PRE-FEASIBILITY REPORT

By

Special Blasts Limited

[Manganese ore Mining in an area of 15 ha.]

Mineral recovery from existing erstwhile dump (considered peak production)	:	*4252.5 TPA*
Proposed production from Mine	:	*4000.0 TPA*
Total Production including recovery from Mineral dump	:	***8252.5 TPA***

At

Forest Compartment No. 551 (East), Miragpur Forest,
Katangi Tehsil, Balaghat District, Madhya Pradesh

For, SPECIAL BLASTS LIMITED

DIRECTOR

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Chapter –1: EXECUTIVE SUMMARY

1.1 SALIENT FEATURES OF THE PROJECT

The present proposal consists of Manganese ore mining in 15.0 Ha. of Lease area in Forest Compartment No. 551 (East), Miragpur Forest, Katangi Tehsil, Balaghat District, Madhya Pradesh.

The present proposal is for the following:

Mineral recovery from existing erstwhile dump (considered peak production)	:	4252.5 TPA
Proposed production of Mn ore from Mine	:	4000 TPA
Total Production including recovery from Mineral dump	*:*	*8252.5 TPA*

Chronology of events pertaining to the ML Area

- The Present mine lease area is very old and has been worked for Mn Ore in the past, which was subsequently closed as the area comes under Forest in 1980 by Govt. of Madhya Pradesh.
- Part of Mine area has already been worked in the past for Manganese ore in the Southern part of the proposed area and large dimension mining pit is in existence.
- Total volume of mineralized dumps existing in the lease area is 70,900 M^3.
- Mineral Resource Department, Govt. of Madhya Pradesh, has thrown open the present Mine area for grant of Mine lease vide Gazette notification dated 24-07-1992.
- Subsequently, *M/s. Special Blasts Ltd.* have applied for Grant of Mining lease vide application dated 02-05-2008.
- In response to mining lease application, Govt. of Madhya Pradesh, Mineral Resource Department, Mantralaya, Bhopal has issued the letter of intent for grant the mining lease to M/s. Special Blasts Ltd. for extraction of Manganese over an area of 15 hectares in Miragpur Forest Compartment No. 551 vide order No. F-2-173/2008/12-1 dated 16-01-2013.
- As the we could not submit the mining plan within the period hence requested to the State Government for extension of time and accordingly after hearing, the State Government has sanctioned additional time limit of 6 months vide Govt. of Madhya-

Pradesh letter No. F-2-173/2008/12-2 dated 31-10-2015.

- Accordingly Mining Plan has been prepared by us and was approved by IBM vide F.No. MP / Balaghat / Manganese / MPLN / G-10 / 16-17 dated 09-01-2017. Subsequently lease deed has been executed between Govt. of Madhya Pradesh and Special Blast Ltd. vide dated 12-01-2017. The Manganese ore produced from this mine will be utilised in the Ferro Alloys plant to be established by Special Blasts Ltd. at Jabalpur District, Madhya Pradesh, for which Environment Clearance has been accorded by MoEF&CC, New Delhi vide dated 19th May 2016.

1.2 PROJECT PROPONENT

Special Blasts Limited has been promoted by well-established entrepreneur belongs to Raipur in Chhattisgarh state and already into the business of steel manufacturing.

Name of Directors

- Shri. Ajai Choudhari
- Shri. Alok Choudhari

Chapter – 2: INTRODUCTION OF THE PROJECT / BACKGROUND INFORMATION

2.1 BRIEF DESCRIPTION OF THE NATURE OF THE PROJECT

Identification of project and project proponent:

M/s. Special Blasts Ltd., Raipur is a company registered under Companies Act and engaged in the mining business from last fifteen years.

Brief description of nature of the project:

The area falls under the vicinity of Compartment No.: 551, Forest – Miragpur, Katangi, Balaghat, Madhya Pradesh. The area is located on Survey of India, Toposheet no. 55 O/10 & 14.

Coordinates of the ML area are:

S.No.	LATITUDE	LONGITUDE
1	21° 38'02.00" N	79° 47'23.77" E
2	21° 37'53.40" N	79° 47'18.00" E
3	21° 37'52.09" N	79° 47'28.98" E
4	21° 37'57.90" N	79° 47'43.40" E
5	21° 38'02.50" N	79° 47'40.30" E
6	21° 38'01.36" N	79° 47'33.90" E

The area is a more or less plain terrain having general slopes towards south east. The difference in the level from top north western portion and the lower south east portion is about 6 mts. Drainage of the proposed area is simple in nature and during rainy season controlled by a seasonal gullies and streams which ultimately flows in to the adjoining nalla towards south east of the area. Manganese ore deposit of Miragpur Forest area is of sedimentary metamorphosed deposit associated with the Gondite series of rocks. These deposits of Manganese belongs to the lower part of sequence of meta- sedimentary formations of rocks of Sausar series of Pre-cambrian age. Sausar group of rocks having NE-SW trend, extend from Balaghat District in Madhya Pradesh in the east to Nagpur District in Maharashtra in the west. The manganese bearing ore belt which is a constituent of the Gondite formation of Sausar series of rocks streches over a length of 200 kms and about 25 to 30 km in width in the central portion. These deposits of Manganese belongs to the lower part of sequence of meta- sedimentary formations of rocks of sausar series of Pre-cambrian age. The area falls under the eastern part of the manganese ore belt in between Balaghat to

Bhandara which is located almost middle of the belt. The litho units of this formation are quartzite, quartz muscovite schist, phyllite, conglomerate and felspathic grit. Further, eastwards the Sausar group of rocks are covered with Deccan Trap. The deposit is in the form of alternating layers of chert and Manganese ore occurring as small detached lenses and also stratified in nature. These stratified deposits occur in three different stratigraphic positions in the `Sausar Series'. The Manganese ore deposit and gondite formations are restricted to the Schists and Quartzites of the Mansar and Chorbaoli stages. The other rock types met with in this belt are biotite schists besides granitic rock with associated pegmatites and quartz vein.

2.2 NEED FOR THE PROJECT AND ITS IMPORTANCE TO THE COUNTRY AND OR REGION

Our country has been progressing very fast requiring inter alia, high production of steel, Ferro alloys and Manganese ore, which plays a very important role in improving the economic condition of any country. Thus, the project will improve the economic condition of the country to a great extent. The region is economically backward mostly dependent on seasonal farming. The per capita income of villages is much below the national average. As a result of the proposed project various facilities like educational, medical and other tangible benefits will enhance in the area. Thus, the project will greatly improve the economic condition of the area.

2.3 DEMAND AND SUPPLY GAP

Manganese ore is the basic source to provide manganese as indispensable input in making of iron and all type of steels. The Ministry of Steel has projected steel production of the country to touch 180 million tonnes by the year 2019-20 amid high growth rate of iron and steel industry. In view of this, the demand for manganese based alloys requirement is bound to increase.

The reserves of high grade manganese ore are limited (<10%), and the overall production is very low (around 2.5 million tones) and highly inadequate, considering the demand of the manganese based alloys industry. Needing thereby, a major boost in exploitation activity to enhance overall productivity after revamping the entire mining sector in the country. Presently, 90% of the country’s production is utilized for making of manganese alloys (ferro manganese & silicomanganese) after blending it with imported medium high grade ore.

By 2020, the constraints of availability of high grade manganese ore coupled with the anticipated demand of 8.33 million tonnes of r.o.m based on metallurgical calculation for steel making would put a tremendous pressure of the consumer sector i.e. manganese alloys

industry to provide better and consistent quality products which are not expensive.

2.4 EMPLOYMENT GENERATION (DIRECT AND INDIRECT) DUE TO THE PROJECT

This mine will provide employment for around 48 people by both direct employment which include mine officials, skilled, semi skilled and unskilled labour and indirect employment, in contractual works & transport. The applicant will play a proactive role in enhancing the employability of the job seekers of the nearby area. The company will prepare a plan for human resource development required for the project in total, train the local people to provide employment to these trained local youth.

Chapter – 3 : PROJECT DESCRIPTION

3.1 TYPE OF PROJECT INCLUDING INTERLINKED AND INTERDEPENDENT PROJECTS, IF ANY.

Type of project : Open Cast mining of Manganese ore

Interlinked project : No interlinked is envisaged

3.2 LOCATION OF LEASE AREA WITH COORDINATES

The area falls under the vicinity of Compartment No.: 551, Forest – Miragpur, Katangi, Balaghat, Madhya Pradesh. The area is located on Survey of India, Toposheet no. 55 O/10 & 14.

Coordinates of the ML area are:

S.No.	LATITUDE	LONGITUDE
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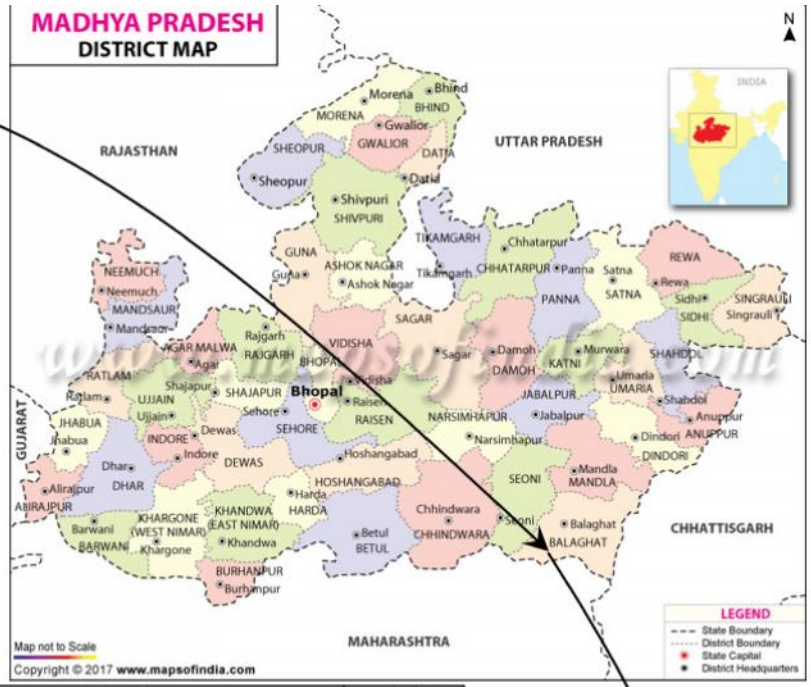
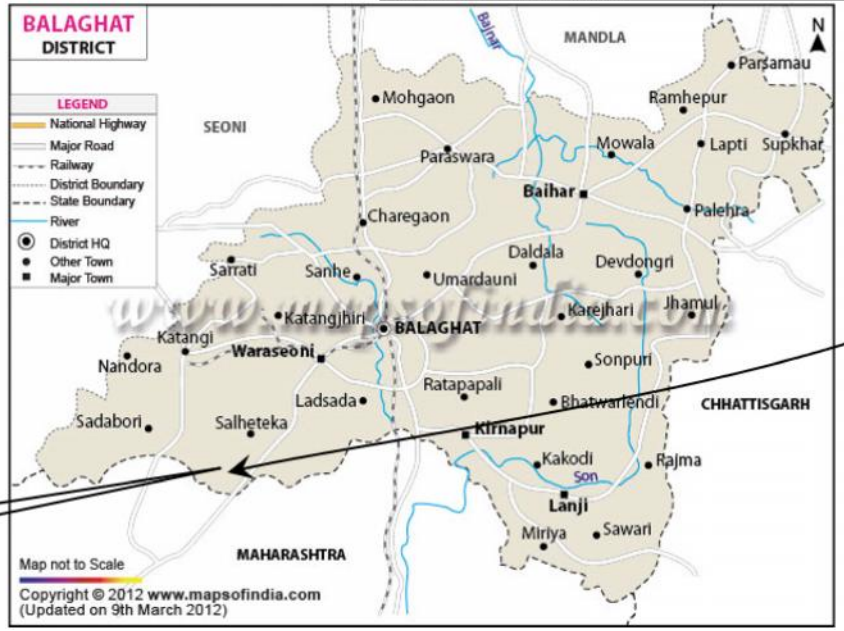
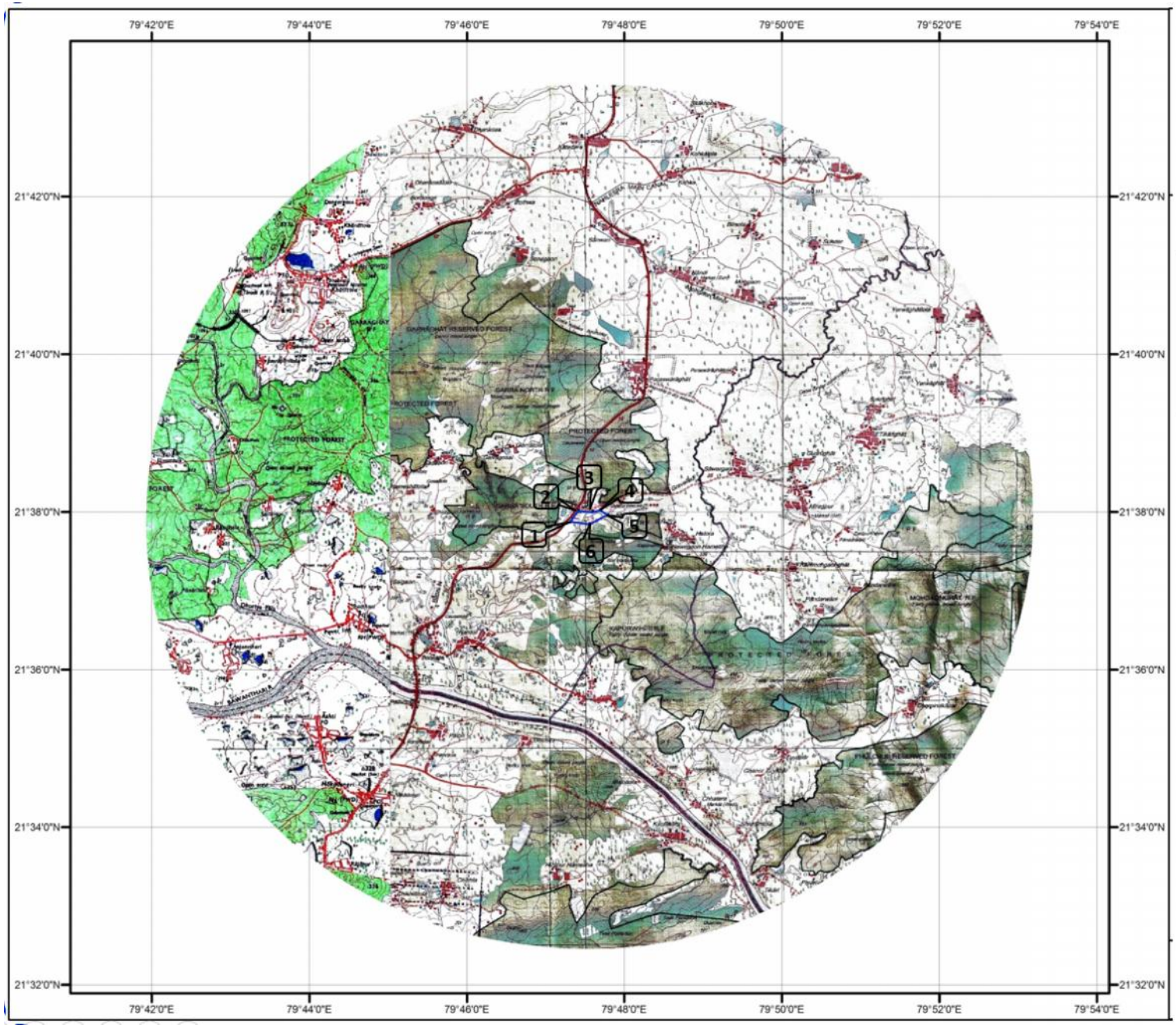
Location of the Mine





Special Blast Ltd.



10 Km RADIUS TOPO MAP SHOWING SITE SURROUNDINGS

N

1 0.5 0 1 2 3 4 Kilometers

1 centimeter = 1,142 meters

Mine Boundary

COORDINATES OF THE BOUNDARY POINTS		
S.No	LATITUDE	LONGITUDE
1	21° 38'02.00" N	79° 47'23.77" E
2	21° 37'53.40" N	79° 47'18.00" E
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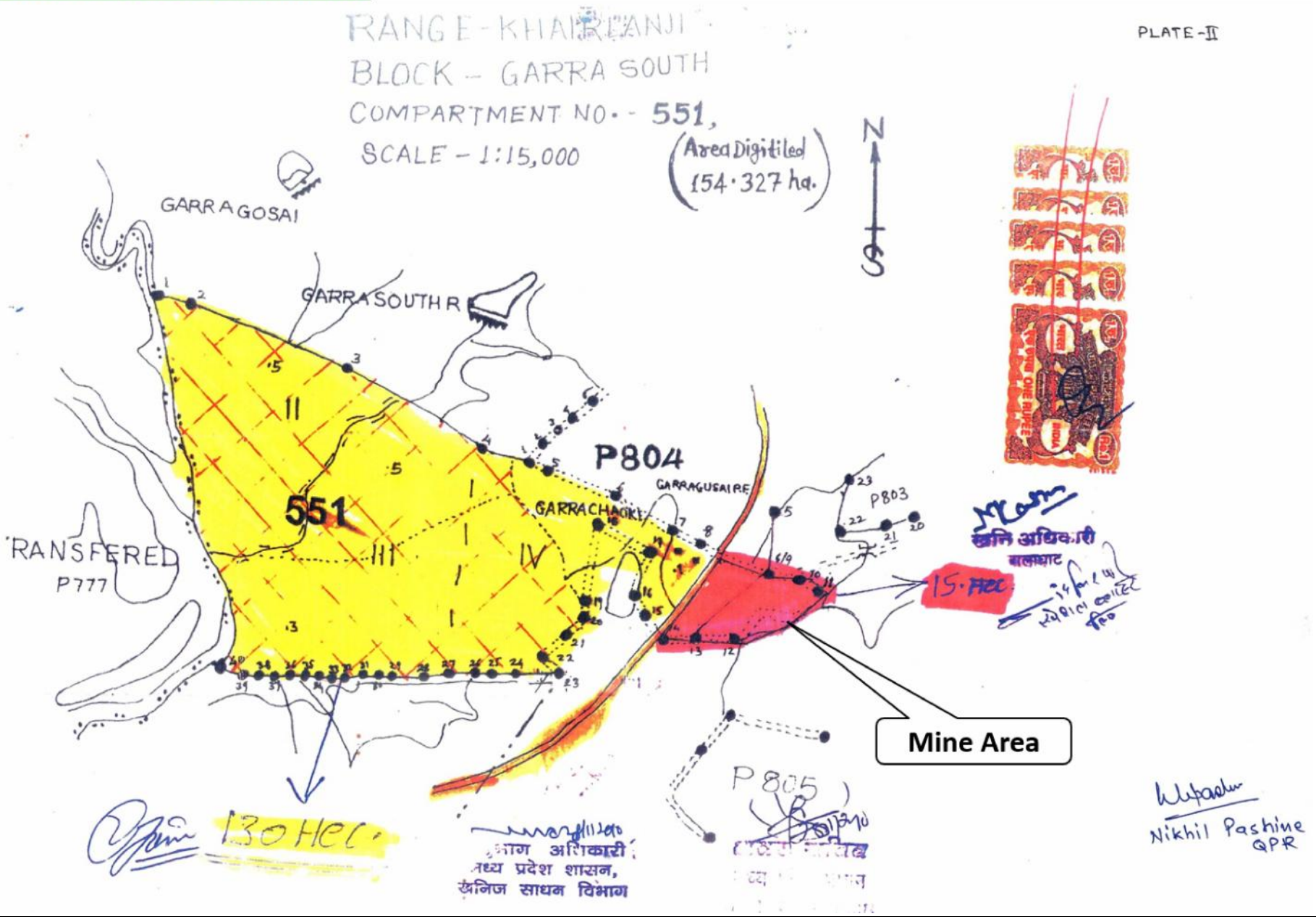
CONVENTIONAL SYMBOLS

Source:-
Survey of India Topographical Maps, No.s. 55 O/10 and 14.

Mine Lease Area Sketch



3.3 DETAILS OF ALTERNATE SITES CONSIDERED

No Alternative sites examined as Mineral Resource Department, Govt. of Madhya Pradesh, has thrown open the present Mine area for grant of Mine lease vide Gazette notification dated 24-07-1992. Subsequently, M/s. Special Blasts Ltd. have applied for Grant of Mining lease vide application dated 02-05-2008. In response to mining lease application, Govt. of Madhya Pradesh, Mineral Resource Department, Mantralaya, Bhopal has issued the letter of intent for grant the mining lease to M/s. Special Blasts Ltd. for extraction of Manganese over an area of 15 hectares in Miragpur Forest Compartment No. 551 vide order No. F-2-173/2008/12-1 dated 16-01-2013. (Copy is enclosed)

3.4 SIZE OR MAGNITUDE OF OPERATION

Mineral recovery from existing erstwhile dump		
(considered peak production)	:	4252.5 TPA
Proposed production from Mine	:	4000.0 TPA
Total Production including recovery from Mineral dump	:	8252.5 TPA

3.5 PROJECT DESCRIPTION WITH PROCESS DETAILS

3.5.1 Geology of the area

Sausar group of rocks extend from Balaghat District in Madhya Pradesh in the east to Nagpur District in Maharashtra in the west. These deposits of Manganese belong to the lower part of sequence of meta-sedimentary formations of rocks of sausar series of Pre-cambrian age. The area falls under the eastern part of the manganese ore belt in between Balaghat to Bhandara which is located in the center of the belt.

The litho units of this formation are quartzite, quartz muscovite schist, phyllite, and conglomerate and feldspathic grit. Further, eastwards the Sausar group of rocks is covered with Deccan Trap. The deposit is in the form of alternating layers of chert and Manganese ore occurring as small detached lenses and also stratified in nature. These stratified deposits occur in three different stratigraphic positions in the 'Sausar Series'.

The Managanese ore and gondite formation are restricted to the Schists and Quartzites of the Mansar and Chorbaoli stages. He other rock types met thiwin this belt are biotite achists besides granitic rock with associated pegmatites and quartz vein.

The regional stratigraphic sequence of the manganese bearing deposits now adopted for

the Sausar Series is a modification of that given by Fermor (1926) and West (1936) as mentioned in the Geology of India and Burma by M.S. Krishnan is as follows:

Formation	**Rock types**
Minor Intrusions	Leucocratic granite, granite-pegmatite and Quartz veins.
Granitic intrusives	Gneissic granite and ortho-gneiss
SAUSAR SERIES	
Bichua stage	Dolomitic marble, calc silicate granulites with Tremolite, actinolite schist, anthrophylite, wollastonite and grossularite.
Junewani stage	Biotite-Muscovite schist and quartz-biotite granulite, biotite gneiss
Chorbaoli stage	Quarzites, Quartz Muscovite and Felspathic Muscovite schists, occasionally
Manganese ore and Gondite Horizon	
Mansar Stage	Muscovite and biotite schist, Phyllite, often garnetiferous; become gneissic where feldsphathized. Generally, highly argillaceous. Two or three manganese ore Horizons within schists.
Lohangi Stage	
a. Lohangi	Pink and white calcitic marble, locally dolomitic and calciphyres
b. Utekata	Calc-granulites and cal-gneiss with silicates contains microline-bearing bands.
c. Kadabikhera	Quartz-biotite granulites with apidote and magnetite intercalated with quartz-biotite gneiss.
d. Sita Saongi stage	Quartz-Muscovite schist and feldspar muscovite schist with inter-0calated quartzites, Schistose feldspathic grit
	---------- Disconformity----------
Tirodi Gneiss	Biotite gneiss with intercalations of amphibolite, Horblende-schist, calc gneiss, feldspar-muscovite-schist, biotite granulites; commonly garnetiferous
	---------- Disconformity----------
Metamorphic	Hypersthene granite-gneiss, biotite gneiss, Hornblende gneiss, amphibolite etc.

3.5.2 Local Geology

From the study of the area and the results of the extensive mining carried out lessee, it is observed that the geological set up of the Miragpur Manganese mine is mainly characterized by the rock units of Mansar and Sitasaongi formation. The rock outcrops of Mansar formations mostly covered with soil in the area, whereas the Sitasaongi formations of rocks are clearly visible in the mining pits. This Miragpur deposit is occurs nearer the contact of Mansar and Sitasaongi formation. Formation of Lohangi stage is missing in this area .

The sitasaongi formations Quartzites, Quartz muscovite schist and felspathic grits are overlain directly and conformably by a thick sequence of Mansar series of rocks mostly phyllites and schist with trend of foliation as NNE-SSW. Quartzite and older metamorphic rocks are also noticed in the area .

Geology of lease area:

Rock types	**Formation**
1) Soil / Murrum	Recent to sub recent
2) Phylites, Quartz-muscovite schist and feldspar muscovite schist with inter-calated quarzite, Schistose feldpathic grit	Mansar
3) Quantz-Muscovite schist ad feldspar muscovite schist with inter-calated quartzite, Schistose feldspathic grit	Sitasaongi Stage

Soil: Soil is mostly lateritic in nature yellowish brown to reddish brown in colour and covers more or less the entire lease area. The average thickness of the soil cover is about 2.00 meters.

Phyllites, Quartz mica schist: The Phyllites are having different shades of colours, variable in composition and fine to medium grained inter -banded with quartz biotite/sericite schist. The general trend of this formation in the area is ENE-WSW and at places more or less E-W and the same is also the trend of the manganese ore body .

Gondite and Manganese ore rocks: Manganese ore horizon mainly comprising of alternate bands of manganese ore and manganiferous quartzite are generally overlain by phyllites of Mansar formation .

3.5.3 Details of Exploration

(i) *Exploration already Carried out in the area:*

The area has been worked in the past manganese ore in the south part of the proposed area and a large dimension water logged mining pit is in existence. In the proposed area reconnaissance survey, geological mapping, study of geological nature of the deposit, topographic survey and sampling and analysis of minerals has been carried out by the consultant for the preparation of this mining plan.

(*ii)* *Proposed to be carried out:*

Proposed method excavation will be "Open cast" method of mining carried out by mechanized means for in-situ ore. This will be commenced after proving the in-situ deposit by drilling bore holes in the next five-year document i.e. first scheme of mining. During this plan period of five years, only manual mining for recovering the ore from the mineralized dumps is proposed.

Existing mineralized sumps will be re-casted phase wise from outer one end and proceed further to the inner side. Recovery of Mn ore will be carried out and sorted grade wise marketable ore and stacked accordingly.

After sorting the mineral from these mineralized dumps, the waste material which is about 90% as recovery of ore is anticipated to be about 10%. These waste materials will be dumped along the norther boundary which is supposed to be non-mineralized area. Before dumping waste in that area, it will be ascertained by pitting and trenching for proving as a barren area without mineralization.

(iii) *Methods of Estimation of Reserves:*

The lease area has been explored by extensive mining in the past and proved the availability of good marketable grade of Manganese ore is available in the area. Recovery of Manganese ore from the old mineralized dumps indicates the availability of ore in the area.

Keeping in view the overall structural and geological setup of the Manganese in the area following parameters have been considered for the purpose of estimating the reserves:

a) Shape, size and depth extension of Manganese deposit as projected on cross sections have been considered as the basis for estimation of ore reserves.
b) A bulk density of 3.5 for in-situ ore & 3.0 for recoverable ore from dumps is considered.

Similarly 80% recovery of in-situ ROM & 10% from mineralized dumps have been considered while estimating recoverable reserves.

c) Manganese of the area is covered with soil / murrum capping following by quartz mica schist, phyllite with manganeferous quartzite and with Mn ore is proceeding at depth with dip angle of about 40^0 for which over and side burden of hanging wall side is to be removed.

Geological Reserves Estimate (Manganese ore)

Classification	Code	Quantity
a. **Mineral Reserve**		
1. Proved Reserves 2. Probable Reserves	111 122	21,270 Tonnes
b. Remaining Resources		
1. Feasibility of Mineral Resource 2. Prefeasibility of mineral resource 3. Measured Mineral Resource 4. Indicated Mineral Resources 5. Inferred Mineral Resources 6. Reconnaissance Mineral resources	211 221 & 222 331 332 333 334	10,920 Tonnes
Total Mineral Resources [a + b]	**=**	**32,190 Tonnes**

Probable Mineral Reserves under UNFC Code 122 = 21,270 Tonnes

With the proposed rate of production and the reserves estimated the life of mine

= 21,270 / **4000** = 5.3 Years

Production as per Mineralized dump

The dimensions of the mineralized dumps from which production is envisaged from the recasting of old mineralized dumps are as under:

Mineralized Dump No. 1. (Average Length, width and height is considered)

Length x Width x Height = Volume of dump in M^3

110 M x 30 M x 6M = 19,800 -------(a)

Mineralized Dump No. 2. (Average Length, width and height is considered)

Length x Width x Height = Volume of dump in M^3

190 M x 40 M x 6M = 45,600 ------(b)

Mineralized Dump No. 3. (Average Length, width and height is considered)

Length x Width x Height = Volume of dump in M^3

55M x 25M x 4M = 5,500 ----------(c)

Total volume of mineralized dumps (a) + (b) + (c) = 70,900 M^3

Recovery of manganese ore from these dumps @ 10% = 7,090 M^3 x 3 B.D.

= 21,270 Tonnes

Year wise production from Mineralized dumps for the ensuing 5 years period

Year ending March	Rehandling mineralized dumps M^3	Recovery of ore in M^3 @ 10%	Waste from dumps in M^3 @90%	Production of Mn in MT @ 3 BD
First	12,600	1,260.0	11,340.0	3,780.0
Second	12,285	1,228.5	11,056.5	3,685.5
Third	12,384	1,238.4	11,145.6	3,715.2
Fourth	14,175	1,417.5	12,757.5	***4,252.5***
Fifth	13,920	1,392.0	12,528.0	4,176.0
Total	**65,364**	**6536.4**	**58,827.6**	**19,609.2**

Total production capacity:

Mineral recovery from dump : 4252.5 Tons/year (considering peak production)

Production due to mining activity : 4000.0 Tons/year

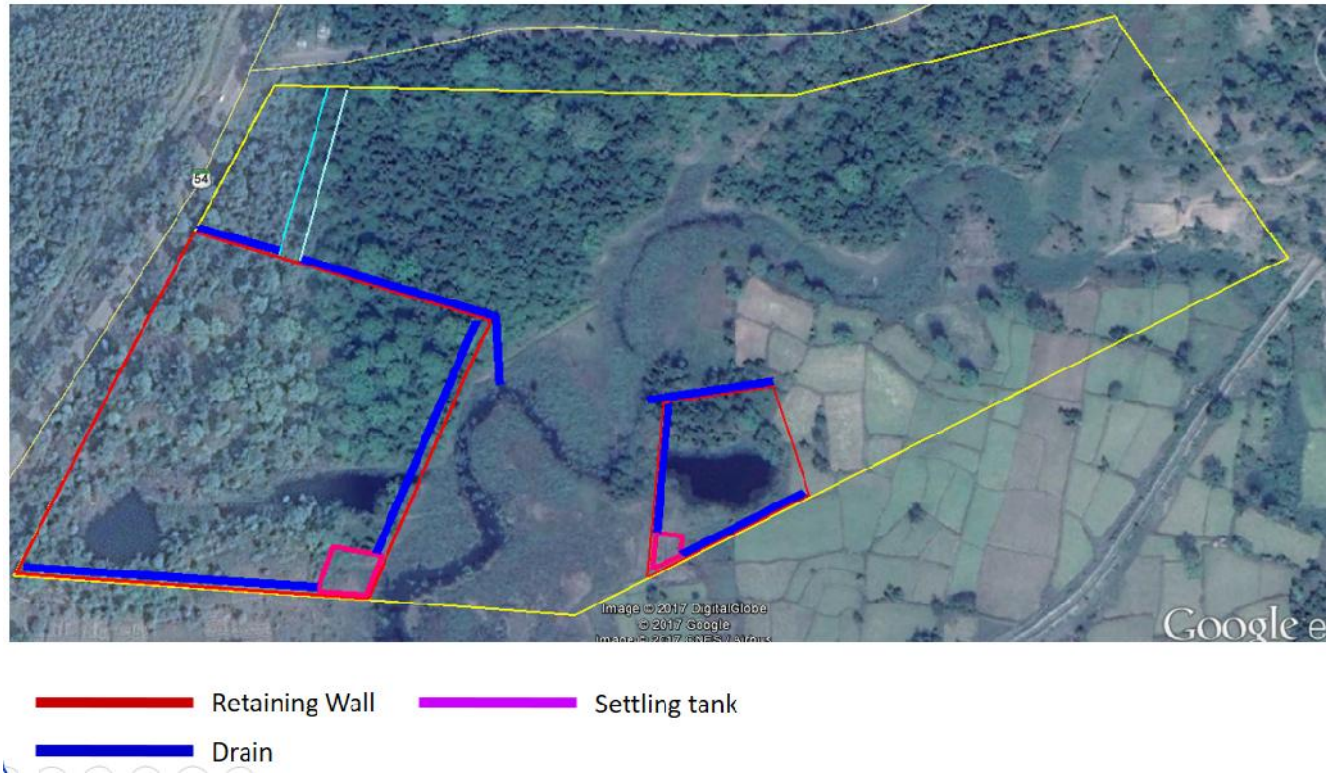
Total Production Capacity : 8252.5 Tons/year

Proposed protection measures for Water body situated on the southern side:

- No mining activity will be carried during Monsoon i.e. June to September of every calendar year
- Drain will be constructed on the Northern side outside the retaining wall, which will connect with existing nallah within the lease area.
- Retaining wall of height 2 m will provided around the existing dump and proposed working area.
- Garland drain with Settling tank will be provided inside the retaining wall.
- Clear water from the settling tank will be used for dust suppression.

Google map showing these environmental protection measures for water body is shown below:

Google map showing protection measures for Water body



3.6 RAW MATERIAL REQUIRED

Since this is a mining activity, no raw material is needed. The Mn ore produced from the mine will be sold to steel plants.

3.7 RESOURCE OPTIMIZATION/ RECYCLING AND REUSE ENVISAGED IN THE PROJECT

Waste material comprises of over burden of phyllite rocks and lateritic soil cover. The average thickness of the lateritic soil is about 1.20 M. In addition to this waste also includes some quantum of quartzite with thin streaks of Mn ore, alternate banding of Mn ore and cherty quartzite and manganese ferrous quartzite. Quartzite with thin streaks of Mn ore, alternate banding of Mn ore and cherty quartzite and manganese ferrous quartzite would be about 10% of the total manganese bearing zone.

3.8 AVAILABILITY OF WATER ITS SOURCE, ENERGY / POWER REQUIREMENT AND SOURCE

Water required for present proposal is for dust suppression, plantation and will be sourced from mine pit water and for Domestic purpose, it will be sourced from bore well. Following is breakup of water requirement:

S.No.	ITEM	REQUIREMENT IN KLD
1.	For Dust Suppression within the ML roads	20.0
2.	For Dust Suppression along the approach Road	20.0
3.	For Domestic Use	4.0
4.	For plantation	6.0
	Total	**50.0**

Diesel is the source of energy to run all the vehicles and operate heavy equipment's within the proposed mining area.

3.9 QUANTITY OF WASTES TO BE GENERATED AND THEIR MANAGEMENT / DISPOSAL

Only waste water generated from the proposed project will be sanitary waste water, which will be treated in septic tank followed subsurface dispersion trench.

Waste material comprises of over burden of phyllite rocks and lateritic soil cover. The average thickness of the lateritic soil is about 1.20 M. In addition to this waste also includes some quantum of quartzite with thin streaks of Mn ore, alternate banding of Mn ore and cherty quartzite and mangane ferous quartzite. Quartzite with thin streaks of Mn ore, alternate banding of Mn ore and cherty quartzite and mangane ferous quartzite would be about 10% of the total manganese bearing zone.

Chapter – 4 : SITE ANALYSIS

4.1 CONNECTIVITY

The area falls under the vicinity of Compartment No.: 551, Forest – Miragpur, Katangi, Balaghat, Madhya Pradesh. The area is located on Survey of India, Toposheet no. 55 O/10 & 14.

The ML Area is about 62.0 Kms. from the district town Balaghat and about 16.0 Kms. from Katangi. Balaghat town is a Railway Junction on Gondia – Jabalpur section of South East Central Railway, from where road and railway connections are available. It is approachable by tar road upto Katangi and then to Miragpur (Forest) on Katangi – Tumsar road. Thus, the area is approachable throughout the year.

4.2 LAND FORM, LAND USE AND LAND OWNERSHIP

Manganese ore body with its associated manganese bearing formation is observed in the pit section and continued up to at least 450 meters length as observed in the pits.

The most part of this old pit is water logged due to accumulation of rain water from years together, since the mine was closed. It is also reported that the manganese ore body is submerged in this water-logged pit at the bottom and still continuing at depth. This is confirmed by the consultant from the study of geological formations exposed in the pit, nature and trend of the manganese bearing formations and ore body in the pit and adjoining mining.

Govt. of Madhya Pradesh, Mineral Resource Department, Mantralaya, Bhopal has issued the letter of intent for grant the mining lease to M/s. Special Blasts Ltd. for extraction of Manganese over an area of 15 hectares in Miragpur Forest Compartment No. 551 vide order No. F-2-173/2008/12-1 dated 16-01-2013.

The status of the existing land use and after plan period is as below:

S.No.	Area used for	Existing in Ha.	At the end of plan period in Ha.
1	Mining pit	0.8960	0.8960
2	Dumping of waste / rejects	0.2500	0.7642

S.No.	Area used for	Existing in Ha.	At the end of plan period in Ha.
3	Dumping of top soil	0.3575	0.3575
4	Storage of Mineralized rejects	1.2400	0.1700
5	Storage of ore	Nil	0.2000
6	Shed / Building	Nil	0.0200
7	Road	Nil	0.2500
8	Plantation	Nil	0.2250
	Total	**2.7435**	**2.8925**

4.3 TOPOGRAPHY

The topography of the area is a slopping terrain having general slopes towards South - East direction. The drainage pattern of the area is mostly dendritic in nature. The area had already been worked under mining lease hence large elongated mining pits, mineralized, waste and soil dumps are in existence in the area.

4.4 EXISTING LAND USE PATTERN

[AGRICULTURE, NON-AGRICULTURE, FOREST, WATER BODIES (INCLUDING AREA UNDER CRZ)}, SHORTEST DISTANCES FROM THE PERIPHERY OF THE PROJECT TO PERIPHERY OF THE FORESTS, NATIONAL PARK, WILD LIFE SANCTUARY, ECO SENSITIVE AREAS, WATER BODIES (DISTANCE FROM THE HFL OF THE RIVER), CRZ. IN CASE OF NOTIFIED INDUSTRIAL AREA, A COPY OF THE GAZETTE NOTIFICATION]

Total ML area is 15.0 Ha. and is a part of Forest Compartment. Following are Environmental Setting within 10 Kms. radius :

S.No.	Particulars	Details
1.	Nearest habitation	Hatora – 1.48 Kms.
2.	Details of water bodies / lakes / rivers / nallahs	In the ML area, one seasonal gully is developed due to rain. Water tank is present at 200 m in South West direction Bawanthadi river – 4.6 Kms. Rajiv Sagar Left Bank Canal – 2.45 Kms. Dhoriya Nallah – 7.0 Kms.
3.	Wildlife Sanctuaries / National Parks / Elephant corridor/Migratory	There are no Wildlife Sanctuaries / National Parks/ Elephant corridor /Migratory Route for Birds/ Tiger

S.No.	Particulars	Details
	Route for Birds / Tiger reserves	reserves within 10 Km. radius of the ML area.
4.	Reserve Forests / Protected Forests	Apart from the ML area which is Govt. Protected Forest (isolated patch), the following forests are situated within 10 Km radius Garra South R.F - 0.3Kms. Garra North R.F - 2.0 Kms. Kapurwihiri R.F – 0.18 Kms. Phulchur R.F – 7.6 Kms. Mohgaonghat R.F – 6.0 Kms.
5.	Interstate boundary	Madhya Pradesh – Maharashtra interstate Boundary at 4.7 Kms.
6.	Industrial areas / cluster, which are listed in MoEF&CC Office Memorandum dated 13th January 2010	No such area within 10 Km. radius.
7.	Other mine the study area	There are several Manganese ore Mine M/s. MOIL Limited (Tirodi Manganese Ore Mine), M/s. Balasore Alloys, M/s. KPG Minerals & M/s. Shankuntala Kasal

4.5 EXISTING INFRASTRUCTURE

Nil

4.6 SOIL CLASSIFICATION

Soil is mostly lateritic in nature yellowish brown to reddish brown in colour and covers more or less the entire lease area. The average thickness of the soil cover is about 2.00 meters

4.7 CLIMATIC DATA FROM SECONDARY SOURCES

Rainfall : Yearly average rainfall is 1,400 mm

Temperature : Summer 44^0 Max. ; Winter 10^0 Min.

Water Regime : Ground water table is about 15 M below ground surface.

Source of Water : Mainly bore well, dug wells are seasonal

Drainage : Drainage pattern of the area is dendritic in nature

4.8 SOCIAL INFRASTRUCTURE

Basic facilities like bus, train and road facilities are available for the nearby villages.

Chapter – 5 : PLANNING BRIEF

5.1 PLANNING CONCEPT

The mine will cater Mn ore which is the one of raw material for steel plant & ferro alloys plant.

5.2 POPULATION PROJECTION

According to the 2011 census Balaghat District has a population of 1,701,156. This gives it a ranking of 288th in India (out of a total of 640). The district has a population density of 184 inhabitants per square kilometre (480/sq mi). Its population growth rate over the decade 2001–11 was 13.56%. Balaghat has a sex ratio of 1021 females for every 1000 males, and a literacy rate of 78.29%.

As per the 2001 Census, the total population of the district is 1,497,968, of which 1,236,083 is rural population and 129,787 is urban. Out of the total population, 113,105 are Scheduled Caste and 298,665 are Scheduled Tribes. The no. of males was 682,260 and the no. of females was 683,610. According to the District website the total area of the district is 9245 km², making the population density 162 persons per km².

There are no major human settlements in the close vicinity of the project site. The manpower requirement will be sourced from the local areas to the extent possible; hence not much of settlement of outside people in the area. However, population concentration may increase around the project site due to increase in ancillary activities.

5.3 LAND USE PLANNING (BREAKUP ALONG WITH GREEN BELT ETC.)

The status of the existing land use and after plan period is as below:

S.No.	Area used for	Existing in Ha.	At the end of plan period in Ha.
1	Mining pit	0.8960	0.8960
2	Dumping of waste / rejects	0.2500	0.7642
3	Dumping of top soil	0.3575	0.3575
4	Storage of Mineralized rejects	1.2400	0.1700
5	Storage of ore	Nil	0.2000
6	Shed / Building	Nil	0.0200
7	Road	Nil	0.2500

8	Plantation	Nil	0.2250
	Total	**2.7435**	**2.8925**

5.4 AMENITIES/FACILITIES

Communication facility like Mobile Phone connectivity and landline services are available at site. Other amenities for workers and staff shall be provided within colony area adjacent to the mining area.

Chapter – 6 : PROPOSED INFRASTRUCTURE

6.1 INDUSTRIAL AREA (PROCESSING AREA)

As mentioned earlier that the tentative land area statement of proposed 15 ha. of mine area is given as below:

S.No.	Area used for	Existing in Ha.	At the end of plan period in Ha.
1	Mining pit	0.8960	0.8960
2	Dumping of waste / rejects	0.2500	0.7642
3	Dumping of top soil	0.3575	0.3575
4	Storage of Mineralized rejects	1.2400	0.1700
5	Storage of ore	Nil	0.2000
6	Shed / Building	Nil	0.0200
7	Road	Nil	0.2500
8	Plantation	Nil	0.2250
	Total	**2.7435**	**2.8925**

6.2 INDUSTRIAL AREA (PROCESSING AREA)

Proposed area of mining at conceptual stage is about 15 Ha.

6.3 RESIDENTIAL AREA (NON PROCESSING AREA)

Not applicable

6.4 GREEN BELT

It is proposed to develop wide green belts surrounding mining area in the 7.5 m buffer zone in the safety barriers erected for the stream and along the roads. In this green belt local tree species will be planted in three rows with spacing of 2.5 m x 2.5 m. In between the tree species bush and shrub verities will be planted.

6.5 SOCIAL INFRASTRUCTURE

The project proponent will extend social benefits like drinking water, health care measures, HIV awareness programme, educational support, promotion of cultural, religious & sports activities, and training for self-employment with initial investment to set up these schemes to the neighboring villagers. Repair & maintenance of the village roads, maintenance of school

buildings, awarding scholarships for higher studies to the meritorious students from economically weaker section, supply of free books and uniforms to the socially deprived class of students, construction of temples, auditorium, halls for social gathering, clubs, co-operative stores will also be taken up, which will be common for the plant & mine.

Thus, this project is expected to yield a positive impact on the socio-economic environment of the area. It helps in sustainable development of this area including further development of physical & social infrastructural facilities.

6.6 DRINKING WATER MANAGEMENT (SOURCE & SUPPLY OF WATER)

Drinking water requirement of 4.0 KLD will be met from the Bore Wells.

6.7 SEWERAGE SYSTEM

The sewage generated from the toilets provided for the employees, will be connected to septic tank followed by sub-surface dispersion trench.

6.8 INDUSTRIAL WASTE MANAGEMENT

No industrial waste will be generated from the mine.

6.9 SOLID WASTE MANAGEMENT

Waste material comprises of over burden of phyllite rocks and lateritic soil cover. The average thickness of the lateritic soil is about 2.0 M. In addition to this waste also includes some quantum of quartzite with thin streaks of Mn ore, alternate banding of Mn ore and cherty quartzite and manganese ferrous quartzite. Quartzite with thin streaks of Mn ore, alternate banding of Mn ore and cherty quartzite and manganese ferrous quartzite would be about 10% of the total manganese bearing zone.

6.10 POWER REQUIREMENT & SUPPLY / SOURCE

Power requirement for mines will be sourced from nearby PGCIL / MPPGCL.

Chapter – 7: REHABILITATION & RESETTLEMENT (R & R) PLAN

It is barren land without any habitation and hence there will not be any R & R involved.

Chapter – 8 : PROJECT SCHEDULE & COST ESTIMATES

8.1 PROJECT SCHEDULE

Only the administrative office building is required to be constructed and the same will be commenced after getting this EC clearance from MoEF&CC and Consent for Establishment from Madhya Pradesh Pollution Control Board.

8.2 ESTIMATED PROJECT COST

Estimated cost for proposed mines activity will be Rs. 212.0 Lakhs

Chapter – 9 : ANALYSIS OF PROPOSAL

9.1 FINANCIAL AND SOCIAL BENEFITS

The proposed mining activity will be beneficial financially and socially considering the project cost, mining costs, environmental cost, cost on health & safety and the various community improvement activities planned, as explained below.

9.2 SOCIO-ECONOMIC DEVELOPMENTAL ACTIVITIES

The management is committed to uplift the standards of living of the villagers by undertaking following activities / responsibilities as the part of Corporate Social Responsibility.

- Health & hygiene
- Drinking water
- Education for poor
- Village roads