
3/9/2005	6.5	1.6	E	32.5	16.3	48		2.6
3/10/2005	7.4	2.3	ENE	34.8	16.2	49		0
3/11/2005	8.4	2.4	ESE	32.9	13.2	43		0
3/12/2005	7.6	2.1	ENE	34.9	13.8	43		0
3/13/2005	8.9	2.2	E	34.7	13.8	43		0
3/14/2005	9.5	2.3	E	33.9	13.0	45		0
3/15/2005	9.5	2.2	SE	34.1	13.1	44		0
3/16/2005	9.3	3.3	S	34.5	14.3	43		0
3/17/2005	8.9	2.5	E	36.2	14.2	42		0
3/18/2005	8.6	3.3	E	36.7	15.1	43		0
3/19/2005	8.9	3.5	ESE	36.3	14.8	42		0
3/20/2005	8.9	2.2	E	36.9	14.5	41		0
3/21/2005	8.4	3.4	E	35.6	13.6	44		0
3/22/2005	8.4	2.5	W	35.8	14.6	40		0
3/23/2005	8.9	3.3	E	35.4	15.1	37		0
3/24/2005	9.5	3.4	W	35.1	14.9	42		0
3/25/2005	9.4	3.3	W	36.3	14.3	38		0
3/26/2005	9.3	3.3	W	36.9	16.2	40		0
3/27/2005	9.8	3.5	WNW	36.7	15.2	39		0
3/28/2005	8.3	2.8	WSW	36.9	14.6	41		0
3/29/2005	9.7	1.2	W/SW	36.7	14.3	37		0
3/30/2005	9.9	1.6	SW	37.1	15.2	33		0
3/31/2005	10.8	2.1	SW	37.8	16.2	36		0
MONTH	11.6	1.1	E	37.8	22.1	43	726	2.6

ABSTRACT OF METEOROLOGICAL DATA

Location: Mines Office

April, 2005



Date	Wind Speed Km/h		Wind Direction	Temp °C		R.H. %	Atm. Pressure mm of Hg	Rainfall mm
	Max	Min		Max	Min			
4/1/2005	9.7	3.3	WSW	35.4	21.4	44	726	
4/2/2005	8.9	2.2	W	34.5	21.5	43	"	0
4/3/2005	8.9	3.3	E	35.5	21.2	45	"	0
4/4/2005	15.8	3.8	E	35.9	21.4	47	"	0.1
4/5/2005	9.4	2.7	ENE	34.3	21.8	46	"	0
4/6/2005	9.3	2.3	E	34.1	21.5	46	"	0
4/7/2005	9.5	3.3	E	34.9	21.6	45	"	0
4/8/2005	8.9	2.4	E	34.5	21.3	43	"	0
4/9/2005	8.7	2.2	E	34.2	20.3	42	"	0
4/10/2005	9.5	2.4	E	35.2	20.9	44	"	0
4/11/2005	9.8	2.4	E	34.6	20.9	54	"	0
4/12/2005	8.5	3.2	E/ESE	33.6	20.6	50	"	0
4/13/2005	9.8	3.9	ESE	33.6	21.3	46	"	0
4/14/2005	8.3	3.2	E/ESE	33.8	20.4	47	"	0
4/15/2005	7.7	2.2	W	32.4	20.9	49	"	0
4/16/2005	9.8	3.2	W	33.9	20.7	47	"	0
4/17/2005	17.4	3.3	WSW	33.9	20.2	48	"	2.1
4/18/2005	17.2	2.7	W	32.3	20.2	52	"	5.2
4/19/2005	9.4	3.2	ESE/E	33.5	21.7	46	"	0
4/20/2005	7.5	2.2	E	33.2	20.2	47	"	0
4/21/2005	8.7	2.2	W	33.5	20.2	48	"	3.4
4/22/2005	19.3	2.2	W/WSW	34.2	20.8	49	"	2.8
4/23/2005	16.3	2.2	E	33.8	20.4	49	"	0.4
4/24/2005	7.8	2.4	W	34.4	20.5	45	"	0
4/25/2005	9.5	2.3	E	35.8	21.2	46	"	0
4/26/2005	8.4	2.2	E	33.8	20.6	43	"	0
4/27/2005	15.2	2.5	E	35.7	20.5	56	"	1.7
4/28/2005	9.9	1.1	W	35.4	23.5	42	"	0
4/29/2005	7.9	1.0	SW	36.1	24.8	39	"	0
4/30/2005	9.7	1.0	SW	37.1	24.2	36	"	0
Month	19.3	1.0	E	37.1	20.2	46	728	15.7

ABSTRACT OF METEOROLOGICAL DATA

Location : Mines Office

May, 2005



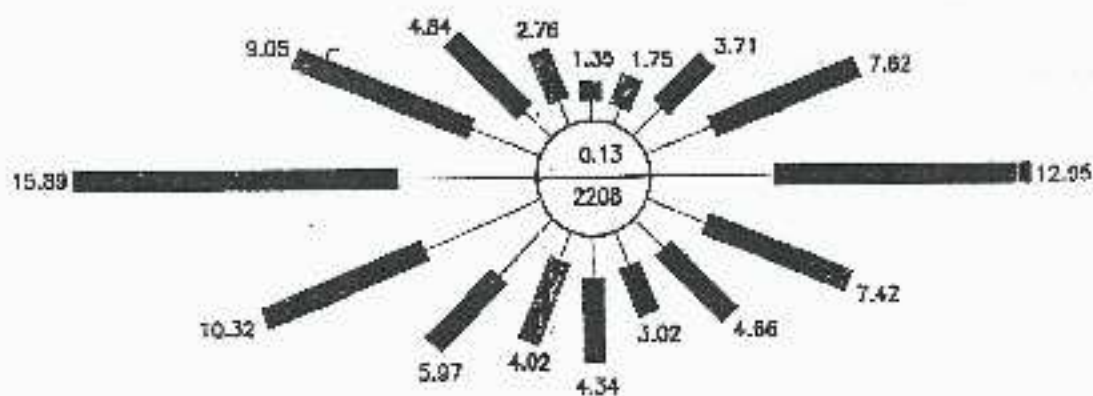
Date	Wind Speed Kmph		Wind	Temp °C		R.H. %	Atm. Pre.	Rainfall
	Max	Min	Direction	Max	Min	Avg.	mm of Hg	(mm)
5/1/2005	15.9	3.3	W	35.8	22.3	46	725	0
5/2/2005	15.2	4.5	W	33.5	22.8	46	725	0
5/3/2005	17.8	5.1	W	34.2	23.8	48	725	1.2
5/4/2005	19.5	2.5	WSW	34.3	21.6	54	726	7.2
5/5/2005	10.5	0.8	SSW	34.8	23.0	51	726	0
5/6/2005	12.5	0.7	SSW	35.0	23.8	47	725	0
5/7/2005	12.6	0.8	SW	36.4	23.5	49	725	0
5/8/2005	13.3	1.3	W	35.5	23.5	47	725	0
5/9/2005	15.4	1.5	NNW	35.3	23.7	44	726	0
5/10/2005	7.6	1.7	WSW	34.7	23.5	45	726	0
5/11/2005	7.8	1.3	W	34.7	24.0	48	726	0
5/12/2005	14.3	1.3	W	36.7	23.2	45	726	0
5/13/2005	11.2	1.4	W	33.0	23.3	48	725	0
5/14/2005	13.5	1.4	W	36.5	23.6	48	725	0
5/15/2005	11.2	1.1	W	36.5	24.1	51	725	0
5/16/2005	15.1	1.4	WSW	36.9	24.5	50	726	0
5/17/2005	17.7	1.5	WSW	36.2	24.9	51	725	0
5/18/2005	16.3	2.6	W	36.5	24.9	48	726	0
5/19/2005	15.4	1.2	W	37.5	25.4	47	726	0
5/20/2005	19.4	4.9	W	38.4	24.1	62	726	18.4
5/21/2005	16	2.7	WNW	36.7	23.1	59	726	5.5
5/22/2005	11.2	1.5	W	35.5	23.7	54	726	0
5/23/2005	16.8	3.2	WSW	36.2	24.4	52	725	0
5/24/2005	9.4	1.1	WNW	36.8	24.8	57	725	0
5/25/2005	13.2	3.6	W	36.3	24.5	49	726	0
5/26/2005	18.6	3.8	WNW	36.4	23.0	61	726	4.7
5/27/2005	18.3	3.3	W	35.8	22.8	63	725	8.5
5/28/2005	15.7	2.7	WSW	36.4	24.3	64	726	1.8
5/29/2005	13.2	1.5	W	35.7	23.6	52	725	0
5/30/2005	19.9	2.5	WNW	35.7	22.3	63	726	19.8
5/31/2005	14.2	1.2	W	34.2	23.7	66	726	1.0
MONTH	19.9	0.7	W	38.4	21.6	52	726	88.1

FIG NO. SEASONAL WINDROSE



PROJECT :
LOCATION : MINES OFFICE

SEASON : SUMMER
PERIOD : MARCH-05 - MAY-05



SCALE : 1 CM = 2.5%

(NOS. IN PERCENTAGE)

WIND VELOCITY
(MPH)



<1.0 1-5 5-11 11-19

AMBIENT AIR QUALITY DATA

Location: Vankatagiri.- AA1

Period : Summer 2005



Sampling Date	Sampling Time	SPM	RPM	SO ₂	NO ₂	CO & HC
01.03.05	06-14 14-22 22-06	149	39	10.5	12.6	BDL
02.03.05	06-14 14-22 22-06	171	45	11.3	12.8	BDL
07.03.05	06-14 14-22 22-06	163	41	10.9	12.1	BDL
08.03.05	06-14 14-22 22-06	138	32	12.6	13.1	BDL
14.03.05	06-14 14-22 22-06	141	38	11.8	12.1	BDL
15.03.05	06-14 14-22 22-06	159	40	12.3	13.1	BDL
21.03.05	06-14 14-22 22-06	191	48	11.9	12.6	BDL
22.03.05	06-14 14-22 22-06	173	44	12.9	13.1	BDL
28.03.05	06-14 14-22 22-06	166	43	11.9	12.6	BDL
29.03.05	06-14 14-22 22-06	133	35	10.3	11.5	BDL
04.04.05	06-14 14-22 22-06	162	45	12.8	14.3	BDL
05.04.05	06-14 14-22 22-06	155	41	12.0	13.5	BDL
11.04.05	06-14 14-22 22-06	149	37	12.5	13.0	BDL
12.04.05	06-14 14-22 22-06	143	35	11.5	12.3	BDL
18.04.05	06-14 14-22 22-06	169	48	10.5	11.3	BDL
19.04.05	06-14 14-22	179	51	11.8	13.1	BDL



	22-06					
25.04.05	06-14 14-22 22-06	186	53	10.5		
26.04.05	06-14 14-22 22-06	155	48	12.1	13.1	
02.05.05	06-14 14-22 22-06	171	55	11.9	12.3	BDL
03.05.05	06-14 14-22 22-06	130	36	10.3	11.8	BDL
09.05.05	06-14 14-22 22-06	135	31	12.1	13.4	BDL
10.05.05	06-14 14-22 22-06	151	39	11.8	12.6	BDL
16.05.05	06-14 14-22 22-06	159	43	12.6	13.1	BDL
17.05.05	06-14 14-22 22-06	133	31	11.9	12.4	
23.05.05	06-14 14-22 22-06	149	34	11.3	12.3	BDL
24.05.05	06-14 14-22 22-06	165	43	10.9	11.4	BDL

* All monitored CO values were found to be BDL (< 114.6 µg/m³)

AMBIENT AIR QUALITY DATA

Location: Ramgad - AA2

Period : Summer 2005

Unit: µg/m³

Sampling Date	Sampling Time	SPM	RPM	SO ₂	NO _x	CO & HC
01.03.05	06-14 14-22 22-06	109	21	BDL	BDL	BDL
02.03.05	06-14 14-22 22-06	98	19	BDL	BDL	BDL
07.03.05	06-14 14-22 22-06	106	23	BDL	BDL	BDL
08.03.05	06-14 14-22 22-06	110	28	BDL	BDL	BDL
14.03.05	06-14 14-22 22-06	89	18	BDL	BDL	Note: BDL SO ₂ : <10µg NO _x : <10µg
15.03.05	06-14 14-22 14-22	105	25	BDL	BDL	BDL

21.03.05	06-14 14-22 22-06	116	29	BDL	BDL	BDL
22.03.05	06-14 14-22 22-06	121	35	BDL	BDL	BDL
28.03.05	06-14 14-22 22-06	114	31	BDL	BDL	BDL
29.03.05	06-14 14-22 22-06	107	26	BDL	BDL	BDL
04.04.05	06-14 14-22 22-06	112	29	BDL	BDL	BDL
05.04.05	06-14 14-22 22-06	97	20	BDL	BDL	BDL
11.04.05	06-14 14-22 22-06	86	17	BDL	BDL	BDL
12.04.05	06-14 14-22 22-06	115	17	BDL	BDL	BDL
18.04.05	06-14 14-22 22-06	102	30	BDL	BDL	BDL
19.04.05	06-14 14-22 22-06	107	24	BDL	BDL	BDL
25.04.05	06-14 14-22 22-06	88	21	BDL	BDL	BDL
26.04.05	06-14 14-22 22-06	89	19	BDL	BDL	BDL
02.05.05	06-14 14-22 22-06	108	25	BDL	BDL	BDL
03.05.05	06-14 14-22 22-06	89	17	BDL	BDL	BDL
09.05.05	06-14 14-22 22-06	79	16	BDL	BDL	BDL
10.05.05	06-14 14-22 22-06	92	19	BDL	BDL	BDL
16.05.05	06-14 14-22 22-06	114	26	BDL	BDL	BDL
17.05.05	06-14 14-22 22-06	106	21	BDL	BDL	BDL
23.05.05	06-14 14-22 22-06	109	23	BDL	BDL	BDL



21.04.05	06-14 14-22 22-06	130	36	12.1	13.8	BDL
27.04.05	06-14 14-22 22-06	128	29	12.5	14.6	BDL
28.04.05	06-14 14-22 22-06	134	39	11.9	14.3	BDL
04.05.05	06-14 14-22 22-06	125	28	12.3	14.3	BDL
05.05.05	06-14 14-22 22-06	117	22	13.8	15.2	BDL
11.05.05	06-14 14-22 22-06	103	16	12.6	14.9	BDL
12.05.05	06-14 14-22 22-06	123	19	12.1	13.8	BDL
18.05.05	06-14 14-22 22-06	130	29	13.6	14.3	BDL
19.05.05	06-14 14-22 22-06	121	26	12.6	13.2	BDL
25.05.05	06-14 14-22 22-06	116	24	13.8	14.3	BDL
26.05.05	06-14 14-22 22-06	109	18	14.0	15.4	BDL



* All monitored CO values were found to be BDL ($< 114.5 \mu\text{g}/\text{m}^3$)

AMBIENT AIR QUALITY DATA

Location: Siddapura - AA4

Period : Summer 2005

Unit: $\mu\text{g}/\text{m}^3$

Sampling Date	Sampling Time	SPM	RPM	SO ₂	NO _x	CO & HC
02.03.05	06-14 14-22 22-06	121	25	BDL	BDL	BDL
03.03.05	06-14 14-22 22-06	106	23	BDL	BDL	BDL
09.03.05	06-14 14-22 22-06	115	22	BDL	BDL	BDL
10.03.05	06-14 14-22 22-06	102	19	BDL	BDL	BDL
16.03.05	06-14 14-22 22-06	96	18	BDL	BDL	BDL

24.05.05	06-14 14-22 22-06	98	22	BDL
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* All monitored CO values were found to be BDL ($< 114.5 \mu\text{g}/\text{m}^3$)

AMBIENT AIR QUALITY DATA

Location: Susila Nagar - AA3

Period : Summer 2005



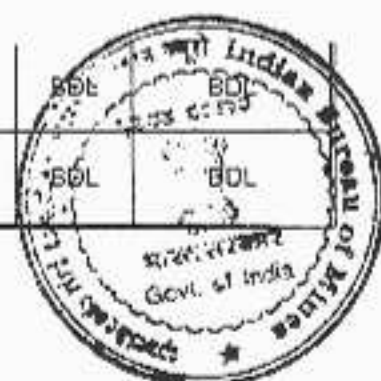
Sampling Date	Sampling Time	SPM	RPM	SO ₂	CO
02.03.05	06-14 14-22 22-06	134	38	13.0	14.3 BDL
03.03.05	06-14 14-22 22-06	140	43	12.1	13.8 BDL
09.03.05	06-14 14-22 22-06	126	29	11.9	12.6 BDL
10.03.05	06-14 14-22 22-06	120	27	14.3	15.1 BDL
16.03.05	06-14 14-22 22-06	118	26	13.9	14.5 BDL
17.03.05	06-14 14-22 22-06	132	42	12.8	13.4 BDL
23.03.05	06-14 14-22 22-06	125	30	12.3	14.6 BDL
24.03.05	06-14 14-22 22-06	117	29	13.2	14.3 BDL
30.03.05	06-14 14-22 22-06	137	40	12.8	13.1 BDL
31.03.05	06-14 14-22 22-06	125	31	12.1	13.0 BDL
06.04.05	06-14 14-22 22-06	118	27	12.8	13.8 BDL
07.04.05	06-14 14-22 22-06	115	25	13.6	14.9 BDL
13.04.05	06-14 14-22 22-06	126	25	12.3	13.6 BDL
14.04.05	06-14 14-22 22-06	131	32	12.1	13.6 BDL
20.04.05	06-14 14-22 22-06	117	23	13.6	14.3 BDL

17.03.05	06-14 14-22 22-08	105	24	BDL	BDL	BDL
23.03.05	08-14 14-22 22-06	113	25	BDL	BDL	BDL
24.03.05	08-14 14-22 22-06	125	29	BDL	BDL	BDL
30.03.05	06-14 14-22 22-06	138	32	BDL	BDL	BDL
31.03.05	06-14 14-22 22-08	133	31	BDL	BDL	BDL
06.04.05	06-14 14-22 22-06	124	28	BDL	BDL	BDL
07.04.05	06-14 14-22 22-08	119	21	BDL	BDL	BDL
13.04.05	06-14 14-22 22-06	129	27	BDL	BDL	BDL
14.04.05	06-14 14-22 22-08	106	19	BDL	BDL	BDL
20.04.05	06-14 14-22 22-08	131	32	BDL	BDL	BDL
21.04.05	06-14 14-22 22-06	117	20	BDL	BDL	BDL
27.04.05	06-14 14-22 22-08	136	38	BDL	BDL	BDL
28.04.05	06-14 14-22 22-06	128	29	BDL	BDL	BDL
04.05.05	06-14 14-22 22-06	135	39	BDL	BDL	BDL
05.05.05	06-14 14-22 22-06	105	22	BDL	BDL	BDL
11.05.05	06-14 14-22 22-06	114	26	BDL	BDL	BDL
12.05.05	06-14 14-22 22-06	123	28	BDL	BDL	BDL
18.05.05	06-14 14-22 22-06	125	25	BDL	BDL	BDL
19.05.05	06-14 14-22 22-06	121	24	BDL	BDL	BDL



25.05.05	08-14 14-22 22-06	130	28	BDL
26.05.05	08-14 14-22 22-06	126	23	BDL

* All monitored CO values were found to be BDL ($< 114.5 \mu\text{g}/\text{m}^3$)



AMBIENT AIR QUALITY DATA

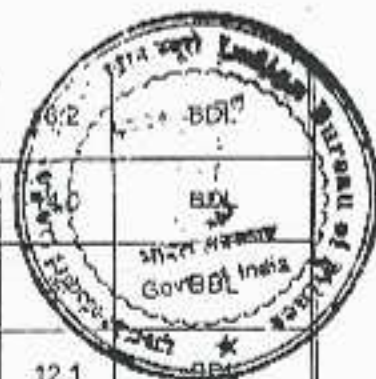
Location: Gunda - AA5

Period : Summer 2005

Unit: $\mu\text{g}/\text{m}^3$

Sampling Date	Sampling Time	SPM	RPM	SO ₂	NO _x	CO & HC
04.03.05	08-14 14-22 22-06	155	39	11.5	14.3	BDL
05.03.05	08-14 14-22 22-06	136	34	13.2	15.3	BDL
11.03.05	08-14 14-22 22-06	141	37	12.9	13.6	BDL
12.03.05	08-14 14-22 22-06	155	42	14.1	15.3	BDL
18.03.05	08-14 14-22 22-06	120	30	16.3	18.4	BDL
19.03.05	08-14 14-22 22-06	136	32	13.8	14.3	BDL
25.03.05	08-14 14-22 22-06	146	38	12.6	13.4	BDL
26.03.05	08-14 14-22 22-06	175	51	11.3	12.8	BDL
01.04.05	08-14 14-22 22-06	140	35	10.4	12.8	BDL
02.04.05	08-14 14-22 22-06	146	38	12.5	13.2	BDL
08.04.05	08-14 14-22 22-06	183	41	13.4	14.2	BDL
09.04.05	08-14 14-22 22-06	135	35	4.6	15.1	BDL
15.04.05	08-14 14-22 22-06	141	37	13.8	14.3	BDL
16.04.05	08-14 14-22 22-06	172	51	13.1	14.2	BDL
	06-14					

22.04.05	06-14 14-22 22-06	12.8	29	12.5		
23.04.05	06-14 14-22 22-06	140	37	13.1		
29.04.05	06-14 14-22 22-06	133	34	12.6		
30.04.05	06-14 14-22 22-06	149	39	11.4	12.1	
06.05.05	06-14 14-22 22-06	129	32	12.1	14.8	BDL
07.05.05	06-14 14-22 22-06	158	41	13.2	15.1	BDL
13.05.05	06-14 14-22 22-06	140	32	13.5	14.8	BDL
14.05.05	06-14 14-22 22-06	149	38	14.3	15.1	BDL
20.05.05	06-14 14-22 22-06	179	45	13.6	14.2	BDL
21.05.05	06-14 14-22 22-06	146	40	13.1	15.3	
27.05.05	06-14 14-22 22-06	130	30	12.5	13.8	BDL
28.05.05	06-14 14-22 22-06	121	27	13.4	14.2	BDL



* All monitored CO values were found to be BDL ($< 114.5 \mu\text{g}/\text{m}^3$)

AMBIENT AIR QUALITY DATA

Location: Jaisinghpura - AAS

Period : Summer 2005

Unit: $\mu\text{g}/\text{m}^3$

Sampling Date	Sampling Time	SPM	RPM	SO ₂	NO _x	CO & HC
04.03.05	06-14 14-22 22-06	163	45	16.5	18.3	BDL
05.03.05	06-14 14-22 22-06	181	51	14.9	15.2	BDL
11.03.05	06-14 14-22 22-06	192	55	13.5	14.9	BDL
12.03.05	06-14 14-22 22-06	179	48	13.1	14.5	BDL
	06-14					

18.03.05	06-14 14-22 22-06	166	43	12.9		
19.03.05	06-14 14-22 22-06	189	49	14.3		
25.03.05	06-14 14-22 22-06	193	54	15.1		
26.03.05	06-14 14-22 22-00	182	48	14.9	15.8	
01.04.05	06-14 14-22 22-06	174	49	13.5	14.2	BDL
02.04.05	06-14 14-22 22-06	171	49	12.6	13.1	BDL
08.04.05	06-14 14-22 22-06	192	55	13.5	14.5	BDL
09.04.05	06-14 14-22 22-06	169	45	12.9	13.4	BDL
15.04.05	06-14 14-22 22-06	186	48	13.5	14.6	BDL
16.04.05	06-14 14-22 22-06	159	39	12.5	13.9	BDL
22.04.05	06-14 14-22 22-00	173	48	13.6	14.3	BDL
23.04.05	06-14 14-22 22-06	181	43	12.5	13.4	BDL
29.04.05	06-14 14-22 22-06	196	49	12.8	14.9	BDL
30.04.05	06-14 14-22 22-06	191	54	14.5	16.2	BDL
06.05.05	06-14 14-22 22-06	185	51	13.5	14.2	BDL
07.05.05	06-14 14-22 22-06	181	45	13.9	15.9	BDL
13.05.05	06-14 14-22 22-06	170	43	14.2	16.5	BDL
14.05.05	06-14 14-22 22-06	145	36	13.8	14.3	BDL
20.05.05	06-14 14-22 22-06	159	40	12.9	15.3	BDL



21.05.05	08-14 14-22 22-06	175	43	11.9	13.0
27.05.05	08-14 14-22 22-06	130	173	41	13.4
28.05.05	08-14 14-22 22-06	140	36	13.4	BDL India

* All monitored CO values were found to be BDL ($< 114.5 \mu\text{g}/\text{m}^3$)



Table 13.3

AMBIENT NOISE LEVEL DATA

Period : Summer 2005.

Sl. No.	Location	Noise Level dB (A)	
		Day Time	Night Time
1	Venketagiri Village	69	48
2	Ramgad Village	60	35
3	Sushila Nagar	74	51
4	Siddapura Village	57	35
5	Gunda Village	50	40
6	Jaisinghapura Village	65	43



Table 13.4
Dust fall Data

Period : Summer 2005


Unit : M.T./Sq.Km./Month

Venketagiri Village	Ramgad Village	Susila Nagar Village	Siddapura Village	Gunda Village	Jaisingh Pura Village	Core Zone
9.3	10.2	8.2	3.5	8.5	6.5	10.5

TABLE : 13.5 GROUND WATER QUALITY DATA

Season : Summer - 2005

Sampling Date : 15-03-2005



Sl. No.	Parameters	Units	Venkatgiri B/W	Ramgud Drinking Water	Susila Nagar B/W	Siddapura B/W	Gurur B/W	Guinur B/W
1	Color	Hazen Units	<5	<5	<5	<5	<5	<5
2	Odour	-	u.o.	u.o.	u.o.	u.o.	u.o.	u.o.
3	Taste	-	Agr	Agr	Agr	Agr	Agr	Agr
4	Turbidity NTU	NTU	6	8	7	5	5	5
5	pH	-	7.91	7.63	8.13	7.95	7.63	8.10
6	Conductivity	umhos	980	1245	1693	634	1259	1483
7	T.Dissolved Solids	mg/l	591	810	1100	410	513	936
8	T.Alkalinity as CaCO ₃	mg/l	80	120	180	60	110	140
9	T.Hardness as CaCO ₃	mg/l	120	220	260	80	180	170
10	Calcium as Ca	mg/l	29	54	65	18	45	40
11	Magnesium as Mg	mg/l	11	18	21	6	15	13
12	Copper as Cu	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
13	Iron as Fe	mg/l	0.20	0.18	0.25	0.16	0.11	0.13
14	Manganese as Mn	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
15	Chlorides as Cl	mg/l	140	180	240	85	190	210
16	Sulphates as SO ₄	mg/l	20	45	110	15	55	73
17	Nitrates as NO ₃	mg/l	6.5	4.3	9.2	8.3	7.2	10.3
18	Flouride as F	mg/l	1.20	1.19	0.80	0.73	0.82	1.20
19	Phenols as C ₆ H ₅ OH	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
20	Mercury as Hg	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
21	Cadmium as Cd	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
22	Selenium as Se	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
23	Arsenic as As	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
24	Cyanide as CN	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
25	Lead as Pb	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
26	Zinc as Zn	mg/l	0.20	0.23	0.15	0.10	0.30	0.25
27	Hexavalent Chromium (as Cr ⁶⁺)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
29	Mineral Oil	mg/l	Nil	Nil	Nil	Nil	Nil	Nil
30	Residual Chlorine	mg/l	Nil	Nil	Nil	Nil	Nil	Nil
31	Total Coliforms	MPN/100ml	11	11	22	11	55	22
32	Pesticides	-	Nil	Nil	Nil	Nil	Nil	Nil
33	Alpha emitters	uc/ml	Nil	Nil	Nil	Nil	Nil	Nil
34	Beta emitters	uc/ml	Nil	Nil	Nil	Nil	Nil	Nil
35	E-Coli	Nos/100ml	Nil	Nil	Nil	Nil	Nil	Nil

Table- 13.6: Surface Water Quality Data

Sl. No.	Parameters	Unit	IS:2296-1982	Venkatagiri Kere	Venkatagiri Kere
1	pH	-	6.5 - 8.5	8.49	8.49
2	Colour	Hazen Units	300	Clear	P. Yellow
3	Taste & Odour	As perceived	-	U.O.	U.O.
4	Conductivity	u-mhos/cm	-	110	163
5	Temperature	$^{\circ}\text{C}$	-	32.0	33.5
6	Solids		-		
	a. Volatile	mg/l	-	10	15
	b. Suspended	mg/l	-	25	30
	c. Dissolved	mg/l	1500	65	93
	d. Total	mg/l	-	90	123
7	Oil & Grease	mg/l	0.1	Nil	Nil
8	Dissolved Oxygen	mg/l	4.0	5.1	6.3
9	Residual Chlorine	mg/l	-	Nil	Nil
10	BOD - 5 days, 20°C	mg/l	3	3	5
11	COD	mg/l	-	25	36
12	Nitrogen				
	a. Ammoniacal	mg/l	-	16.5	9.3
	b. Total Kjeldhal	mg/l	-	20.3	15.6
13	Free Ammonia	mg/l	-	Nil	Nil
14	Chloride (as Cl)	mg/l	600	25	30
15	Fluoride (as F)	mg/l	1.5	0.65	0.73
16	Sulphates (as SO_4)	mg/l	400	15	10
17	Sulphides (as S)	mg/l	-	Nil	Nil
18	Nitrates (as NO_3)	mg/l	50	7.5	6.3
19	Cyanides (as CN)	mg/l	0.05	<0.1	<0.1
20	Dissolved Phosphates (as PO_4)	mg/l	0.75	0.15	0.20
21	Insecticides/Pesticides	mg/l	Absent	Absent	Absent
22	Phenols	mg/l	0.001	<0.001	<0.001



TABLE : 13.7 RAINFALL DATA



Sl. No.	Month	Yearwise Rainfall Data (in mm)							
		1998	1999	2000	2001	2002	2003	2004	2005
1	January	-	-	-	-	4.2	-	-	19.9
2	February	-	-	1.2	-	15.2	-	-	0.4
3	March	-	-	-	-	-	20.5	1.1	3.7
4	April	-	-	-	11.4	-	57.2	92.9	89.1
5	May	-	27.4	22.4	9.2	36.3	-	70.5	-
6	June	-	71.8	52.4	26.8	126.8	6.9	-	-
7	July	44.6	9.8	11.5	5.2	259.2	65.3	-	-
8	August	48.0	64.4	187.0	64.0	29.7	63.4	-	-
9	September	162.6	72.0	62.2	206.7	14.0	45.3	-	-
10	October	159.6	58.0	130.7	241.0	141.3	146.5	-	-
11	November	30.0	-	-	38.9	-	4.4	-	-
12	December	2.0	-	-	-	-	-	-	-
Total Rainfall (mm)		445.0	331.4	487.4	694.1	828.7	409.5	164.5	

Highest Rainfall : August 5th, 2000 - 124.1 mm

Table 13.8
Soil Quality Data

Period : Summer 2005



Sl. No.	Parameter	Ramgad Village Agriculture Soil	Venkatagiri Village Agriculture Soil	Siddapur Village Agriculture Soil	Core Zone
1.	Textural Class.	Sandy loam	Sandy loam	Clay Loam	Sandy loam
2.	Silt %	58	63	40	61
3.	PH	8.62	8.49	8.72	8.36
4.	E.C. (m.mhos/cm)	0.33	0.22	0.20	0.88
5.	Organic Carbon (meq/100gms)	0.05	0.08	0.10	0.10
6.	Phosphorous as P (Kg/ha)	20	25	20	10
7.	Potassium as K (meq/100gms)	0.01	0.01	0.01	0.01
8.	Sulphate as SO ₄ (meq/100gms)	0.25	0.05	0.08	0.05
9.	Chlorides as Cl (meq/100gms)	1.10	0.10	0.13	0.18

TABLE: 13.9 Basic Statistics of Sandur Taluk

Sl.No.	Item	Unit	Sandur Taluk
1	Area	Sq. Km	1258
2	Population	No.	188400
3	Sex ratio	No. of Female per/1000 male	954
4	Population density	No. per Sq. Km	149
5	Population growth rate	Hectares	
6	Land use (area)		
	a) Forest	Hectares	241
	b) Land not available for cultivation		
	Non agricultural uses		17700
	Barren	Hectares	7170
	Sub-total		24,870
	c) Other Uncultivated Land		
	Cultivable waste land		1659
	Permanent Pastures		45
	Trees & groves		1704
	Sub-total		
	d) Fallow land		
	i) Current fallow	Hectares	9534
	ii) Others		58
	Sub- total		9592
	e) Net area sown		34075
	Total geographical area (a to e)		94359
7	Education		
	a) Primary school		175
	b) High school		20
	c) Pre-University college		3
	d) College		-
	e) Polytechnical college		1
8	Health	No.	
	a) Government Hospital		1
	b) No. of beds in Government Hospitals		561
	Private Hospitals		-
9	Post Office	No.	36
10	Telegraph Office		20



ENVIRONMENTAL MANAGEMENT PLAN (EMP):



GENERAL

The sources of air pollutants viz., SPM and RSPM in Bellary – Hospet area are mining operations and ore transportation activity. The impacts are also dependent on meteorological conditions in the area. Proper mitigation measures are necessary to reduce the dust pollution as well as fumes containing noxious gases emanated during blasting operations as described below:

Mining Operations

Typically, there are several options for the control of fugitive particulate emissions from any given source. The uncontrolled emission rate is the product of the source extent and uncontrolled emission factor, a reduction in either of these two variables produces a proportional reduction in the uncontrolled emission rate.

The reduction of source extent and the incorporation of process modifications or adjusted work practices are preventive techniques for control of fugitive particulate emissions. In addition, there are variety of "add-on" measures that can be used for either (i) the prevention of the creation and / or release of particulate matter into the atmosphere or (ii) the capture and removal of the particles after they have become airborne.

Preventive measures include those measures that prevent or substantially reduce the injection of particles into the surrounding air environment. Preventive measures are independent of whether the particulate is emitted directly or indirectly into the ambient air. The major types of preventive measures include passive enclosures (full or partial), wet suppression, stabilization of unpaved surfaces, paved surface cleaning, work practices, and housekeeping.

Suitable Environmental management measures are suggested to mitigate the possible negative impacts that may be caused to the various attributes of environment due to the proposed Iron Ore Mine.



CONTROL ON MICRO-METEOROLOGICAL ASPECTS:

Analysis of meteorological data has not revealed any appreciable adverse trend with reference to rainfall, temperature, humidity or wind velocity and direction over a period of time.

MANAGEMENT MEASURES FOR AIR QUALITY:

The sources of air pollution in this mining activity are ore extraction handling, transportation and screening operations. The main air pollutant would be suspended particulate matter (SPM), Respirable suspended particulate matter (RSPM), Sulphur dioxide (SO_2) and Oxides of Nitrogen (NO_x). Contributed also by diesel operated excavation / loading equipment and vehicles plying on haul roads.

Generation of dust in the proposed mining area can be controlled by suitable methods such as-

- i) Development of green barriers along with approach roads, Buffer zone and around statutory buildings.
- ii) Regular water sprinkling to suppress the dust on haul roads, service roads and mining face by truck mounted water tankers.

- iii) Covering of all conveyors and chutes at the transfer points at gravity screening plant.
- iv) Construction of well designed haul roads with side drains and installation on both the sides.
- v) Spraying of water in and around the plant hopper.
- vi) Proper maintenance of the heavy earth moving equipment.
- vii) Proper gradient of haul roads and service roads.
- viii) Avoiding of overloading of tippers and covering with tarpaulins during transportation.
- ix) Periodical monitoring of air quality.



MANAGEMENT MEASURES FOR WATER QUALITY:

As mentioned earlier, the only surface water source in the project is rainwater. The following measures are proposed by the applicant to control water pollution.

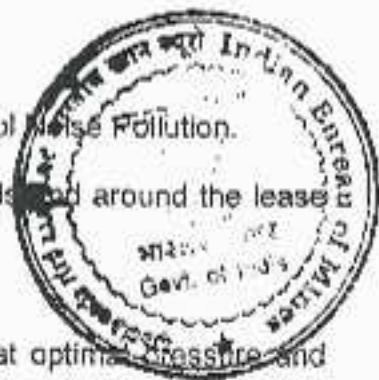
- i) Creation of water garland to regulate and drain the rain water from the mine area to check dams. This will help in carrying silt to the water bodies and fields, rain water passing from the higher elevations enroute and joining the water courses.
- ii) Providing sufficient check dams, Gully checks to check any silt flowing along with the surface run-off in the valleys.

CONTROL OF NOISE & VIBRATION:

NOISE:

The following abatement measures will be undertaken to control Noise Pollution.

- i) Planting of trees with thick foliage along approach roads and around the lease boundary to act as acoustic barriers.
- ii) Use of sharp drilling bits, delivery of compressed air at optimal pressure and proper maintenance of compressor, drilling machine, loader and tipper trucks. The equipment shall generate minimum noise with suitable modification.
- iii) Blasting noise can be minimized by using optimum charge and M.S. delay detonators. The explosive energy should be used for rock breakage than wasting on noise generation.
- iv) Provision of earmuffs/ear plugs to drillers, loader and compressor operators. This is a statutory requirement from DGMS under MMR 1961.



VIBRATION

The source of ground vibration is deep hole blasting of on proposed mining activity. The permissible limits the peak particle velocity (PPV) depend upon charge per delay, delay interval and type of explosive.

The following measures shall be adopted:

- i) Charge per delay shall be regulated.
- ii) M.S. delay detonators/relays shall be exclusively used.
- iii) Stemming column shall be more than the burden to avoid blown out shots.
- iv) Each blast shall be carefully planned, supervised, executed and observed.

MANAGEMENT MEASURES FOR SOIL CONSERVATION:

There is no topsoil. All protective arrangements such as construction of the gully plugs, check dams and others will be undertaken.



FLORA AND FAUNA:

FLORA:

The core zone area is located on top of the hill. The hilltops due to high velocity winds do not sustain any growth of trees. The flora is generally shrubs and grasses with occasional small trees. There is no adverse impact on core-zone flora due to the proposed mining operations. As the mining activity will be limited to the core zone, no impact on the flora of the buffer zone due to proposed mining activities are anticipated. No residential area is planned. The buffer zone flora is un-disturbing due to the proposed mining activities. No direct impact of mining activities on the vegetation of the area was observed.

FAUNA:

The area is not a significant faunal habitat. No endangered or endemic species are found in the lease area. No land degradation or deforestation shall take place in the buffer zone, as the mining activity shall be limited to the ML area.

Thus, the impact on the fauna of the buffer zone due to the mining activity will be minimal. No endangered species of the fauna has been sighted in the area and as fauna can move to the surrounding areas, no significant impact on their survival is anticipated.

Fauna is observed in the study area include Crow, Batair, Koel, Nikanthi, Kabutar, Teetar, Uloo, Cheel, Mor, Tota, Bulbul, Shikra, Buzzard, Blue Jay, Whistling teal, Gidh, Maina, Egred, Bbrahmany and Kite.



DISASTER MANAGEMENT PLAN:

The complete proposed mining operations will be carried out under the guidance of Mines Manager. Directorate General of Mines Safety (DGMS) have issued a number of standing orders, model standing orders and circulars to be followed by the mine management in case of disaster, if any. Moreover, mining staff will be sent for refresher courses from time to time to keep them updated with the latest on safety aspects.

However, following natural / industrial hazards may occur during mining operation:

- Slope failures at the mine faces.
- Accident due to explosives.
- Accident due to heavy mining equipment.

In order to avoid the above disasters the following control measures:

- Checking and regular maintenance of garland drains and bunds to avoid build-up of water in the mine pit.
- Safety precautions and provisions of Metalliferous Mines Regulations 1961 are strictly followed during mining operations.
- Entry of unauthorized persons in to the mine will be prohibited.

- Fire fighting and first aid materials will provide in the mine office and area.
- Safety appliances such as safety boots, helmets, goggles and earplugs will provided to the employees and regularly checked for the proper use.
- Mine will be worked as per approved Mining Plan only.
- Regular maintenance and testing of all mining equipment as per manufacturer's guidelines.
- Water spraying will be done for suppression of dust on the haulage roads.



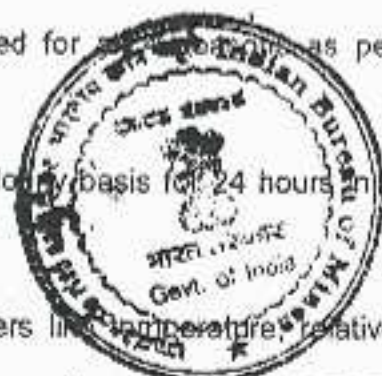
For handling any type of disaster situation, a rescue team will be formed by specialized training of a selected group of mining personnel.

ENVIRONMENTAL MONITORING PROGRAMME:

Post project environmental monitoring programme will be carried out as per the Guidelines of MOEF / CPCB, by the out sourced agency.

- AMBIENT AIR QUALITY:-** The ambient Air Quality shall be monitored for SPM, RSPM, SO₂ & NO_x for 3 seasons.
- FUGITIVE AIR QUALITY:-** Fugitive Air Quality Respirable & Non-Respirable silica particles has to be monitored near haulage road, loading point & working pits.
- DUST FALL RATE:-** Dust fall rate measurements have to be carried out for 30 days at a stretch at all Ambient Air Quality / Work Zone Air Quality stations located in crushing & screening plant, mine area and in surrounding villages.

- d) **WATER QUALITY:-**Water quality needs to be monitored for surface / Ground Water, Quality Parameters.
- e) **NOISE LEVEL:-** Noise level shall be monitored on Hourly basis for 24 hours in a month.
- f) **MICROMETEOROLOGY:-** Micrometeorological parameters like temperature, relative humidity, wind speed and direction shall be monitored as per the guidelines of CPCB / MOEF, at Mine Area.
- g) **SOIL SAMPLE:-** The quality of soil will be monitored regularly. The samples will be taken from Agriculture Land and mine lease area.
- h) **CHECK DAMS & DRAINS:-** Check dams will be constructed across the foot of the hill and need to be maintained well and few more may be constructed in future. Proper maintenance will be done regularly to the drains around the proposed dumps.
- i) **PLANTATION:-** Plantation programme will be carried out in mining area along the main haulage road.

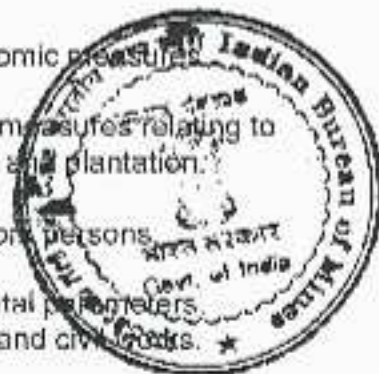


ENVIRONMENTAL CELL

In order to implement the measures suggested for mitigating the adverse impact on the environment and also to monitor some of the environmental parameters regularly, a separate cell shall be constituted with the employed personnel, identifying clearly the functions and responsibilities of each member of the cell as follows.

Mines Manager	:	Over all planning, execution and supervision and implementation of environmental protective measures and monitoring of parameters regularly as per
---------------	---	--

	schedule and socio-economic measures
Asst., Manager	: Implementation of all the measures relating to the air, water, Noise, Soil and plantation.
Part time Medical Officer	: Occupational health of work persons.
Environmental Engineer/Supervisor	: Monitoring of environmental parameters, supervision of plantation and civil works.
Skilled Workers	: Nursery, planting and garden etc.,



FINANCIAL IMPLICATIONS:

After an in-depth examination of the environment management plan, proposed on annual basis for the implementation of different programme, activity wise.

Sl.No.	Proposed Activity	Total Rs. in Laks
1.	Check dams construction.	5.0
2.	Gully Plugs	0.5
3	Dust extractors.	0.2
4	Water tankers for dust suppression	2.0
5	Occupational health like first-aid room with equipment etc.,	0.5
6	Environmental pollution monitoring	1.0
7	Miscellaneous expenses for consultants celebration of safety and environment week etc.,	2.0
Sub Total		13.20
Contingency (10 %)		1.32
Total		14.52

CONCLUSIONS:

The following are the benefits due to proposed mines to the local populations:

- Direct & Indirect employment opportunities.
- Improved road and communication network.
- The Lessor proposes to do some welfare facilities in the study area.



Iron Ore Mine is a proposed mining project seeking environment clearance over an area of 5.90 Hectares. For the production rate 8.77 Lakh tons/annum, the base line data for Air, Water, Noise, Soil and Vibration levels are found to be normal and are well within the permissible limits.

A. John Aloysius
A JOHN ALOYSIUS
RQP/BNG/157/2001/A

Baru

PROGRESSIVE MINE CLOSURE PLAN

(NOTIFICATION GSR 330 (E) DATED 10.4.03)

1.0 Introduction:



Name of Lessee / Applicant : Sri D. Ramosh
Plat No.42, Door No.13
Ganesh Colony,S.N. Pet
Bellary-583 102

Mining Lease No. : Nil
Extent of the Lease : 5.90Hectares
Type of the Lease Area : Revenue Land / Non Forest Land (Ramgad Village, Sandur Taluk, Bellary Dist.)
Present Land use Pattern : The Area is located on a hilly terrain at an altitude of more than 985 meters above MSL, the mining operations will be purely for extraction of Iron-ore. Hence the pattern of land use and its extent is given here under

a) Mining	- 5.26 hectares
b) Waste Dumps	- --
c) Roads	-0.30 hectares
d) Statutory Building	- --
e) Area for afforestation	- --
f) Others	- }
<hr/>	
Total	<u>5.56 hectares</u>

Details of the Area with Location map : The Lease area is marked in red in the Key plan (Plate-1)

The M.L. sketch is prepared on 1inch = 660 feet scale, and is enclosed as Plate 2

Locational Details : ➤ Survey No. - S.No.17 & 18 (part) of Ramgad Village

- Village - Ramgad
- Taluk - Sandur
- District - Bellary
- State - Karnataka
- Topo Sheet Nos. - 57 A/8



Method of Mining : Opencast Mining (Mechanised)
Category-A

Mineral Processing : The Iron ore deposit being friable in nature
Operations : does not require much processing however
screening has to take place for size
separation, which would happen outside
the M.L. area.

1.1 Reasons for Closure:

The occasion that warrants for this exercise is to obtain of M.L. under Rule 22 of MCR-1960, and progressive Mine Closure Plan is a component of Mining Plan (as per circular No. 14/2003, dated 08/08/2003).

As explained in the earlier pages in the current 5 years period, no portion of the M.L. Area is planned for abandonment, and hence there is no scope to elaborate on the nitty-gritties of Mine Closure aspects.

1.2 Statutory Obligations:

The Lessee categorically will comply with the mineral laws (viz., MM& DR Act -1957, MCR-1960, MCDR-1988 and others) and Pollution and Environmental statutes and Mines Act, Rules and Regulations and any other relevant laws that are and will be applicable with regard to mining of the said lease area.

1.3 Progressive Mine Closure Plan Preparation:

Names & Address

- a) Applicant : Sri D. Ramesh
City Press Compound
Behind Sangam Theatre
Bellary - 583 102
- b) Recognised Qualified Person : John A. Aloysius
No. 728, Mission Road
Robertsonpet
K.G.F. - 563 122
- c) Executing Agency : Sri D. Ramesh
Applicant
City Press Compound
Behind Sangam Theatre
Bellary - 583 102



2.0 Mine Description:

2.1 Geology:

Refer Chapter 3.2 . page ____ of this Mining Plan.

2.2 Reserves:

Dealt in detail in chapter 3.4 page ____ and in Annexure - II

2.3 Mining Method:

Mining has been dealt in detail in chapter 4.0 please refer page No. ____ for the same.

2.4 Mineral Beneficiation:

No beneficiation process is involved within the M.L. Area. The iron-ore after being excavated with the help of Hydraulic excavators will be loaded by tippers and will be trucked out of the M.L. Area.



3.0 Review of implementation of Mining Plan / Scheme of Mining including five years progressive Closure Plan upto the Final Closure of the mine.

The Mining Plan of Proposed M.L. of Sri D. Ramesh, situated at Ramgad Village, Sandur Taluk, Bellary District having an extent of 5.90 hectares is envisaged to be worked by opencast method of Mining for extraction of Iron- ore as discussed in the chapter of Mining Plan earlier.

Proposal for Protection of Environment

a. Temporary storage and utilization of Top Soil

The M.L. in question is situated in a non forest area having dry scrub as a blanket with laterite or lateritic ore formations and hence there is very little Top Soil in the area which will be excavated along with Iron ore and sold as ore and therefore no issues of preservation and stacking of Top Soil arise here.

b. Year wise proposal for Reclamation

Iron-ore deposits of Hospet – Bellary- Sandur sector i.e. in Sandur Schist Belt are known for their narrow widths and deeper depths and the Iron-ore deposit here are more than 50 - 100 meters deep. Therefore concurrent reclamation is not feasible. The actual reclamation work will start only at the fag end of the life of the Mine, and the blueprint for the same will be laid out in the final Mine Closure Plan.

c. Afforestation Programme

A detailed Afforestation programme given in the Environmental section of this Mining Plan.



- d. Stabilisation of Dumps
Not Applicable

- e. Measure to Control Erosion / Sedimentation of water Courses.

The existing water courses shall not be disturbed and rain water will continue to flow in the same direction and gather in the usual places away from the Lease areas. The details are discussed in the chapter on Environmental Management Plan.

- f. Treatment and disposal of wastes from mine.

There is no proposal to use water in any of its mining activities but for sprinkling and watering the green areas. Therefore there is no question of water disposal and its treatment in the mines.

- g. Measures for minimizing adverse effects on water regime.

Water courses shall not be disturbed and rain water will continue to flow in the same direction as it was in existence. Neither the water is pumped in or out of Lease area during mining operations so no adverse impact is foreseen on the existing water regime.

- h. Measure for protecting historical movements and for rehabilitation of habitat.

There are no monuments of historical importance in the Lease area, neither in the 5 km radius area of M.L. area.

The mine is situated on a hilly terrain. So there is no question of preserving and safeguarding historical movements and rehabilitation of displaced people.

4.0 Closure Plan

4.1 Mined-Out Land

Of the existing extent of 5.90 hectares and in this current plan mined and as depicted in the year wise Production and Development plans (plate Nos. 1 to 5) and in the interest of mineral development, it's not proposed to reclaim any mined out portion of the mines.



4.2 Water Quality Management

As described earlier the M.L. Area is situated on a hilly terrain at an altitude of more than 985 meters above MSL, hence there is no question of ground water surface ponds, stream, lakes, etc. in the core zone. The only source of water is from rain, and unfortunately the mine is situated in Bellary Dist., which is known for receiving scant rainfall and basically it's a dry area. Bellary on an average receives an average rainfall of 500mm per year.

On the valley side of the terrain there are some seasonal water courses which are undistributed and the rain water flows down through these natural water courses.

4.3 Air Quality Management

One season data (non- monsoon) i.e. rapid EIA was conducted in the mines and in the buffer zone by the applicant himself, is incorporated in this Mining Plan which gives the detailed monitoring report on Air quality parameters and prevention measures to control air pollution,

4.4 Waste Management

Not Applicable

4.5 Top Soil Management

Not Applicable

4.6 Tailing Dam Management

No wet processing / beneficiation happens in the mining area and so no tailings generated in mining operations.



4.7 Infrastructure

There is no infrastructure available in the mine other than the main haulage road for transportation of Iron ore from the top of the mines to the nearby Village. Plus the mining operations are mechanised and only Labour or mechanical equipments like Excavator, Wheel Loader, and Tippers will be used in mining operations. So there is no requirement of electrical power and neither the electrical poles nor power lines run across the mine area.

Being a hilly terrain there are no water lines, Gas pipelines, Sewer lines, Telephone cables, Rails, Bridges, culverts etc at the mines.

4.8 Disposal of Mining Machinery

All machineries are proposed to be taken on hired basis and the question of disposal of mining machinery does not arise at all.

4.9 Safety and Security

The location of the area itself is a big plus on safety and security parameters. The only way to reach the mine is through the main haulage road. It is proposed by the applicant to have Tollgate type of arrangement at the entry point of his Lease area, manned by a security guard all through.

4.10 Disaster management and Risk Management

The mining areas are also under the preview of the Mines Act-1952, Metalliferous Mines Regulations -1961, Mines Rules-1960 etc and the DGMS with its offices all over the country monitor the workings of a mine with regard to health and safety aspects of mines and its workers thereon.

However the risk to general public may arise from the following

- (i) Failure of mine bench slopes
- (ii) Fly rocks from blasting operations (1st year only)
- (iii) Plying on trucks on public roads
- (iv) Fire in bulk in fuel storage and others



There is absolutely no risk to public on account of any of the above factors as entry as unauthorized personnel and vehicles into the mining and processing areas is restricted. Also there is no question of anyone inadvertently approaching, the mining area as the M.L. area is situated on a hilly terrain and the Hill slopes / Valley do not have any path ways to be used by any one.

Assessment of risk involved due to each of the above factors is given here below.

- a) No Slope stability problems are envisaged not only in this M.L. area, but also in this entire sector and also the strata encountered is quite compact.
- b) Blasting will be restricted only to the harder rock formation say for about 10% of the total material handled & controlled blasting techniques like optimum charge, cord relays etc will be the predominant features and also blasting will be conducted under the supervision of statutory Manager while involving experienced and competent persons for front line blasting operations. Blasting will be done only in laterite or lateritic ore formations only which would be completely excavated in the first year of operation.
- c) Only Ten Ton tippers (6 wheelers) are proposed to be used, using local available drivers. So these vehicles will fit into the normal category of Automobiles that ply on roads and would follow all the traffic norms on haulage roads. Hence there is no danger to public and property because of transportation vehicles.

- d) The applicant does not intend to store fuel in bulk quantities in the mining Lease area. Hence no risk is involved due to this factor.

Contact details of person responsible for disaster management:

Sri. D. Ramesh
Applicant
City Press Compound
Behind Sangam Theatre
Bellary-583 102
Phone-(08392) _____



4.11 Care and Maintenance during temporary discontinuance

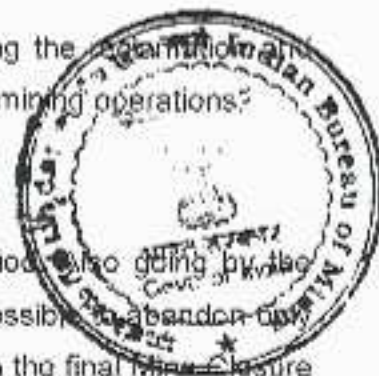
No temporary discontinuance would be there in this plan period from any of the statutory authorities be it Revenue / Forest, Pollution Control Board, Mines and Geology etc as M.L. will be obtained for 20 years from now, plus Environmental Clearance will be given for life of Mine or 20 years (whichever is less) until and unless there is change in the production capacity or there is an enhancement of M.L. Area, and all the formalities with regard to Mineral Laws (MMDR, MCR and MCDR) will be complied.

Also the life of mine as explained earlier at the given rate of production is about 10 years. Hence no discontinuance of workings would be there in this plan period once the mine starts operating.

5.0 Economic Repercussions of Closure of Mine and manpower retrenchments

There is no manpower retrenchment or Socio- Economic repercussions as mining activities are likely to continue for a further period of 10 years & and there is no proposal for closure of the mine.

The present plan is a progressive mine closure plan indicating the rehabilitation measures being taken up simultaneously with the mining operations.



6.0 Time Scheduling for Abandonment

No portion of the mine would be abandoned in this plan period. Also going by the physiography of the mine and the extent applied, it would be possible to abandon the mine at the end of the life of the mine, and which will be discussed in the final mine closure Plan.

7.0 Abandonment / Rehabilitation of cost

The estimation of cost for protective and rehabilitation measures including maintenance and monitoring are given below:

Sl.No.	Proposed Activity	Total Rs. in Laks
1.	Check dams construction.	5.0
2.	Gully Plugs	0.5
3.	Dust extractors.	0.2
4.	Water tankers for dust suppression	2.0
5.	Occupational health like first-aid room with equipment etc.,	0.5
6.	Environmental pollution monitoring	1.0
7.	Miscellaneous expenses for consultants celebration of safety and environment week etc.,	2.0
Sub Total		13.20
Contingency (10 %)		1.32
Total		14.52

Land Use for calculation of Monetary involvement for Financial Assurance



Sl. No	Type of Land Use	Type of Land Use (in Hectares)			The considered as fully reclaimed and rehabilitated	Not considered for calculation of financial assurance
		As at Present	As at the end of Planned period of 5 years	As at the end of Conceptual period (life of Mine)		
1	Area for Excavation	Nil	5.26	5.90	-	5.26
2	Overburden Dump	Nil	-	-	-	-
3	Admin Building & others	Nil	-	-	-	-
4	Roads*	Nil	0.30	0.30	-	-
5	Green Belt**	Nil	-	-	-	-
6	Area which will remain untouched	57.12	0.64	-	-	-
Total						5.26

* Already part of broken up area

** Afforestation only after mineral exhaustion i.e. after full excavation of mineral.

[Signature]
A JOHN ALOYSIUS
RGP/BNG/157/2001/A

[Signature]

8.0 Financial Assurance

The Financial Assurance as said under Rule 23(F)(2) of MCDR 1988 (as amended upto 24th Dec, 2003) will be made by way of an irrevocable Bank guarantee and in favor of the Regional Controller of Mines, Bangalore, for the following:

- | | | |
|--|---|------------------|
| ✓ Precise Area for mining and Allied activities | } | - 5.90 Hectares |
| ✓ Financial Assurance @ Rs. 25,000/- per hectare (Minimum Financial assurance for 'A' Category mines) | | |
| | } | - Rs. 2,00,000/- |

The amount of Rupees Two Lakh only will be made out by way of an Irrevocable Bank guarantee and the performing bank being _____, Bellary branch and in favor of the Regional Controller of Mines, Bangalore, and will be **executed at the time of grant or execution of Mining Lease.**

Place: Bellary
Date : 10th May, 2006

Sri D. Ramesh
Sri D. Ramesh
Applicant

A. John Aloysius
Recognised Qualified Person
A. JOHN ALOYSIUS
RCP/BAG/187,2001/A

This Mining Plan is approved subject to the conditions / stipulations laid down in the Mining Plan approval letter No. MP/248/RS-NA-82.
Date: 12/05/2006

[Signature]
Regional Controller of Mines,
Bangalore
[Stamp]
[Signature]
Regional Controller of Mines,
Bangalore

ANNEXURES

Amexuna -J

Govt. of Karnataka,

No. MOD AML/97/2003-05/13129

DIRECTOR'S OFFICE
MINES AND GEOLOGY DEPT
NO. 49, KIANJIA HILLAVAN
RACE COURSE ROAD
BANGALORE - 560 001
DATE: 24.01.2006
DATE: 25.01.2006



TO

NR.D. RAMESH S/O. D. PULLAIH
CITY PRASS COMPOUND
BELLARY

Sir,

Sub: Application dated 12.09.1997 for grant of M.L. in an extent of 14.59 acres in Rainghad Village, Sandur Taluk, Bellary submission of records - Reg.

Ref: Govt. letter No. CIS MMM 2003 dated 13.01.2006

With reference to the above, you have applied M.L. for iron ore in an extent of 14.59 acres in Rainghad Village, Sandur taluk, Bellary even though the applied area is a patta land as per the rules of mineral rules 1950 you have not submitted the following documents so far. You are required to furnish the following documents to further process your application.

1. Consent letter from Karnataka Pollution Control Board.
2. Report from the Deputy Director, Hospet
3. Approved Mining Plan (3 copies) from I.B.M.
4. N.O.C. from Forest Department Forest Protection Act 1980 Section (2)
5. Affidavit and Income Statement.
6. MOEF from Govt. of India, Forest and environment Department.
7. Clearance under the Environment (Protection) Act 1986

Your ML application will be processed and forwarded as soon as you submit the above documents

Yours faithfully,

sd/-

Director

For: K. Ramesh

Kannada form
Shree
27.5.06

[Signature]

[Signature]



NO. 338 PM/97/12/1977

NAME: SR. T. RAMESH

VILLAGE: KUMAR

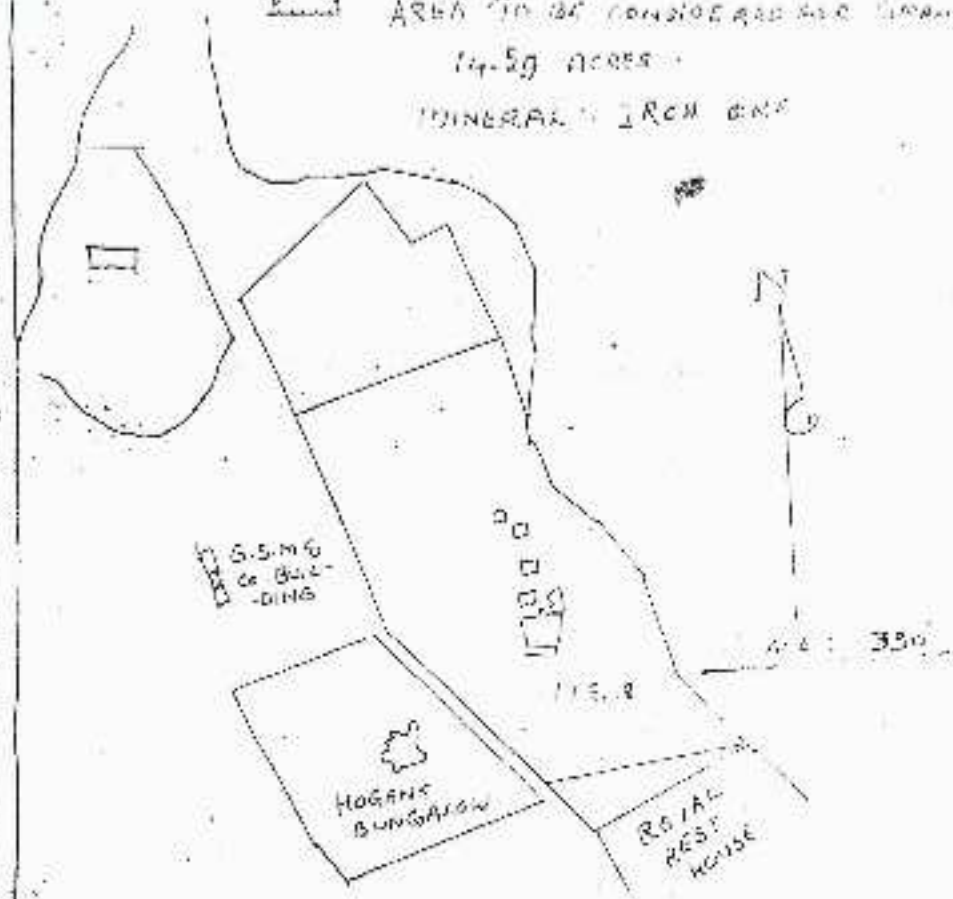
DISTRICT: GILLERY



AREA TO BE CONSIDERED FOR MINING

14.59 ACRES

MINERAL: IRON ORE



Office of Mines & Geology
to Karnataka, Bangalore
11/1/77



ANNEXURE II

SECTION AND CATEGORY WISE IRON ORE RESERVES CALCULATION

Proved

Section	Area Sq. m	Influence m	Volume cum	TCF	Quantity tons	Recovery @ 90% cum	TCF	Qty of Ore Tons
AA ¹	8750	39	263250	3	789750	236925	3.0	710775
BB ¹	6591	50	329550	3	988650	296595	3.0	899785
CC ¹	6538	50	326900	3	980700	294210	3.0	882630
DD ¹	7421	50	371050	3	1113150	333945	3.0	1001835
EE ¹	7120	50	356000	3	1068000	320400	3.0	961200
FF ¹	6628	50	331400	3	994200	298260	3.0	894780
GG ¹	3054	42	254268	3	762804	228841	3.0	686523
					6697254	6027528		





SECTION AND CATEGORY WISE IRON ORE RESERVES CALCULATION

Probable

Section	Area Sq. m	Influence m	Volume cum	TCF	Quantity tons	Recovery @ 90% cum	TCF	Qty of Ore Tons
AA ¹	8630	20	132600	3	397800	119340	3	358020
BB ¹	8200	20	164000	3	492000	147600	3	442800
CC ¹	7950	20	159000	3	477000	143100	3	429300
DD ¹	9200	20	184000	3	552000	165600	3	496800
EE ¹	8750	20	175000	3	525000	157500	3	472500
FF ¹	8150	20	163000	3	489000	146700	3	440100
GG ¹	6258	20	125160	3	375480	112644	3	337932

3308280 2977452

ANNEXURE - III



YEAR WISE PRODUCTION DETAILS OF IRON ORE

FIRST YEAR

Section	RL	Area sq.m	Influence m	Volume cum	Recovery 90% for Ore cum	TCF	Qty of Ore tons
AA'	>976	630	39	24570	22113	3.0	66339
BB'	>976	687	50	34350	30915	3.0	92745
CC'	>976	814	50	40700	36630	3.0	109890
DD'	>976	797	50	39850	35865	3.0	107595
EE'	>976	820	50	41000	36900	3.0	110700
FF'	>976	760	50	38000	34200	3.0	102600
GG'	>976	692	42	28980	26082	3.0	78246
Total							668115

SECOND YEAR

Section	RL	Area sq.m	Influence m	Volume cum	Recovery 90% for Ore cum	TCF	Qty of Ore tons
AA'	976 967	1143	39	44577	40119	3.0	120357
BB'	976 967	1098	50	54900	49410	3.0	148230
CC'	976 967	1053	50	52650	47385	3.0	142155
DD'	976 967	1289	50	63450	57105	3.0	171315
EE'	976 967	1197	50	59850	53865	3.0	161595
FF'	976 967	1089	65	70785	63707	3.0	191121
GG'		--	--	--	--	--	--
Total							934773

THIRD YEAR

Section	RL	Area sq.m	Influence m	Volume cum	Recovery 90% for Ore cum	TCF	Qty of Ore tons
AA'	967 958	900	39	35100	31590	3.0	94780
BB'	967 958	859.50	50	42975	38678	3.0	116034
CC'	967 958	814.50	50	40725	36653	3.0	109959
DD'	967 958	1035	50	51750	46575	3.0	139725
EE'	967 958	954	50	47700	42930	3.0	128790
FF'	967 958	850.50	55	46777	42099	3.0	126297
GG'		--	--	--	--	--	--
Total							715575



FOURTH YEAR

Section	RL	Area sq.m	Influence m	Volume cum	Recovery 90% for Ore cum	TCF	Qty of Ore tons
AA'	958 949	660	39	25974	23377	3.0	70131
BB'	958 949	621	50	31050	27945	3.0	83835
CC'	958 949	585	50	29250	26325	3.0	78975
DD'	958 949	796	50	39825	35843	3.0	107529
EE'	958 949	771	50	35550	31995	3.0	95985
FF'	958 949	612	40	24480	22032	3.0	66096
GG'		--	--	--	--	--	--
Total							502561

FIFTH YEAR



Section	RL	Area sq.m	Influe nce m	Volume cum	Recovery 90% for Ore cum		
AA'	949 940	427.50	39	16672	15005	3.0	
BB'	949 940	629	50	31050	27945	3.0	83835
CC'	949 940	387	50	19350	17415	3.0	52245
DD'	949 940	513	50	25650	23085	3.0	69255
EE'	949 940	472	50	23625	21263	3.0	63789
FF'	949 940	378	25	9450	8505	3.0	25515
GG'		--	--	--	--	--	--
Total							339654

Grand Total:

<u>Year</u>	<u>Total (Tons)</u>
I st Year	668115
II nd Year	934773
III rd Year	715575
IV th Year	502551
V th Year	339654
Total	3160668



GEO-CHEM
LABORATORIES P. LTD.

Annexure



(ISSUED FROM BELLARY BRANCH)
Geo-Chem, House, Plot No.35, Jayanagar, Bellary

Na.BLY/ 88

Date: 01.03.2006

CERTIFICATE OF ANALYSIS

1. PARTICULARS OF SAMPLE : Submitted

- a) Nature of Sample : Iron ore
b) Name of the Party : Mr.D.Ramesh, Bellary
c) Register No. : 88
d) Date of Register : 01.03.86
e) Mark : Iron ore, Survey No.17 & 18
Ranagad Village, Sandur (Tq)

2. RESULTS OF ANALYSIS

ANALYSIS ON SAMPLE DRIED AT 105° C

Iron	Fe	63.23%
Silica	SiO ₂	2.68%
Alumina	Al ₂ O ₃	2.42%
Phosphorous	P	0.042%

For Geo-Chem Lab (P) Ltd.,

For: K. Jayaram
Manager.