

MINING PLAN



1.0 INTRODUCTION:

Smt. Prema Chennappa is well experienced in mineral trading; she has also having knowledge about mining activities. Therefore she is likely to operate the mining and she applied for the mining lease.

She applied for grant of iron ore mines in part of Sy No. New No:38 (32 Old No) of Hobalagatta, Sy. No. New No.28 (old No.47) of Yerekatte, Sy.No.64 of Hosahali, & Sy. No. 11 of Gollahalli Villages, C.N.Halli Taluk, Tumkur District. Karnataka. Her application was considered by the Government of Karnataka and issued a letter No. CI.139:MMM.2005 dated 5TH June 2008, seeking an approved copy of Mining plan from the Indian Bureau of mines. Copy of the letter enclosed as Annexure – 1a. In the mean time Director Dept. of Mines & Geology has also issued consent letter advising to submit Mining Plan approved by IBM vide letter No. MGD: MML/558AML-04/07-08/3940 dated 10th June 2008 – copy of the letter enclosed as Annexure 1b Kannada version and Annexure 1c, English version.

The detail survey and the Geological study have been carried out by the RQP along with the applicant. The Mining plan is prepared as the guidelines issued by the Chief Controller of Mines, India Bureau of Mines, Nagpur. Submitted under Rule 22 of MCR 1960

1.1. GENERAL:

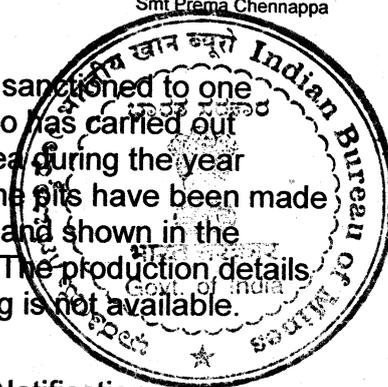
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|-----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.1.1 Name of the Applicant & Address | : Smt. Prema Chennappa
Bhagavathi House,
3793, 7th Cross, MCC B – Block
Davanagere. |
| 1.1.2 Status of the applicant | : Individual |
| 1.1.3 Minerals which are occurring in the area and which the applicant intends to mine. | : Iron Ore and Manganese ore |
| 1.1.4 Period for which the ML is | : 30 (Thirty) years |
| 1.1.5 Name and address of the RQP preparing the Mining Plan | : Sri T.Thippeswamy,
No. 176/7, 3 rd Cross,
Bhuvaneshwarinagar,
C.V.Raman nagar post,
Bangalore-560 093.
Mobile: 99808 46098/ 9448697001 |
| Registration No. | : RQP/ BNG/189/2003/A (Annexure -2) |
| Date of grant | : 01.10.2003 |
| Valid up to | : 01.10.2013 |


 खान नियंत्रक (द.स.)
 Controller of Mines (S.Z.)
 भारतीय खान ब्यूरो
 Indian Bureau of Mines
 Bangalore बंगलोर

This Mining Plan is approved subject to the conditions / stipulations Indicated in the Mining Plan approval letter No. *M.P./T.M.K./E.M.Mn-22152* Date...*12.09.2008*

1.1.6 Name of the prospecting Agency

: The area earlier was sanctioned to one Sri. Sarangapani who has carried out the mining in this area during the year earlier to 1965. Some pits have been made. These are surveyed and shown in the plans and Sections. The production details of the Existing mining is not available.



1.1.7 Reference No. and date Of consent letter from the State govt.

: Govt. of Karnataka Notification No.CI.139-MMM-2005 dated: 05-06-2008 copy of the same is enclosed as Annexure-1a

2.0 LOCATION & ACCESSIBILITY

2.1 Details of the area

State	District	Taluk	Villages / Sy. No.	Extent	Ownership
Karnataka	Tumkur	C.N.Halli	(i) Hombalagata Sy. No. New No.38(Old No.32) (ii) Yerekatte Sy. No. New No.28 (Old No.47) (iii) Hosahalli Sy.No.64 (iv) Gollahalli Sy.No.11	60-00 Ha. or 148.26 Acres	Revenue area 7.71ha. Forest Area 52.29 ha.

2.2 Ownership occupancy : Revenue & forest Land

2.3 Top sheet No. With Latitude & longitude : No. 57 C/11 (Plate – 1)
Latitude : 16°.04'.55" to 16° 05'.00"
Longitude: 75°.55'.00" to 75°.55'.40"

2.4 Location and Accessibility:

The Mining lease area is located towards west about 2 K.Mts. from to village Yerekatte and towards about 3.00 K M from the village Hombalagata, and towards east and about 8.00 Kmts from C.N.Halli town. The approach road from C.N.Halli is about 4 Kmts Tar road and another 4 Kmts is weathered road. The town C.N. Halli is about 25 Kmts. from Ammasandra which is the nearest railway station to transport the minerals. The C.N.Halli town is located about 75 Kms. from Tumkur City which is District. HQ. The town C.N.Halli is a taluk HQ, and it is having all the facilities like Hospital, Bank, Post offices, Police Station, Schools/Collages, etc., the nearest air port is Bangalore, which is at a distance of about 180 Kms.

PART - A**3.0 GEOLOGY AND EXPLORATION:****3.1 Topography:**

The area is situated on the ridge of the hilly terrain and gradually sloping towards eastern side. The hilly terrain is almost running in the N.W and S.E direction. The area has its highest elevation at about 1040 Mts and lowest at about 850 Mts. above the mean Sea level. The slopes are drained by North Eastern trend of drainage pattern (please refer key plan plate No.1, and surface plan plate No.3)

Geology**3.1.1 Regional Geology.**

This part of the district is well known for its occurrences of various minerals. The rocks of Dharwar Super group are exposed in two parallel belts belonging to southern continuation of Chitradurga and Javanahalli Schist Belts. The Bababuden Group is exposed in the south-western and western part of the area. The metabasalt with intercalation of current bedded quartzite and ironstone constitute the Bababuden Group. The Chitradurga group is, quartzite, banded magnetite quartzite and pyrolusite rocks (metabasalt, agglomerate and tuff). Limestone/ dolomite with manganiferous phyllite occurs as marker horizon. High grade schists of Javanahalli Group equivalent to Chitradurga Group is exposed in the north eastern part. Javanahalli Group is represented by amphibolites with intercalation of quartzite (+/- silluminite) and iron stone.

Prominent bands of iron formation are exposed forming a continuous chain of hills with local concentrations of iron ore. The important occurrences are near Vajra & Kudure Kanve, Lakkihalli, Kenekere, Bhaemasandra and Madikeripura.

There are vast resources of strata-bound manganese, dolomite and limestone deposits in the district. The manganese is associated with the phyllite, chart and laterite; and is situated east of Chiknayakanahalli, Janeharu, Sadenahalli, Karekurchi, Siva Sandra, and Vajrapura and in Kudurekanave reserve forest area.

3.1.2. Local Geology

The applied area geologically covered by the following formations

- (i) Iron ore
- (ii) Manganese ore
- (iii) Banded ferruginous Quartzite
- (iv) Limestone
- (v) Ferruginous Shale.



(I) Iron Ore

Iron ore occurs in this area both as reef and float type. Towards Western ridge Iron ore band running in the strike direction of North West and South East and dipping towards west. Iron Ore band in west is exposed in hill range of 1040 R.L. This 1040 R.L. range abruptly ending and forms deep valley portion and having close contours. Iron ore which is occurring in the area is soft and friable. Rolled boulders of iron ore is spreading on the eastern and northern slope of ridge. Boulders size ranging from 0.5 Mts. to 1.5 Mts. broken surface shows dull grey surface. Small pieces are blended and rectangular in shape. The sample analysis result shows 63.30% Fe. Analysis report enclosed as Annexure-3. To the east also thin band of measuring width 10 to 15 Mts. width ferruginous shale is seen. After these shale indications of powdery iron ore band is seen. The occurrence this band powdery iron ore band can be established by carrying out pitting and trenching work.

(ii) Manganese Ore

Manganese ore in occurring in this area at Northern end with in the Northern lease boundary. This ore body occurring at saddle portion. Ore is nodular in the shape and dull black in colour. Three pits are opened irregularly on the ore body. In one of wall section ore band is well exposed width of band may be 15 Mts. 20 Mts. width of the ore band is not uniform. After examine the area it is concluded only low and medium grade manganese ore is available.

(iii) Banded Ferruginous Quartzite

It is exposed in the leased area to the eastern boundary. (Elevation 999Mts. N 13° 25' 642" E 76°40'770" and Elevation 994 Mts. N 13° 25'665' E 76° 40'752") this band is striking north 30° west and dipping westerly at 60°. Outcrops are hard and compact alternative bands of Silica and Iron is seen. Closely banded nature minor anticlinal and synclinal folds are common. This BFQ is exposed to the east of the iron ore band.

(iv) Limestone

It is occurring at western margin of lease boundary. Limestone boulders are big and exposures are prominent by standing above the ground level. This is having smooth surface grey in colour less quartzveins.

(v) Ferruginous Shale

It is seen in the examined area in association with Iron ore band as well as to the east of the Manganese pit. (Elevation 947 N 13 25' 588": E 76° 40' 476"). This shale is brick red in colour, highly weathered strike N N W – S S E dip is not clear.

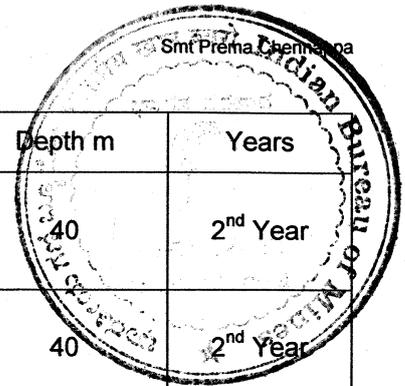
3.1.3 Details of Exploration**Existing:**

The area was previously done by one ex-lessee of this area Mr. Sarangapani and some existing pits were seen and they are in irregular shape. However, the applicant has 5 nos. of pits, measuring 1m×2m×3 and samples were collected from these pits. The analysis results of these samples are shown in Annexure - 3. The area was also been mapped geologically and locations of the pits and samples drawn shown in the Geological Plan Plate No.4

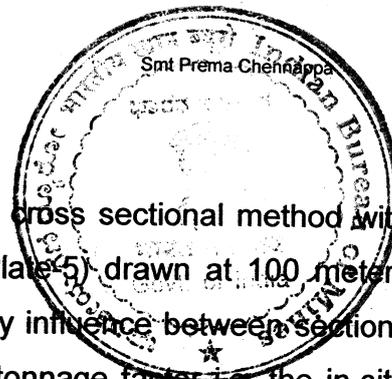
Proposed:

As part of the exploration program it is proposed to drill 6 Nos. of bore holes with Diamond bit Core/ DTH drilling to a total depth of 320mts. The depth of the different bore wells proposed to 60 Mts in the iron ore area ranging between RL 1020 to 1030 Mts and to 50 Mts in the iron ore area ranging between 1015 Mts-1000 Mts RI and 40 Mts depth proposed in the Manganese area which is low lying area of RL 945 mts. Location of the proposed drill holes are shown in the Geological plan.





Sl. No.	Section Line	Co-Ordination	B H No.	Depth m	Years
1	AA ¹	N 100 – N 200 E 300 – E 400	1	40	2 nd Year
2	BB ¹	N 200 – N 300 E 300 – E 400	2	40	2 nd Year
3	CC ¹	N 300 – N 400 E 200 – E 300	3	60	1 st Year
4	DD ¹	N 400 – N 500 E 200 – E 300	4	60	1 st Year
5	EE ¹	N 500 – N 600 E 100 – E 200	5	60	1 st Year
6	FF ¹	N 600 – N 700 E 100 – E 200	6	60	1 st Year
7	GG ¹	N 700 – N 800 E 100 – E 200	7	60	2 nd Year
8	MM ¹	N 500 – N 600 E 500 – E 600	8	40	1 st Year
9	NN ¹	N 500 – N 600 E 500 – E 600	9	40	2 nd Year
10	OO ¹	N 600 – N 700 E 600 – E 700	10	40	3 rd Year
11	PP ¹	N 600 – N 700 E 700 – E 800	11	40	4 th Year
12	II ¹	N 100 – N 200 E 900 – E 1000	12	50	6 th Year
13	JJ ¹	N 100 – N 200 E 900 – E 1000	13	50	6 th Year
14	KK ¹	N 100 – N 200 E 1000 – E 1100	14	50	6 th Year
15	LL ¹	N 100 – N 200 E 1200 – E 300	15	50	6 th Year
Total meterage					740



3.4 Estimation of Geological reserves:

Estimation of Reserve Calculation have been done by cross sectional method with reference to Geological plan (Plate-4) and Cross Section (Plate-5) drawn at 100 meters intervals. Area on each section is measured and multiplied by influence between sections to find out the volume and then this volume is multiplied by tonnage factor i.e. the in-situ bulk density of the ore body, to calculate the geological reserves. In the absence of any bore hole data / exploration data, occurrence of boundary outcrop at 1040m RL on the western boundary of ML, old mine pit exposing 10m thick friable iron ore at 1000m RL about 100m south of southern ML boundary and old mine working on Vekoji gudda on the same strike length is seen. This reference has considered for estimation of reserves for iron ore & this reserves have been estimated as proved up to 30m. Further 30mts depth for probable reserves and 10mts depth for possible reserves have been considered.

The Recovery factor of 80%, 70% and 60% is considered using 3.0 ton/cum as bulk density factor for iron ore. For the float ore 50% of recovery factor is considered for the total thickness of 3mts. For the Manganese ore up to the depth of 20mts from the surface level is considered as proved reserves. Further to a depth of 10mts considered for probable reserves & further to a depth of 5mts considered for possible reserves. The recovery factor of 20%, 10% & 5% is considered for proved, probable & possible reversers respectively. The bulk density is taken 2.5 tons/cum. The bulk density and recovery factors have been arrived by the knowledge acquired by working such deposits in this sector. However, after completion of exploration, the percentage recovery of individual ore types will be re-estimated. These calculations are give vide Annexure 4. Either side of the ore zone of applied area, especially in the slopes.

Resources:

The summary of the reserves calculated apart from the float ore, are given below:

Category (UNFC)	Float ore (in tons)	Iron Ore (in tons)	Mn Ore (in tons)
Proved Mineral Reserves(111)	8,31,000	81,87,600	6,74,840
Probable Mineral Reserves (122)		24,96,900	44,810
Possible Mineral Resources (334)		11,66,400	11,203
Total	8,31,000	11,850,900	7,30,853

Total iron ore resources including float ore works out to around 12.68 million tons, and manganese ore reserves works out around 7.3 Lakh tones.

4.0 MINING:

The proposed mining method in this applied area will be mechanized open-cast mining method, in which the waste and ores will be removed /handled by means of systematic bench formation. Bench height and width shall be maintained at 8 mts each, with separate benches for ore and waste. Slope of the benches will be maintained at 45° gradient. The applicant proposes to deploy hydraulic excavators for progressing benches and for handing ore/ waste material. Most of the ore to be excavated is soft and drilling and blasting techniques will be used for hard formations. Wagon drills and diesel driven compressors will be used for deep-hole drilling, Wheel loaders and tippers are used for loading and dumping of waste material/ ore. Ore reef will be blasted, if necessary, handled and loaded by wheel loaders into tippers of 10ton capacity and transported to proposed Crushing/ Screening Plant for bifurcation of ROM into lumpy ore, calibrated ore and fines. However, Manganese will be mined systematically ROM of Manganese will be stacked separately for sorting by manual Laborers as per the specifications of the buyer. Proposed mining layout plan for the five years period has been shown in Plate Nos. 6 & 7.

In the applied area the iron ore body is exposed at certain places on top of the hillock. On both sides of the ore body ferruginous shale exist and laterite / laterite soil occurs as capping. These need to be stripped. In the first year of mining development works line marking roads preparing site for buildings and crushing/ screening plant along with exploratory drilling are proposed to be taken up. Along with the mining, the topsoil cover will be removed wherever it is encountered and stacked separately for use in afforestation.

[Signature]
खान नियंत्रक (द.स.)

Controller of Mines (S.Z.)

भारतीय खान विभाग

Summary of Proposed Year wise Development and production

Year	Production(Tons)			Total production (Tons)	Indian Waste (Tons)
	Float Ore	Iron Ore	Mn Ore		
First		3,38,444	52,500	3,90,944	2,94,600
Second	4,55,700	3,45,600	1,20,000	9,21,300	10,22,100
Third		3,95,760	1,12,500	5,08,260	5,48,940
Fourth		2,21,184	84,000	3,05,184	3,91,296
Fifth		2,51,136	1,20,000	3,71,136	5,42,784
Total	4,55,700	15,52,124	4,89,000	24,96,824	27,99,720

4.2 Proposed rate of Production when the mine is fully developed:

When the mine is fully developed, a targeted production of around 3.95 lakh tones of iron ore, and about 1.12 lakh tons of Mn. Ore can be achieved from this area.

4.3 Mineable reserves and anticipated life of the Mine

- (a) Estimated Reserves : 12.23 million tons
(Including Float)
- (b) Expected rate of production/ annum : 4.99 lakh tones
During First Five years.
- (c) Expected rate of production : 5.07 lakh tones
When the mine is fully developed
- (d) Thus anticipated life of mine : 24.47/25 years (approx)



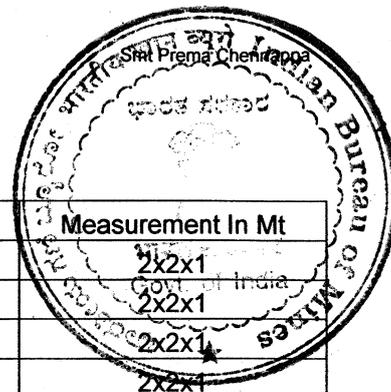
Exploration: As part of the exploration program it is proposed to dig 4 Nos of trial pits & to drill 11 Nos. of bore holes with Diamond bit Core/ DTH drilling to a total depth of 540mts. The depth of the different bore wells proposed to 40 Mts in iron ore float area, 60 mts in the iron ore area ranging between RL 1020 to 1030 Mts and 40 Mts depth proposed in the Manganese area which is low lying area of RL 945 mts. Location of the proposed drill holes & trial pits are shown in the Geological plan & particular are as given in the below tables.

Proposed bore holes:

Sl. No.	Section Line	Co-Ordination	B H No.	Depth m	Years
1	AA ¹	N 100 – N 200 E 300 – E 400	1	40	2 nd Year
2	BB ¹	N 200 – N 300 E 300 – E 400	2	40	2 nd Year
3	CC ¹	N 300 – N 400 E 200 – E 300	3	60	1 st Year
4	DD ¹	N 400 – N 500 E 200 – E 300	4	60	1 st Year
5	EE ¹	N 500 – N 600 E 100 – E 200	5	60	1 st Year
6	FF ¹	N 600 – N 700 E 100 – E 200	6	60	1 st Year
7	GG ¹	N 700 – N 800 E 100 – E 200	7	60	2 nd Year
8	MM ¹	N 500 – N 600 E 500 – E 600	8	40	1 st Year
9	NN ¹	N 500 – N 600 E 500 – E 600	9	40	2 nd Year
10	OO ¹	N 600 – N 700 E 600 – E 700	10	40	3 rd Year
11	PP ¹	N 600 – N 700 E 700 – E 800	11	40	4 th Year
Total meterage					540

Proposed Trial pits:

Sl. No	Proposed Trial pits	Co-ordinates	Measurement In Mt
1	PTP ₁	N 500 – N 600, E 100 – E 200	2x2x1
2	PTP ₂	N 700 – N 800, E 200 – E 300	2x2x1
3	PTP ₃	N 600 – N 700, E 600 – E 700	2x2x1
4	PTP ₄	N 100 – N 200, E 1000 – E 1100	2x2x1



Mine Development: As the Calculation, about 2.8 Million tones of waste have to be handled in the plan period of 1st 5 years. Out of this 33.34 millions tones waste shall be accommodate in three different places and dumped on non-mineralized area as shown in the yearly working plan plate No. 6A-6E and conceptual plan plate No.8. During the balance lease period is 2nd Five year, 3rd Five year, 4th Five year period the waste generated is proposed to dump in the three places with in the leased area i.e. on the non mineralized area as shown in the conceptual plan plate a No.8 and conceptual cross section plate No.9.

Production: The total production of iron ore including float iron ore is about 16.63Mt and manganese ore is about 8.01 Mt. is calculated in the mineralized area of about 35.00 Ha. The average annual production will be about 8 Lakh tones in the 1st mining plan period and considering the expected rate of production when the mine is fully developed i.e. 9.1 lak T.P.A. During the life of about seventeen years, an area of about 9 Ha. With an average depth of 70 Mts shall be utilized.

Afforestation, Reclamation & Rehabilitation: In the 1st 5 years of mining, as part of the land reclamation concurrent to mining, about 2.40 ha. Area will be afforested. After the exploration Programme by drilling the data recorded will be incorporated and or body geometry and fresh reserves will be estimated, this date will be used for planning about back – filling and reclamation and rehabilitation measures and this will be dealt within the next progressive mine closure plan.

4.4 Proposed method of Mining:**4.4.1 Open-cast mining:**

Mining is by mechanized opencast mining method by a system of benches for iron ore. Bench height and width shall be maintained at 8m each, with Separate benches for ore and waste. Slope of the benches will be maintained at 45° gradient. Hydraulic excavators, Wheel loaders and Tippers etc will be put into operation. Whereas Manganese ore will be extracted from the reef stacked separately for sorting manually as per the Specification.

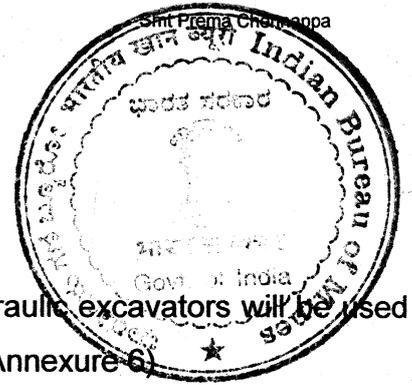
Sl.No	Mining pits	Co-ordinates	R.L (Mtr)
1	I YEAR	N 300 –N 700, E100 - E 400	1040 to 990
2	II YEAR	N 100 - N 900, E100 - E 400	1040 to 950
3	III YEAR	N 300 -N 900, E 100 -E 300	1040 to 1000
4	IV YEAR	N 600 - N 900, E 100 – E300	1030 to 995
5	V YEAR	N 300 – N 800, E 100 – E 300	1040 to 1000

4.4.2 Underground Working : Not applicable

4.5 Extent of Mechanization:

4.5.1 Extent of Manual and/or machine mining:

The mine will be operated by mechanical means. Hydraulic excavators will be used for progressing benches and for handing ore/waste material. (Annexure 6)



4.4 Proposed method of Mining:

4.4.1 Open-cast mining:

Mining is by mechanized opencast mining method by a system of benches for iron ore. Bench height and width shall be maintained at 8m each, with Separate benches for ore and waste. Slope of the benches will be maintained at 45° gradient. Hydraulic excavators, Wheel loaders and Tippers etc will be put into operation. Whereas Manganese ore will be extracted from the reef stacked separately for sorting manually as per the Specification.

Sl.No	Mining pits	Co-ordinates	R.L (Mtr)
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4	IV YEAR	N 600 - N 900, E 100 - E300	1030 to 995
5	V YEAR	N 300 - N 800, E 100 - E 300	1040 to 1000

4.4.2 Underground Working : Not applicable

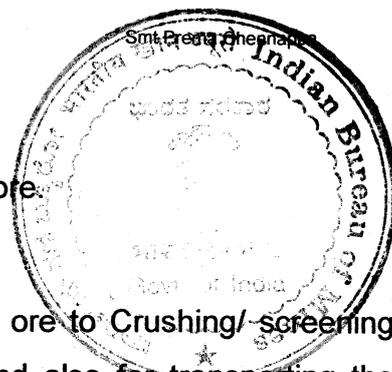
4.5 Extent of Mechanization:

4.5.1 Extent of Manual and/or machine mining:

The mine will be operated by mechanical means. Hydraulic excavators will be used for progressing benches and for handing ore/waste material. (Annexure 6)

4.5.2 Drilling:

Drilling and blasting techniques will be used for hard formations whenever encountered. Wagon drills and truck mounted diesel driven compressors will be used for drilling with special permission from the authorities.



4.5.3 Loading:

Wheel loaders will be used for loading of waste material/ore.

4.5.4 Hauling/Transport:

Tippers of 10 ton capacity will be deployed for hauling ore to Crushing/ screening plant/ sub-grade dump and waste material to dump yards and also for transporting the saleable ore to buyers point / railway loading yard.

4.5.5 Miscellaneous Operations:

Extracted ROM will be initially fed into proposed Crushing/ Screening Plant to bifurcate ROM to different sized ore. Other activities like water supply for domestic use, sprinkling and afforestation will be done by water tank mounted on 10-ton trucks. Explosive Van shall be used to carry explosives. Jeeps shall be deployed for movement of personnel/staff. The list of proposed mining machinery and their justification is given in Annexure 6.

The estimated reserves from this area are of the order of 13.41million tone. Conceptual mining plan is prepared for the entire life of the mine of 25 years. Ultimate pit limit is fixed keeping pit slope angle of 45°. In the first 5 yr plan Period 26ha area is earmarked for mining. Ref Plate No 10 of for Conceptual Plan. This plate also shows, proposed dumping, reclamation program including 5 yearly plantations and afforestation program, based on the data/.information Available at present.

4.6 Mining:

In the applied area about, 7.39 ha area is mineralized with reef ore and Mining is proposed in this area. As estimated the reserves including float Ore are about 12.68 million tons. The average annual production will be about 4.99 lakh tons in the first mining plan period and considering the expected rate of production which the mine is fully developed i.e., 5.07 lakhTPA, during the life of around Twenty Five years.

4.7 Dumping of Waste material:

Waste material to be handled for the mine will be about 2.79 million tones (i.e. Waste handling for total reserves). To accommodate this waste material, a total area of 3.74ha is earmarked four different places, keeping 20m as Dump height in each stage of four stages. Also, after completion of iron ore excavation from eastern band, the area will be used for back filling after exploration.



5.0 Blasting:

Blasting will be resorted to whenever hard formations are encountered. Wagon drill and truck mounted, diesel driven compressors will be used for deep hole drilling.

5.1 Broad Blasting Parameters:

Bench height & width shall be maintained 8m each for easy operation of machinery. So holes of 8 to 9 mts. will be drilled with covering inclination and sub-grade drilling.

The 115-mm dia wagon drill holes in development shall have a spacing and burden of 3.00 m and 2.5 m. respectively. Charge per hold will be kept at around 30 kgs. Normally two rows of blasting pattern will be adopted to control the ground vibration, back break and noise pollution. Stemming of around 3m will be done to control the fly-rock generation. The maximum no of holes kept in one blasting round will be around 15-20. Use of MS delay detonators will help in controlling the vibration and achieve better fragmentation.

5.2 Type of explosives to be used : ANFO/Slurry explosives.

5.3 Storage of explosives:

The applicant proposes to have a Portable Magazine to meet the requirement and proposed location of that is shown is Surface Plan, Plate No.3.

6.0 Mine Drainage:

The Mining activity will be concentrated on the top portions of the hill range. The monsoon water gets drained off through the natural valley. Suitable garland drains will be made in the mine benches and haul roads, so that water flows out of the mining area in to the valleys where the construction of check dams is proposed. Hence, the accumulation of rainwater within the pit limit in monsoon is negligible. Moreover, the proposed mining depth is well above the ground water table level, so there is no ground water seepage in to the workings. Dams, five gully checks will be erected to check the velocity of rain water and reduce the sill volume in the check dams. Apart from this 3 nos. of walls will be built around foot of each dump. Ref Plate – 11 for location. These will be constructed in the first year of mining.

There is no seepage water and there is no water table in the vicinity as the the lowest of working will be 730m i.e., well above the general ground level of around 550m above MSL.



7.0 Disposal Waste:

7.1 Nature of waste:

Overburden laterite capping on the body and side burden ferruginous shale is the waste material to be handled during mining.

7.2 Selection of dumping site:

The areas selected for dumping are located in the slopes of each edge/corner of the applied area. These are barren lands comprising of exposures of ferruginous shale. As the area selected are sloppy, toe walls will be made around the dump bottom to prevent the rolling down of boulders and wash off of fine material. Dumping will be done in two stages of 20m height stepwise in this mining plan period. Locations of the proposed dumping sites with each year's spread are shown year wise development & production plan with different colours.

7.3 Maximum height and spread of dumps:

A total area of 10.20 ha has been proposed for dumping site. As per the proposed production and development program, 3.4 Million tons of waste material generation will be there during 5 years plan period. Maximum height of the dumps shall be maintained at 20 mtrs with an angle of repose 30 to 35 degrees and spread of dump shall be around 15000 Sq. mtrs.

Iron Ore of >58 and <60% Fe grade is considered as sub grade. During the production and development program of 5 years plan period, a total 45.69 lakh tons of ore production with an average of 9.1 lakh tons/annum is proposed. Generally considering the past experience, it is assumed that around 10% of the production will be of sub grade mineral of Geological reserve. However, realistic estimations for this area will be done only after the data from proposed exploration program is available. Stacking of sub-grade mineral shall be done separately on the designated area systematically and suitable toe walls will be constructed around the stacks to prevent wash-off.

Years	Gully Check	Check Dams	Retention Wall
First	2		1
Second	2		
Third		1	1
Fourth	2		1
Fifth	2	1	
Total	8	2	3

For location of each structure is shown is plate No. 6A – 6E to be enclosed.



Selection of site for Stacking:

A total of 0.80 ha area in the central part of the applied area has proposed for stacking the sub-grade minerals.

7.5 Height and spread of stacks:

Height of sub-grade mineral stock shall be maintained at 10 mtrs. to two stages of 5m each. With angle of repose 30 to 35 degrees. This will facilitate remanding the stocks without any difficulty to process the ore as and when required. (Please refer Plate-10, for location of sub-grade mineral stack). This material will be moved for blending with high-grade ore, now and then. However, the spread of sub-grade stock shall be around 5830 Sqm for the plan period.

8.0 Use Of Minerals:

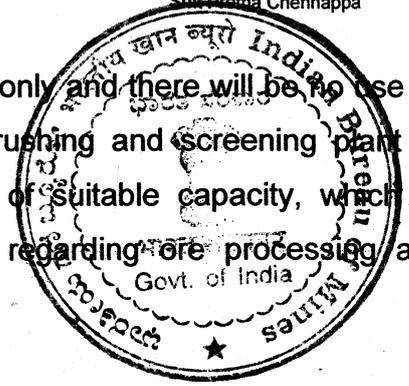
The ore produced from this mine shall be used for sale both for export and in the domestic market mainly to the steel industry. The quality parameters for supply of the mineral will be as per the requirements of the user industry. The ore will be sold to other industry as and when demand arises.

9.0 Mineral Beneficiation:

Ore produced from this proposed mining will be sized and bifurcated in to +30mm, -30mm, +10mm and -10mm material to meet the specifications of the buyers. Out of the total maximum production of 9.8 lakhs tons of Iron ore around 50% ROM needs treatment in the crushing and screening plan. For this purpose, it is proposed to set up a crushing/screening plant of 100 ton/h capacity, so that, around 1000 tons per day or 3.0 lakh tons of ROM in a year of 300 Working days can be processed. The ROM shall be fed to crushing plant set to crush at 30mm. The crushed material will be screened on 30mm and 10mm screen and material -30mm +10mm is sold as Calibrated Ore and Fines respectively. The lumps if required are crushed to -30mm size and then treated in Screening Plant. The likely material balance of this processing of ROM is mentioned below. However lateritic ore which was mined at top 10m in iron ore band will be stacked separately for manual sorting as per the buyer's specifications.

Description	Rate	%Fe
Feed (ROM)	100tph	+62
Lumps (+30mm)	10tph	+62
Cal. Ore(-30+10mm)	20tph	+62
Fines (-10mm)	70tph	+62

The processing described above will be in dry circuit only and there will be no use of water in processing except for suppressing the dust. Crushing and screening plant is proposed to run on the power supply from the Dg Set of suitable capacity, which is proposed to install. No lab tests on the ore samples regarding ore processing are conducted so far.



10.0 Surface Transport:

During the mining plan period it is proposed to do haulage of the ore/waste inside the applied area and transport the ore production to buyers point by 10 ton tippers. The hauling distance inside the applied area from mine faces to crushing/screening plants and dumps will be within 1 to 2km.

11.0 Site Services:

Office, Store, Workshop, Water tank and other facilities like First-Aid Center, Rest Shelters etc are proposed to construct at the southern part of the applied area. The location of these structures is shown in Surface Plan, Plate No.3

12.0 Employment Potential:

Employment Potential For the proposed mining activity and crushing and screening plant operation is listed in Annexure No.7.

13.0 Environment Management Plan:

13.1 Base Line Information:

(i) Existing land use pattern:- The applied area is virgin and part of the reserve forest. It is moderately vegetated land with shrubs & bushes.

The proposed land use pattern in the area will be as follows:

Mining	26.00 ha
Dumping	2.74 ha
Crushing/Screening plant & Statutory Buildings	2.60 ha
Top Soil Yard	1.00 ha
Roads	2.00 ha
Sub-grade Mineral Stock	1.00 ha
Afforestation/Green Belt	2.4 ha
TOTAL	37.74 ha
Area untouched	22.26 ha
TOTAL	<u>60.00 ha</u>



(ii) **Water Regime:** No perennial rivers/ nallahs or springs present in the area. Natural valleys drain the rainwater. The slopes are drained by southwestern and northeastern trends of drainage pattern. Water table is at a low depth there is no chance of encountering the same during proposed mining.

(iii) **Flora & Fauna:** As the applied area falls in the reserve forest of dry mixed Deciduous or scrubs type vegetation. The major floras are bushes and grass Etc. As the applied area was once a working mining lease and mining activity was going on previously, no faunal species are observed, except, monkey, Mouse, honeybee etc.

(iv) **Climatic conditions:** The area enjoys tropical climate with an annual average Rain fall of 750mm. Maximum temperature in summer days hovers around 40° C and minimum temperature during winter nights records around 14-20° C. Humidity varies between 35 to 85.

(v) **Human settlement:** No Villages or human dwellings are within the applied area. So there will not be any need for re-settlement.

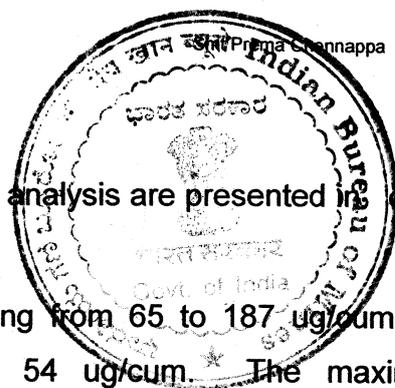
(vi) **Public Buildings, Places and Monuments:** There are no public buildings or Places of worship, monuments of historic importance, inside the applied area. To be affected by the proposed mining were collected according to the Guidelines of IBM/CPCB. The details of the same are presented in the following Section.

13.1.1 Air Quality:

The air quality with respect to the study zone of 10-km radius around the applied area forms the baseline information. The sources of air pollution in the region are mining, vehicular traffic, dust arising from unpaved village roads and domestic fuel burning.

Ambient air quality monitoring has been carried out with a frequency of two days per week and the Monitoring locations are (Ref Key Plan);

A 1	Chiknayakanahalli town
A 2	Yerekatte Village
A 3	Mavinahalli Village



Results and Data Analysis:

The results of ambient air quality monitoring sample analysis are presented in detail in Annexure – 8.

The Suspended Particulate Matter (SPM) is ranging from 65 to 187 ug/cum and Repairable Particulate (RPM) is ranging from 21 to 54 ug/cum. The maximum Concentration of SPM was recorded as 187 ug/cum at the Yerekatte village and the minimum was recorded as 65 ug/cum at Mavinahalli Village. The High value of SPM at applied area may be due to the bad roads that are in adjacent areas.

Gaseous pollutants like SO₂ and NO_x are ranging from 5 to 14 ug/cum and are well within the stipulated standards.

All the parameters in the buffer zone villages are well within the permissible limits as fixed by the CPCB for residential areas.

13.1.2 Water quality

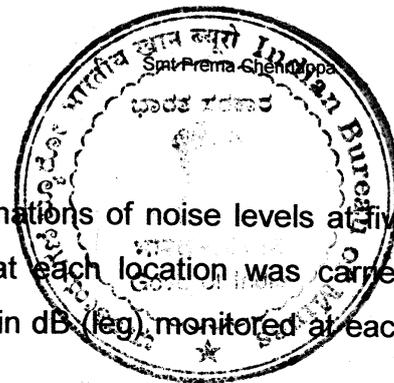
Water quality of ground water as well as surface water resources within 10-km radius of the study area has been studied for assessing the water environment.

Ground water and surface water sources covering 10-km radial distance were collected from five sampling locations. Ground water samples were collected from the bore wells from the villages in the study area. These samples were taken as grab samples and were analyzed for various parameters. The sampling locations are:

G1	Chiknayakanahalli borewell water
G2	Katurkihalli borewell water
G3	Mavinahalli borewell water

Results and Data Analysis:

The analysis data of water is given vide Annexure-9. As seen from the data, the pH value was observed to be in the range of 7.2 to 7.9. Total Hardness of the water samples varies between 195 to 4302 mg/l. The total dissolved solids ranged between 389 to 691 mg/L. Chlorides and Sulphates were found to be in the range of 97 to 129 mg/l and 52 to 82 mg/l respectively. The analysis revealed that most of the parameters of the water samples are found to be within the tolerance limits for water but for the fact that the groundwater sample of Katurkihalli is somewhat hard. The area falls under notified area under water act 1974.



13.1.3 Noise levels:

The noise monitoring has been conducted for determinations of noise levels at five locations in the study area. The noise levels monitoring at each location was carried recorded using a digital sound level meter. The noise levels in dB (Leq) monitored at each location are:

Location Code	Location	Noise lever	
		Daytime	Night time
N 1	Chiknayakanahalli	62	40
N2	Honnebagi Village	55	37
N 3	Mavinahalli Village	48	31
N 4	Thirthapura Village	45	30
N 5	Applied Area	50	36

Data Analysis:

The noise levels vary between 31 to 62 dB (A) Leq. Noise levels are within the permissible rangers and are generated intermittently.

13.1.4 Soil characteristics:

Soil is an essential component of the terrestrial Eco-system. Soil also acts as a medium of transport to various dissolved materials to the underlying ground water. Hence, the impact of the proposed activity on soil needs to be understood to properly plan the mitigation measures wherever required. Accordingly, a study on assessment of the soil quality has been carried out.

Four locations were selected for soil sampling in the study area and they are;

- S 1 Mavinahalli Agricultural soil
- S 2 C.N Halli Agricultural Soils
- S 3 Inside Applied area

Analysis report is given in Annexure 10. Sampling was carried out in the hear by agricultural fields except in the applied area where it was collected from the hill slope.

Date Analysis:

It has been observed that the pH of the soil ranged from 6.6 to 7.1 indicating that the soil is almost neutral in nature. The soil in the study area is predominantly Sandy loam type. The water holding capacity the soil rangers from 32 to 38%. The electrical conductivity was observed to be in the range of 0.2 to 0.3m. Mhos/cm. The Phosphorus values ranged between 0.3 to 0.6 mg/100gm.



13.2 Environment Impact Assessment Statement:

Impact of Mining & Beneficiation on Environment Mining in general affects the environment by way of breaking and defacing the land, removing vegetation, generating dust etc. The individual impacts are detailed below.

13.2.1 Air Quality:

As the mining operations are open-cast mining, the main air pollutant would be dust or particulate matter generated by ore/waste extraction and handling operations, transportation and screening of ore. The emissions of Sulphur (SO₂), Oxides of Nitrogen (Nox) contributed by diesel operated excavation/ loading equipment and vehicles plying on haul roads shall be marginal. In mining site the SPM levels are going to increase, as the mining operation to produce 9.0-lakh tons/annum will involve excavation, loading/dumping by heavy machinery is involved. However, the effect of this will be marginal as the applicant is going to implement all the effective management measures.

13.2.2 Water Resources:

No proposal for any wet processing of ore using water in-the proposed mining area. Hence, there is no question of effluent generation. Water shall be used only for afforestation purposes and domestic use like wasning/drinking etc.

The major surface water resources in the study area are small tanks points near Chiknayakanahalli, etc. The Chiknayakanahalli kern is the water body fed by the seasonal mullahs and streams originating from the hill ranges where this and other mining leases are situated. The analysis results of the ground samples collected from these sources show all the parameters are within the limits prescribed.

Ground water pollution may take place only if the dump and mineral stockpiles contain harmful chemicals which may get leached by the precipitation water and percolate to the water table. This is not the case with this deposit as the is not the case with this deposit as the iron ore or waste does not contain any Harmful ingredients, which could leach down to the water table that is much below the lowest mining bench level of proposed mining scheme.

13.2.3 Land:

The topography of the core zone will be changed due to the mining operation in the form of digging / leveling of land and dumping of waste etc. These have the potential to affect in the form of land erosion, changes in ground cover by vegetation etc. However, these changes are restricted to the quarry site only.



13.3 Management Plan:

(i) Storage and preservation of the Soil:-

Area where Iron Ore Excavation is proposed contains soil patches with thickness varying from 0.5m to 1.5m. Before the commencement of excavation this soil cover shall be selectively removed and stacked for use in Reclamation/afforestation purpose on hard terrain and waste dumps.

(ii) In case of forest – Program of phased afforestation:

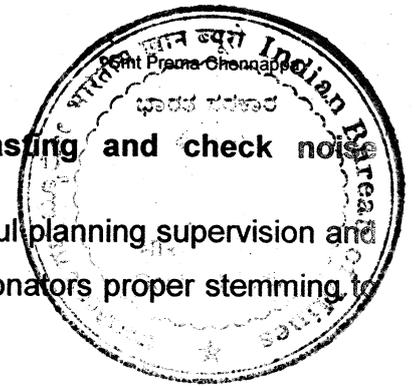
An area 2.4 ha land has been proposed for phased afforestation inside the applied area. The species going to be planted are acacia, eucalyptus and local species etc as these are having a better chance of survival in this region. Each year around 0.5 ha area will be taken up for plantation. An average of 550 saplings will be planted at a spacing of 2×2 m per annum. Year-wise and site-specific proposals for plantation are shown in Afforestation and soil conservation plan, Plate-11. The expected rate of survival will be around 60%. All efforts to improve the survival of the saplings and their healthy growth will be made like watering, fencing, keeping watch and ward and seeking guidance from the local Forest Dept. Apart from the above, the applicant has committed to pay the cost of compensatory afforestation in an equal area of forestland to be granted for mining as per the Forest and Conservative Act.

Year	No. of Plants	No. of Agave	Area in Ha.	Species
First	825	5,000	0.22	Jatropha, Honge And Local Species
Second	600	5000	0.22	-Do-
Third	575	5000	0.22	-Do-
Fourth	450	5000	0.22	-Do-
Fifth	325	5000	0.23	-Do-
Total	2775	25000	1.11	-Do-

For location of the plantation please refer plate no.11

(iii) Measures for dust suppression:-

It is proposed to deploy Water Tankers to suppress the dust by regular water spraying on all the roads used for haulage and in Crushing/Screening Plant. Dust extractors shall be put into use during drilling operation and Crushing / screening.



(iv) Measures to minimize vibration due to blasting and check noise pollution:-

The vibrations due to blasting is minimized by careful planning supervision and execution of each blast and using mill-second (M.S.) delay detonators proper stemming to prevent blow out of holes.

To control noise pollution in the proposed mining operation the following steps will be practiced.

- Proper and timely maintenance of mining machinery and Crushing / Screening Plant adhering to original equipment manufacturers recommendations;
- Limiting of speed of haulage vehicles/tippers.
- Rubber lining in the chutes of Crushing / Screening Plant:
- Restriction of blast hole drilling to only day time hours and usage of sharp drilling bits and delivery of compressed air at optimal pressure during drilling.

(v) Stabilization and Vegetation of dumps:

Static dump tops and slopes will be stabilized by planting tree saplings, grass and good root bearing saplings such as Agava. Garland drains will be made to canalize the rainwater out of the dumping area. Sufficient numbers of Checkdams/Toe-walls of suitable size will be constructed around the base of the dumps to prevent sliding and wash off of the material.

(vi) Treatment and Disposal of Water from Mines and Beneficiation Plant.

There is no proposal of use of water during beneficiation or mining, hence necessity of water treatment does not arise.

(vii) Measures for minimizing adverse affects on water regime:

Proposed plantation and construction of check dams and toe-walls will be an affective insulation to arrest the soil erosion at the vulnerable areas like hill slopes. This will prevent the silt making its way to natural valleys and spoiling the water regime.

(ix) Afforestation of tailing ponds:-

Not applicable as no tailing pond is proposed.

(x) Preparation of dumping ground for stacking toxic minerals :

No toxic minerals/effluents are generated.

14.0 Any Relevant Information

Preparation of Rapid Environmental Impact Assessment and Environmental Management Plan is under progress for getting Environmental Clearance for the project from MoEF, A Copy of the report will be submitted to IBM within one month of its approval.



T. Thippeswamy
RQP/BNG/189/2003/A

PROGRESSIVE MINE CLOSURE PLAN**1. Introduction:**

Please refer sections 1 and 2 of Mining Plan, Part I.

1.1 Reasons for closure:

Not applicable

1.2 Statutory Obligations:

Any legal and statutory obligations from Indian Bureau of Mines, Ministry of environment & Forest, State and Central Pollution Control board or by any other Govt. organization will be implemented.

**1.3 Closure Plan Preparation
Applicant:**

: Smt. Prema Chennappa
Yerekatta Village
C.N.Halli Taluk,
Tumkur District

Name and address of the
RQP preparing the Mining
Plan

: Sri T.Thippeswamy,
No. 176/7, 3rd Cross,
Bhuvaneshwarinagar,
C.V.Raman nagar post,
Bangalore-560 093.
Mobile: 99808 46098

Registration No.

: RQP/ BNG/189/2003/A

Executing Agency

: Applicant.

2. Mine Description:

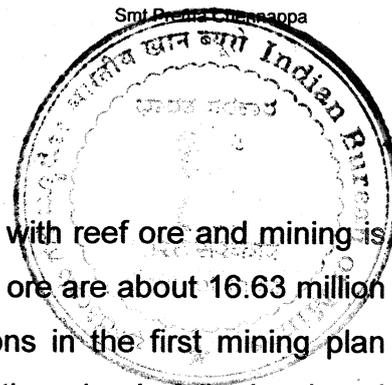
2.1 Geology : Please refer section 3 of Mining Plan, Part I.

2.3 Mining Method: Please refer section 4 of Mining Plan, part I.

2.4 Mineral Beneficiation: Please refer section 9 of Mining plan, Part I.

3. Review of Implementation of Mining Plan /Scheme of Mining Including Five Years Progressive Closure Plan upto the Final Closure Of Mine:

Not applicable as it is part of the first mining plan.



4. Closure Plan:

4.1 Mined out land:

In the applied area about 40% of the area is mineralized with reef ore and mining is proposed in this area. As estimated the reserves including float ore are about 16.63 million tons. The average annual production will be about 8 lakh tons in the first mining plan period. and considering the expected rate of production when the mine is fully developed i.e., 9.1 lakh TPA, during the life of around seventeen years, an area of about 9 ha with an average depth of 70 meters shall be utilized.

In the first five years of mining, as part of the land reclamation concurrent to mining 1.11 ha area will be afforested. After the exploration program by drilling the data recorded will be incorporated and ore body geometry and fresh reserves will be estimated, This data will be used for planning about back-filling and reclamation and rehabilitation measures and this will be dealt with in the next progressive mine closure plan.

4.2 Water quality management:

No perennial rivers/nallas or springs present in the area. Natural valleys drain the rain water. Water table is at a low depth and the chance of encountering the same during proposed mining is nil There is no proposal of use of water during beneficiation or mining, so there is no water pollution due to discharge of effluents.

To prevent air pollution the following corrective steps will be taken during It is proposed to deploy Water Tankers to suppress the dust by regular water spraying on all the roads used for haulage and in Crushing/Screening Plant. Dust extractors shall be put into use during drilling operation and Crushing/Screening.

4.3 Waste Management:

Please refer section 7 of Mining Plan.

4.4 Top soil Management:

Area where Iron Ore excavation is proposed contains soil patches with thickness varying from 0.5m to 1.5m. Before the Commencement of exaction this soil cover shall be selectively removed and used for reclamation/afforestation purposes on hard terrain and waste dumps.

4.5 Trailing Dam management:

No tailing dam is proposed.



4.6 Infrastructure:

Statutory Building will be built of Temporary structures which can be dismantled easily and sold as scrap.

4.7 Mining Machinery:

Most of the mining machinery deployed will be on hire. After the mine closure, these will be taken back by their respective owners.

4.8 Safety & Security:

The total area excavated will be fenced properly with single opening left for workers engaged in closure plan work. No high risk accidents are anticipated as the project is a open cast mining operation in a fairly stable area free from land subsidence, earthquake etc. No tailing dam is proposed and risks associated with it will not come into picture.

4.9 Care and maintenance during temporary discontinuance:

It is a proposal for Fresh grant of lease and this is not applicable as of now.

5. Economics Repercussions of Closure of Mine & Manpower Retrenchments:

Not applicable as it is a Progressive Mine Closure Plan.

6. Time Scheduling of Abandonment:

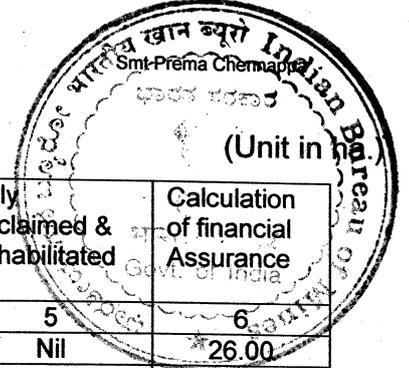
This will be submitted in the Final Mine Closure Plan.

7. Abandonment Cost:

Plans for abandonment and reclamation will be mad after the exploratory drilling and exhaustion of ore the eastern band. Hence the details of abandonment and reclamation will be submitted in the next Mine Closure Plan.

8. Financial Assurance:

Financial assurance as stated in Rule 23(F) will be submitted before the lease exaction for the area that will be put to use 37.74 ha. @ 25,000(Rs.4,43,500) in the first 5 year plan period as per details of CCOM circular is given in the following table.



Type of Land Use	As at Present	As at the End of Planned Period	As at the end Of conceptual Period (lease Of the mine)	Fully Reclaimed & Rehabilitated	Calculation of financial Assurance
1	2	3	4	5	6
Area of Excavation	--	26.00	35.00	Nil	26.00
Storage for topsoil	--	1.00	01.00	Nil	1.00
Overburden Dump	--	2.74	4.00	Nil	2.74
Mineral storage	--	1.00	01.00	Nil	1.00
Infrastructure (Crushing plant workshop. Adm. Building, min stock etc)	--	2.60	02.60	Nil	2.60
Roads	--	2.00	03.00	Nil	2.00
Green belt / Afforestation	--	2.40	05.00	Nil	2.40
Tailing pond	--	--	--	Nil	--
Effluent Treatment plant	--	--	--	Nil	--
Township area	--	--	--	Nil	--
Others	--	--	--	Nil	--
Area untouched	60.00	22.26	08.00	Irrelevant	22.26
Total	60.00	60.00	60.00	Irrelevant	60.00

9 Certificate:

Enclosed.

10. Plans and Sections:

Enclosed, Plate No. 1 to 11.


T. Thippeswamy
RQP/BNG/189/2003/A

This Mining Plan is approved subject to the conditions / stipulations Indicated in the Mining Plan approval letter No. MP/TMK/FCMN-221-82
Date...12.09.2008


खान नियंत्रक (द.स.)
Controller of Mines (S.Z.)
भारतीय खान ब्यूरो
Indian Bureau of Mines
Bangalore बंगलोर