

Review and Updation of **MINING PLAN**

Submitted under Rule 17(1) of MCR 2016 for approval



For

JAISINGHPUR IRON ORE MINE

(M.L. No. 2545)

Jaisinghpur Village, Sandur taluk,
Ballari district, Karnataka

Extent: 34.14 ha (as per CEC & ML deed)

of

M/s Lakshmi Minerals, Hosapete

Mine code: 30KAR03164

Rule 45 registration no: IBM/175/2011

Lease period: 50 years - upto 17.04.2057 as per MMDR Amendment Act-2015

Category: A (OTFM), Private/Non-captive

Type of land: Ramghad Reserved Forest

Plan Period: 2017-18 to 2021-22

Prepared by

SRIPAD PUJAR
Qualified Person

B.V.R. ACHAR
Qualified Person

SANJOY KR MAHATO
Qualified Person

CHAITHANYA GEO LYNX

SURVEY, GEOLOGY, EXPLORATION AND MINING CONSULTANTS

ANNAPURNA BADAVANE, HOSPET - 583 201

Ph: 08394 226563 Fax: 08394 224012

e-mail : cglhpt@gmail.com

Oct-2016

C O N T E N T S



	PAGE NO.
Introductory Notes	1
1.0 General	3
2.0 Location and accessibility	4
3.0 Details of approved Scheme of Mining	6
Part A	
1.0 Geology and Exploration	8
2.0 Mining	20
3.0 Mine Drainage	26
4.0 Stacking of Mineral Reject /Sub Grade Material and Disposal of Waste	27
5.0 Use of Mineral and Mineral Reject	28
6.0 Processing of ROM and Mineral Reject	29
7.0 Others	30
8.0 Progressive Mine Closure Plan –Under Rule 23 of MCDR'1988	31
Part B	
9.0 Certificates/Undertakings/Consents	
Consent letter/Undertaking /Certificate from the Applicant	39
Under taking regarding legal issues	40
Certificates of QP	41

ANNEXURES



Nos.	Details	Pages
1	Copy of Supplementary Mining Lease deed	24
2	Copy of forest Clearance	2
3	Copy of Environment Clearance	6
4	Copy of Scheme of Mining approval by IBM	3
5	Copy of letter regarding R&R approval	1
6	Registration letter of the firm	1
7	Copy of photo ID of Sri KR Kaviraj	1
8	Certificates of Qualified Persons	7
9	Mahajar copy	3
10	R&R compliance Report	3
11	Form J & K	1
12	Analysis report from NABL lab	8
13	Env. Monitoring Report	3
14	Feasibility Report	5
15	Copy of Bank Guarantee	5

List of Plans and Sections



Nos.	DESCRIPTION	SCALE
I a	Location Plan	NTS
I b	Key Plan / Precise area map on Toposheet	1: 50,000
I c	Lease sketch	1" = 1320'
II a	Surface Plan	1 : 2000
II b	Geological Plan	1 : 2000
II c	Geological Cross Sections	1 : 2000
III	Year wise development plans & sections	1 : 2000
IV	Reclamation plan	1 : 2000
V	Environment Plan	1 : 5000
VI	Conceptual Plan	1 : 2000
VII	Financial Area Assurance Plan	1 : 2000



**GOVERNMENT OF INDIA
MINISTRY OF MINES
INDIAN BUREAU OF MINES
OFFICE OF REGIONAL CONTROLLER OF MINES**



FAX : 080- 23371027 / 23373287
Tel : 080-23371027 / 23375366 / 67
Email ID: ro.bangalore@ibm.gov.in
rcombng@rediffmail.com

29, Industrial Suburb, II Stage,
Tumkur Road, Gorguntapalya,
Yeshwantpur,
Bangalore- 560 022.

No. 279/789/2004/BNG/1776

Dated: 04/11/2016

To:

✓ Sri. K. R. Kaviraj
M/s Lakshmi Minerals
No.601, 7th Main, Near Balanjaneya Temple
M.J. Nagar, Hosapete - 583 201
Ballari dist.

Sub : Approval of Review and Updation of Mining Plan with Progressive Mine Closure Plan in respect of Jaisinghpur Iron Ore Mine (ML No.2545) of M/s Lakshmi Minerals over an area of 34.14 Ha.(as per CEC Sketch) located in Jaisinghpur Village, Sandur Taluk, Ballari District, Karnataka State under Rule 17(1) of MCR, 2016 - Private /Cat -A- Mech. / Forest / Non-Captive.

Ref : 1. Your letter No. Nil dated. 22/09/2016
2. This office letter of even number dated. 13/10/2016
3. Your letter No. Nil dated. 27/10/2016.

Sir,

In exercise of the power conferred under Rule 17 of Minerals (Other than Atomic and Hydrocarbon Energy Minerals) Concession Rules, 2016, vide Gazette Notification No. S.O.1857 (E)dtd.18/05/2016 issued by Controller General IBM, under F. No. T-43004/CGBM/MM (DR)/2015, I hereby approve the **Review and Updation of Mining Plan with Progressive Mine Closure Plan** in respect of **Jaisinghpur Iron Ore Mine (ML No.2545) of M/s Lakshmi Minerals** over an area of 34.14 Ha.(as per CEC Sketch) located in Jaisinghpur Village, Sandur Taluk, Ballari District, Karnataka State under Rule 17(1) of MCR, 2016. This approval is subject to the following conditions:

1. The Review and Updation of Mining Plan is approved without prejudice to any other laws applicable to the mine from time to time whether made by the Central Government, State Government or any other authority and without prejudice to any order or direction from any court of competent jurisdiction.
2. The proposals shown on the plates and /or given in the document is based on the lease map/Sketch submitted by the applicant /lessee and is applicable from the date of approval.
3. It is clarified that the approval of your aforesaid Review and Updation of Mining Plan does not in any way imply the approval of the Government in terms of any other provisions of the Mines and Minerals (Development and Regulation) Act 1957 or the Mineral Concession Rules, 2016 and any other laws including Forest Conservation Act, 1980, Environment (Protection) Act, 1986 or the rules made there under, Mines Act, 1952 and Rules & Regulations made there under.
4. Indian Bureau of Mines has not undertaken verification of the mining lease boundary on the ground and does not undertake any responsibility regarding correctness of the boundaries of the leasehold shown on the ground with reference to lease map& other plans furnished by the applicant/ lessee.
5. At any stage, if it is observed that the information furnished, data incorporated in the document are incorrect or misrepresent facts, the approval of the document shall be revoked with immediate effect.
6. Next Financial Assurance shall be due for submission on 1/04/2022
7. The execution of Review and Updation of Mining Plan shall be subjected to vacation of prohibitory orders / notices, if any.

No. 279/789/2004/BNG

8. The Approval of Review and Updation of Mining Plan is strictly confined to the proposals contained within the mining leasehold demarcated as per lease sketch given by the joint survey team constituted by the CEC and duly authenticated by the State DMG. It does not convey approval to the proposals falling outside the Mining Lease boundary.

9. The Approval of Review and Updation of Mining Plan is without prejudice to the final order of the Hon'ble Supreme Court order dtd.18/04/2013 in W.P. No. 562/2009 and interim orders passed by the Hon'ble Supreme Court from time to time in the said W.P. Nos. 25910/2009 and 26083/2009.

10. The Approval Review and Updation of Mining Plan is subject to the condition that mining operations and other allied activities shall not be extended in unbroken forest area in compliance of the Hon'ble Supreme Court order dtd. 18/04/2013 in W.P.No.562/2009.

11. The contents of Circular No: 2/2010 issued by the Chief Controller of Mines, IBM, Nagpur vide his letter No.11013/3/MP/90- CCOM Vol-VII dated 06/04/2010 shall be complied with.

12. A copy of Environment Impact Assessment and Environment Management Plan as approved by the MOEF, New Delhi in terms of Hon'ble Supreme Court order dtd. 20/04/2012 shall be submitted to this office along with a copy of their approval letter, within one month of the date of such approval.

13. Environmental Monitoring Cell of the company shall continue monitoring ambient air quality, dust fall rate, water quality, soil sample analysis and noise level measurements on various stations established for the purpose both in the core zone and buffer zone as per Department of Environment guidelines and keeping in view IBM's circular No.3/92, season wise every year or by engaging the services of an Environment Laboratory approved by MOEF/CPCB. The data so generated shall be maintained in a bound paged register kept for the purpose and the same shall be made available to the inspecting officer on demand.

14. In case the mining lease falls within a radius of 10 kms of National Park/ sanctuary, recommendations of NBWL have to be obtained as per the Order of Hon'ble Supreme Court in I A No. 460/2004.

15. A yearly report shall be submitted to this office before 1st July of every year setting forth the extent of protective and rehabilitative works carried out as envisaged in the approved mine closure plan.


16. The Review and Updation of Mining Plan is approved for proposals contained therein and as applicable from the date of approval of the document for the mining activities to be carried out within the mining lease hold.

17. The Review and Updation of Mining Plan is approved for total Mineral Reserves of 1.782 Million Tonnes of Iron ore and annual production capacity as under.

Year	Iron ore (in Tonnes)
2017-18	10000
2018-19	10000
2019-20	10000
2020-21	10000
2021-22	10000

Encl: One copy of the Review and Updation of Mining Plan with Progressive Mine Closure Plan.

Yours faithfully,


(J.R. Chaudhary)

Regional Controller of Mines
Indian Bureau of Mines.

Copy for kind information to:

1. The Director of Mines & Geology, Govt. of Karnataka, Bangalore, along with a copy of the approved Review & Updation of Mining Plan.
2. The Director of Mines Safety, Directorate General of Mines Safety, Bellary Sub- Region, 31, Infantry Road, Cantonment, Bellary - 584104.
3. The Controller of Mines (SZ), Indian Bureau of Mines, Bangalore.
4. S/ Sri. Sripad Pujar, BVR Achar & Sanjoy KR Mahato, Qualified Persons, Chaitanya Geo Lynx, Chaitanya Bhavana, Annapaurana Badavane, Hosapeta - 583 201 Ballari Dist..
5. Mine file / Guard file

Regional Controller of Mines
Indian Bureau of Mines.

INTRODUCTORY NOTES:

M/s Lakshmi Minerals, Hosapete is holding a mining lease (M.L.No. 2545) by name Jaisinghpur Iron Ore Mine located in Ramgad Forest Range, Jaisinghpur Village of Sandur Taluk, Bellary Dist., Karnataka. The mining lease was initially granted over an area of 36.42 ha for 30 years w.e.f. 18.04.2007. But as per CEC, the extent of ML area was finalized to 34.14 ha. After MMDR Amendment Act 2015, the lease period has been extended for 50 years upto 17.04.2057 with an extent of 34.14 ha as finalized by CEC. (Annexure-1). The entire lease area is under Forest and Forest Clearance has been granted for the erstwhile extent of 36.42 ha by Forest Department. (Annexure-2). The lessee has also obtained Environmental Clearance form MoEF (Annexure-3).

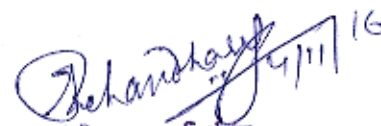
The details of other mining leases held by lessee are as follows:

Table-1:

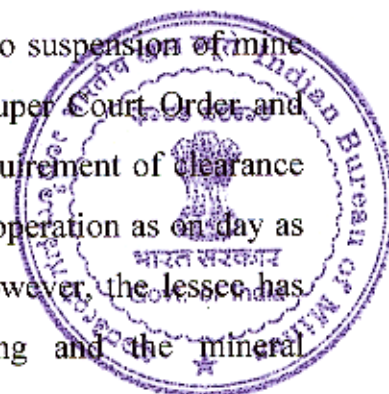
ML no.	Area (ha)	Location	Mineral	Working /Nonworking	Execution / Expiry date	Remarks
2551	27.73	Venkatagiri village, Sandur tq, Bellary dt	Iron Ore	Working	18-06-2007 to 17-06-2057.	--
2561	34.40	Kallahalli village, Hospet tq, Bellary dist.	Iron Ore	Non - working	17.10.2007 to 16.10.2027	--

The previous Scheme of Mining was approved by IBM for the five years' period from 2012-13 to 2016-17, vide letter No. 279/789/2004/BNG/1261 dated 14/07/2014 (Annexure-4) with an annual production program of 10,000 tonnes as per the production limit fixed by CEC. Copy of the letter from DMG is enclosed as Annexure-5.

Review & updation of
The Mining Plan is approved subject
to the conditions / stipulations
indicated in the Mining Plan approval
letter No. 279/789/2004/BNG
Date 4/11/2016


अधीनस्थ खान निबन्धक
Regional Controller of Mines
भारतीय खान ब्यूरो
Indian Bureau of Mines
बेगलूर Bangalore-560022

No mining operation in the last five years, mainly due to suspension of mine operations initially (from 29th July 2011) by Hon'ble Super Court Order and later on implementation of R & R report and further requirement of clearance from Monitoring committee. The mine is still not under operation as on day as it is awaiting clearance from monitoring committee. However, the lessee has carried out exploration in the lease area by pitting and the mineral reserves/resources have been updated.



As the existing Scheme of Mining is expiring by 31.03.2017, a review and updation of Mining Plan is prepared and submitted for approval under Rule17(1) of MCR, 2016 for the ensuing period of 2017-18 to 2021-22 incorporating the updated mineral reserves / resources after exploration. But the production program of 10,000 TPA is maintained as per the production limit fixed by CEC.

1.0 GENERAL

a)

Table -2:

Name of lessee	M/s Lakshmi Minerals Proprietor: Sri K R Kaviraj
Mine Code	30KAR03164
Rule 45 registration no.	IBM/175/2011
Address	601, 7 th main, Near Balanjaneya Temple, HOSAPETE-583 201
District	Ballari
State	Karnataka
Pin code	583201
Phone	08394-230644
Fax	08394-230644
Mobile	09880765116
E-mail id	srilakshmiminerals@gmail.com



b) Status of applicant/lessee:

Proprietary firm

(Registration letter of the firm is enclosed as Annexure-6 and Photo ID and Address proof of Shri KR Kaviraj is given as Annexure-7).

c) Mineral(s) which is are included in the prospecting license (for fresh grant):

Not applicable

d) Mineral(s) which is included in the lease deed:

Iron Ore

e) Mineral(s) which is the lessee intends to mine:

Iron Ore

f) Name of Qualified Person preparing Mining Plan:

Table -3:

Name	Sripad Pujar	BVR Achar	Sanjoy Kr Mahato
Qualification	M.Sc., (Mineral Exploration)	M.Sc., (Mineral Exploration)	M.Sc., (Applied Geology)
Address	Chaithanya Geo Lynx, Chaithanya Bhavana, Annapurna Badavane, Hospet – 583 201 Bellary Dist. Karnataka		
Phone	08394-226563		
Fax	08394-224012		
Mobile	9448366964	9448469407	
E-mail id	cglhpt@gmail.com		

(Certificates of Qualified persons enclosed as Annexure-8)

2.0 LOCATION AND ACCESSIBILITY

a) Lease Details

Table -4 :

Name of the mine	Jaisinghpur Iron Ore Mine
Lat/long of any boundary point	L.M-1 Latitude - 15° 10' 26.1" Longitude - 76° 26' 16.7" There are 12 corner pillars and lat/long values of these pillars are listed in below table -8
Date of grant of lease	18.4.2007
Period/Expiry Date	50 years - up to 17.04.2057
Postal Address	JIOM, near Jaisinghpur village, Sandur taluk
District	Ballari
State	Karnataka
Pin code	583119
Phone	--
Fax	--
Mobile	98451 08201
E-mail id	srlakshmimineral@gmail.com



b) Details of lease area:

Table – 5:

Forest	Non-forest
Ramgad Reserve Forest Area- 34.14 ha*	NIL

*The mining lease was initially granted over an area of 36.42 ha. But as per CEC, the extent of ML area was finalized to 34.14 ha.

Table -6:

Total lease area	34.14 Ha (as per CEC) and 36.42 ha (as per FC)
District & State	Bellary Dist, Karnataka State
Taluka	Sandur
Village	Jaisinghpur
Whether the area falls under Coastal Regulation Zone (CRZ)?	No
Existence of public road/railway line, if any nearby and approximate distance	One public road is passing along the lease boundary towards NE.
Toposheet No. with latitude & longitude of all corner boundary point/pillar	Topo sheet no -D43E7, D43E8 & D43E12 Lat / Long values are given in table below

Table -7: Latitude and longitudes of the Boundary pillars of the lease area

BP No	Location co-ordinates (India Bangladesh)	
	Northing	Easting
LM-1	15° 10' 26.1"	76° 26' 16.7"
LM-2	15° 10' 24.6"	76° 26' 16.6"
LM-3	15° 10' 23.0"	76° 26' 16.2"
LM-4	15° 10' 15.6"	76° 26' 05.1"
LM-5	15° 10' 33.2"	76° 25' 49.7"
LM-6	15° 10' 44.6"	76° 26' 06.4"
LM-7	15° 10' 41.7"	76° 26' 06.7"
LM-8	15° 10' 40.4"	76° 26' 09.6"
LM-9	15° 10' 38.2"	76° 26' 08.5"
LM-10	15° 10' 32.6"	76° 26' 10.6"
LM-11	15° 10' 27.8"	76° 26' 10.4"
LM-12	15° 10' 26.7"	76° 26' 13.7"



Copy of the Mahajar is enclosed as annexure no.8

Three GCP points were set up near to BP no. 6 and are shown in Surface Plan/Geological Plan and photographs of both boundary pillars and GCP are enclosed.

Table -8: Latitude and longitudes of the GCP

GCP No.	Co-ordinates		Distance from BP6	Level mRL
	Northing	Easting		
1	N 15° 10' 51.7"	E 76° 26' 02.6"	82.12m towards N	633
2	N 15° 10' 51.0"	E 76° 26' 01.9"	65.39m towards-NNW	634
3	N 15° 10' 49.7"	E 76° 26' 01.0"	55.71m towards-NW	632

c) Location Map:

A general location map is attached as Plate- I a showing area and access routes on with area marked on a Survey of India topographical map of 1:50,000 scale, Plate Ib.

A certified lease sketch of CEC is enclosed as Plate –I c.

3.0 DETAILS OF APPROVED SCHEME OF MINING:

3.1) Date and reference of earlier approved SOM

The list of MPs and SOMs approved by IBM are as follows:



Table -9:

Period	MP/SOM	Approval details	Remarks
2007-08 to 2011-12	MP	No. 279/789/2004/BNG dated 02/06/2004	For grant of Mining lease
2012-13 to 2016-2017	SOM	279/789/2004/BNG/1261 dated 14/07/2014	Regular Scheme

3.2) Details of last modifications if any (for the previous approved period) of approved MP/SOM, indicating date of approval, reason for modification.

No modification / Not applicable.

3.3) Review of earlier approved proposal in respect of exploration, excavation, reclamation etc.

Exploration: 25 nos. of trial pits were proposed in the earlier approved Scheme. However, during Sept. 2016, lessee has sunk 30 nos. of trial pits. Out of these, 28 pits are having float ore deposit and two trial pits are barren. The grade of the float iron ore is varying from 53.95 to 65.01% Fe. The recovery of float ore is around 75%. (Pl refer Analysis report, page 1 of Annexure no.12).

Excavation: No mining operation in the last five years, mainly due to suspension of mine operations initially by Hon'ble Super Court Order and later on implementation of R & R report and further requirement of clearance from Monitoring committee.

Reclamation: As part of reclamation, after R&R proposals, plantation on 0.30 ha area was carried out. The other details of implementation of R&R proposals are given below along with details of completion in tabular form.

Table-10: Details of implementation of R&R proposals given for first three years (2013-14 to 2015-16)

Type	Particulars of work	Proposed	Completed	Progress
Retaining wall	R&R Dry	2	2	100%
Check Dam	Loose Boulder Check Dams	7	7	100%
	Stone masonry check dam	1	1	100%
Gully Plugs	Gabion CD	3	-	Under progress - proposed to be completed within March 2017
Afforestation				
Avenue plantation /Haulage road		2850 nos.	Under progress - proposed to be completed within March 2017	
Greenbelt development		1100		

Note- Environmental monitoring & watch & ward and maintenance of all engineering and biological measures will be continued in all subsequent years.

Copy of the R&R compliance is enclosed as Annexure-10.

3.4) Status of compliance of violations pointed out by IBM:

During last five years no violations were pointed out by IBM.

3.5) Indicate and give details of any suspension/closure/prohibitory order issued by any Government agency under any rule or Court of law:

This mine is not under operation till now per Hon'ble Supreme court order dated 29.07.2011.

3.6) In case the MP/SOM is submitted under rules 17(3) of the MCR'2016 for approval of modification, specify reason and justification for modification under these rules.

Not applicable.

PART – A

1.0 GEOLOGY AND EXPLORATION:

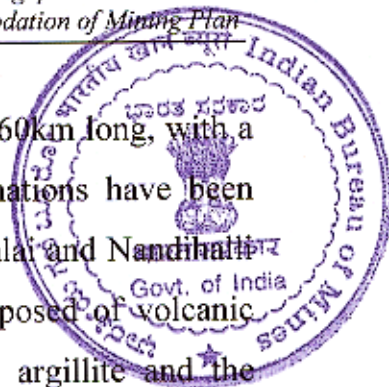
a) Physiography:

Physiographically the entire lease area occupies middle and the northwestern part of the Ramgad Range hillocks, trending Northwest-Southeast. The area is spread in the Northeastern slopes which is moderate to steep topography. The ridge forms a couple of saddle portion at places. The lease area is an open scrub forest. The area has alternate spurs and valleys. The highest and lowest elevation in the lease area is 770m and 640m above MSL respectively. Average annual rainfall in area is around of 746mm which does not disturb the mining activities. Moderate wind velocities, prevailed in north east-south west direction. The weather is moderate to temperate, and known for hot summer and dry weather for a major part of the year.

b) Regional Geology:

The Mining Lease area is located in Ramgad range forming part of the Bellary–Hospet group of iron ore deposits hosted by Sandur Schist Belt. The Sandur Schist belt is one of the Dharwar type precambrian supracrustal belts in the Karnataka craton of South India. Many geologists like Radhakrishnan, RN Mishra, Ray & Biswas, Swaminathan, Mukhopdhyaya & Martin, Vasudev and Prabhakar have worked extensively on the structure, geology and genesis of this schist belt. This is the smallest of the three basins and covers an area of just 960 sq. km. It is structurally highly disturbed and squeezed out of shape by the intrusion of Younger granites. Shelf facies as in the other basins is confined to the western margin. Well-developed mafic magmatism and strong development of manganiferous greywacke, phyllite and numerous bands of banded hematite quartzite (BHQ) characterize the basin. The basin is known for its rich accumulation of both Iron and Manganese Ore. Basement cover relations are obscured because of intense deformation and intrusion by younger granite.





The Sandur Schist belt has a lens-shaped geometry of about 60km long, with a maximum width of 28 Km in the central part. Four formations have been distinguished in this basin: Yeshwantnagar, Deogiri, Donimalai and Nandihalli formations. The Yeshwantnagar Formation is largely composed of volcanic flows; the Deogiri formation by maganiferous greywacke argillite and the Donimalai Formation by extensive development of banded haematite and chert and Jasper. The topmost Nandihalli Formation is made up of Metabasalts with intercalation of greywacke and argillites. Lateritization has played an important role in the concentration of manganese and Iron in the profile, giving rise to rich accumulation of manganese and Iron ore for which this schist belt is well known. (Source: *Geology of Karnataka-BP Radhakrishna & R Vaidyanathan*)

c) Geology of the lease area:

Based on the surface exposures and the field study, geologically it indicates that more or less the area is covered by float iron ore. Following are the general lithological sequence observed:

- Iron ore floats.
- Limonitic/Phyllitic clay

Iron ore float is deposited in the limonitic/phyllitic clay. The float ore consists of iron ore pebbles and cobbles of size variation from 2mm to 150mm. Mineralogically, the float ore zone though consists of mixture of Hematite and Goethite/Limonite but majority is Hematite ore. The waste material consists of mainly lateritic soil, phyllite/ limonitic clay which are non - toxic in nature and associated with the float ore deposit. The float ore spread in the lease is almost entire area. The exploration by trial pits have proved the depth of the float ore and it varies from 1.5 meters to 5 meters. The grade of the float ore as per the samples analysis is varies from 46.36 %Fe to 65.01 Fe%. The recovery of float ore is around 75%. (Kindly refer analysis report Annexure no.12). The ratio of lumpy ore (+10mm) to fines (-10mm) is around 70:30.

d) Prospecting/Exploration:

Table –11:

Name of prospecting /exploration agency	Lessee: M/s Lakshmi Minerals, Hosapete
Address	601, 7 th main, Near Balanjaneya Temple, HOSAPETE-583 201.
E-mail id	srilakshmimineral@gmail.com
Phone	08394-230644



e) Details of prospecting/exploration already carried out


i) Number of pits and trenches indicating dimensions, spacing etc along and across the strike/foliation with reference to geological plan.

No trenching was carried out, but during Jan. 2014, lessee has sunk 16 nos. of trial pits and further during Sept 2016, 30 nos. of pits were sunk at a grid of 100m x 100m to know the float ore extent, its depth persistence and characteristics.

Table-12: Trial pit details made during Jan 2014

Sl.no	NORTHING	EASTING	ORE DEPTH (m)	TOTAL DEPTH (m)	R.L (m)
TP-1	N15° 10' 44.5"	E76° 25' 56.9"	2.5	3	680
TP-2	N15° 10' 40.8"	E76° 25' 56.4"	2.0	3	668
TP-3	N15° 10' 39.1"	E76° 25' 53.8"	2.5	3	691
TP-4	N15° 10' 37.2"	E76° 25' 51.2"	2.5	3	719
TP-5	N15° 10' 40.1"	E76° 25' 51.1"	1.5	3	705
TP-6	N15° 10' 34.1"	E76° 25' 52.5"	2.5	3	722
TP-7	N15° 10' 36.0"	E76° 25' 55.2"	2.5	3	696
TP-8	N15° 10' 37.9"	E76° 25' 57.9"	2.5	2.5	682
TP-9	N15° 10' 40.8"	E76° 26' 02.1"	0.0	3	655
TP-10	N15° 10' 37.8"	E76° 26' 03.5"	2.5	2.5	644
TP-11	N15° 10' 35.7"	E76° 26' 00.5"	2.5	3	675
TP-12	N15° 10' 33.8"	E76° 25' 57.7"	2.5	3	688
TP-13	N15° 10' 31.8"	E76° 25' 55.0"	2.5	2.5	710
TP-14	N15° 10' 29.1"	E76° 25' 56.8"	2.5	2.5	718
TP-15	N15° 10' 31.1"	E76° 25' 59.5"	2.5	2.5	685
TP-16	N15° 10' 33.3"	E76° 26' 02.1"	2.5	2.5	670

Table-13: Trial pit details made during Sept. 2016



Pit No.	UTM Co-Ordinates		Level mRL	Dimensions (L×W×D)	Depth of Ore (m)	Fe%
TP-17	N15°10' 36.6"	E76° 26' 00.7"	675	2×2×3.5	2.5	53.95
TP-18	N15° 10' 35.8"	E76° 25' 49.1"	763	2×2×5.0	5.0	57.64
TP-19	N15° 10' 33.4"	E76° 25' 51.4"	752	2×2×5.0	5.0	61.21
TP-20	N15° 10' 28.3"	E76° 25' 55.6"	754	2×2×3.0	3.0	59.20
TP-21	N15° 10' 25.9"	E76° 25' 57.2"	758	2×2×4.0	4.0	62.78
TP-22	N15° 10' 22.7"	E76° 26' 01.2"	736	2×2×5.0	5.0	62.78
TP-23	N15° 10' 25.8"	E76° 25' 58.2"	752	2×2×5.3	5.3	61.66
TP-24	N15° 10' 27.3"	E76° 26' 00.4"	718	2×2×5.0	5.0	62.55
TP-25	N15° 10' 29.4"	E76° 26' 02.9"	681	2×2×2.2	2.2	61.44
TP-26	N15° 10' 27.6"	E76° 26' 02.6"	695	2×2×3.0	3.0	58.08
TP-27	N15° 10' 28.6"	E76° 26' 03.8"	682	2.5×2×3.0	3.0	61.66
TP-28	N15° 10' 24.9"	E76° 26' 02.0"	715	2.5×2×4.5	4.5	65.01
TP-29	N15° 10' 37.9"	E76° 25' 57.9"	750	2.5×2×5.0	5.0	57.08
TP-30	N15° 10' 22.9"	E76° 26' 03.4"	726	2×2×2.3	2.3	62.55
TP-31	N15° 10' 24.6"	E76° 26' 06.2"	686	2×2×2.3	2.3	64.67
TP-32	N15° 10' 27.6"	E76° 26' 07.0"	675	2×2×3.5	3.5	62.55
TP-33	N15° 10' 27.2"	E76° 26' 10.9"	675	2×2×2.5	2.5	62.11
TP-34	N15° 10' 28.9"	E76° 26' 10.8"	668	2×2×2.5	2.5	58.08
TP-35	N15° 10' 31.7"	E76° 26' 04.5"	666	2×2×2.3	2.3	56.74
TP-36	N15° 10' 32.5"	E76° 26' 03.7"	667	2x2x3.3	3.3	58.53
TP-37	N15° 10' 35.5"	E76° 26' 03.9"	660	2x2x2.4	2.4	65.01
TP-38	N15° 10' 39.0"	E76° 26' 05.4"	646	2x2x2.3	2.3	62.55
TP-39	N15° 10' 39.3"	E76° 26' 02.9"	656	2x2x2.5	2.5	58.31
TP-40	N15° 10' 41.8"	E76° 26' 03.6"	649	2x2x2.5	2.5	63.89
TP-41	N15° 10' 44.3"	E76° 26' 02.5"	648	2x2x5.0	5.0	63.67
TP-42	N15° 10' 45.4"	E76° 26' 02.1"	648	2x2x1.5	1.5	50.27
TP-43	N15° 10' 47.1"	E76° 26' 01.5"	646	2x2x2.0	2.0	63.00
TP-44	N15° 10' 45.6"	E76° 25' 58.9"	659	2x2x3.0	3.0	57.86
TP-45	N15° 10' 45.4"	E76° 25' 58.1"	664	2x2x3.0	3.0	63.00
TP-46	N15° 10' 43.7"	E76° 25' 57.6"	671	2x2x3.0	3.0	60.32
				Average	2.89	58.28

All the pits are marked in Geological Plan.

- ii) Number of boreholes indicating type (Core/RC/DTH), dia, spacing, inclination, Collar level, depth etc with standard borehole logs duly marking on geological plan/sections.

No drilling was carried out.

iii) Details of samples analysis indicating type of sample (surface/sub-surface from pits / trenches/borehole etc)

Samples from these pits tested for determination of in-situ bulk density and recovery factor. Chemical analysis of ore and waste was also carried out. (Annexure-12 shows reports from NABL approved lab). Most of the pits show the presence of ore analyzing between 46.36% and 65.01% Fe.

iv) Expenditure incurred in various prospecting operations:

Expenditure for these trial pits is about Rs. 0.90 lakhs @ Rs. 3000/- per pit.

f) Surface Plan: Enclosed as Plate no-II a on a scale of 1:2000

g) Geological Plan: Enclosed as Plate no-II b on a scale of 1:2000

h) Geological Section: Enclosed as Plate no-II c on a scale of 1:2000

i) Future program of exploration:

The total mineralized area in the lease is about 27.40 ha and the entire mineralized area is under G1 as it has been explored by pitting at a grid interval of 100m x 100m as the deposit is of float nature. Many of the pits have closed in the ore zone at the bottom and hence once again it is proposed to sink trial pits in between the existing pits to establish the reserves from resources. Hence, 12 nos. of pits with a dimension of 2.5m x 2.5m x 5m will be sunk during the year 2018-19. These pits are marked in Geological Plan plate no. II b.

j) Mineral Reserves/Resources:

Resources and Reserves:

Table-14: Reserves/Resources as on 01.04. 2014

Category (UNFC)	Float Iron Ore
Proved mineral reserves (111)	194,380 tonnes
Inferred mineral resources (333)	256,824 tonnes

Resource and reserves are updated based on the UNFC guidelines. The depth persistence of float ore is varying from 1.5m to 5m. The reserves are estimated by area method. The area multiplied by the average depth of the float ore and further multiplied by bulk density to calculate tonnages. Recovery of saleable ore of +2mm of 45% Fe grade is considered as 75% based on field testing of samples. Report is enclosed as Annexure no.12. This recovery factor is more than the earlier approved Mining Plan as it is based on the current marketable grade and size. Presently +2mm size ore of +45%Fe is saleable compared to the earlier marketable size of +10mm of +55%Fe grade. The Bulk density is considered as 3.0 t/cum based on the field tests as well as experience in the field.

The terms and codes on reserves and resources are made as per the definitions provided under United Nations Framework Classification (UNFC) of mineral resources, as required under the guidelines of IBM.

Proved Mineral Reserves (111): These are estimated based on the data of G-1 level of exploration (up to 100x100m grid interval) by pitting up to the bottom exposure that is varying from 1.5m to 5m. The area covered under pitting is about 27.40 Ha. The average depth of the float ore is 2.86m and this depth is considered as proved ore limit.

Feasibility Mineral Resources (211): These are blocked reserves in the safety zone area of 6.60 ha with 2.0m depth.

Indicated Mineral Resource (333): These are extension of the float ore below the proved ore-up to 2.5m depth - as per the geology. An extent of 18.51 ha area is having float ore below the proved depth. (Photographs of working faces and trial pits enclosed).

k) Detailed calculation of reserves/resources section wise:

Table: 15- PROVED MINERAL RESERVES (111)

Area (sqm)	Avg. Depth (m)	Volume (cum)	Recovery 75%	Bulk Density Ton/cum	Quantity tonnes
274,000	2.89	791,860	593,895	3.0	1,781,685

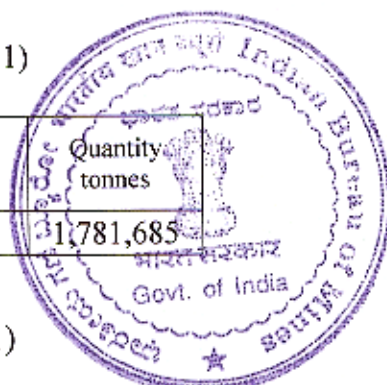


Table: 16- Feasibility Mineral Resource (211)

Area (sqm)	Avg. Depth (m)	Volume (cum)	Recovery 75%	Bulk Density Ton/cum	Quantity tonnes
66,000	2	132,000	99,000	3.0	2,97,000

Table: 17- Inferred Mineral Resources (333)

Area (sqm)	Avg. Depth (m)	Volume (cum)	Recovery 75%	Bulk Density Ton/cum	Quantity tonnes
185,100	2.5	462,750	347,063	3.0	1,041,189

l) Mineral Resources:

Table – 18: Total Resources as on 01.10.2016

Level of Exploration	Iron Ore Resources	Grade
G1 - Detailed exploration	2.079 million tonnes	Average 58.28% Fe at +45% Fe cutoff
G2 - General Exploration	--	
G3 – Prospecting	1.041 million tonnes	
G4- Reconnaissance	--	

Reserves and resources are arrived after applying results of feasibility and economic evaluation (Pl refer Table-20) of the deposit based on the various factors such as:

- Open cast mining method, recovery factor as 75%
- Cutoff grade of +45% for iron ore, ultimate pit depth
- Mineral / ore blocked at lease boundary.

Table – 19: Reserves and Resources

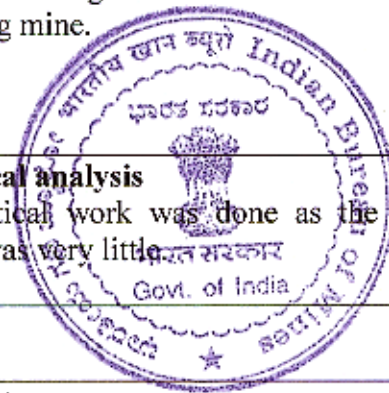
Category	UNFC	Quantity in million tons	Grade
A. Total Mineral Reserve			
Proved Mineral Reserve	G1 -111	1.782	Average 58.28% Fe at +45% Fe cutoff
Probable Mineral Reserve	G1- 121	--	
B. Total Remaining			
Feasibility Mineral Resource	G1-211	0.297	
Prefeasibility Mineral	G2-221, 222		
Measured Mineral Resource	G1- 331	--	
Indicated Mineral Resource	G2- 332	--	
Inferred Mineral Resource	G3- 333	1.041	
Reconnaissance Mineral	G4- 334	--	
Total Reserves + Resources		3.120	

Note: It is not possible to quantify grade wise reserves, as normally there is considerable variation in size and grade distribution within the ore zone, which results variable recovery factor and bulk density. Thus tonnages arrived are tentative

Table -20: DETAILS OF UNFC CLASSIFICATION REPORT

GEOLOGICAL AXIS	
G1(Detailed Exploration)	Status
1.Geological survey: (i)Mapping-For coal, mapping 1:5000;for other minerals 1:1000 (ii)Preparation of detailed topographical-cum-geological map including all surface geological features, extent of deposit, structure, location of boreholes, assay plan and sections of exploratory mine development and borehole data; (iii)Topogrid/triangulation stations / identified fiducials linking in the maps.	1.Geological survey: (i) Mapping-Surface and Geological maps prepared in 1:2000 scale and enclosed as Plates in Mining Plan (ii)Preparation of detailed topographical (surface), geological map including all surface geological features, extent of deposit, structure, location of boreholes, sections and borehole data were made and enclosed as plates and annexure. (iii)Topogrid /triangulation stations identified and these are linked in Surface Plan.
2.Geochemical survey: Detailed grid pattern sampling and analysis.	2.Geochemical survey: Not carried out.
3.Geophysical survey: Detailed and specific borehole geophysical survey.	3.Geophysical survey: Not carried out.
4.Technological: (i)Pitting - 2 to 5 per sq. km. for simple deposits; (ii)Trenching - At spacing of 200-300m; (iii)Drilling- closer spaced (with definite grid pattern) than that for G2 category; For coal, i) Density of boreholes to be 12 to 15 per sqkm depending on the complexities for geostructural proving ii) For opencast project grid spacing may be 100m x 50m depending on the geology, weather mantle cover , burning nature of coal seams. (iv)Exploratory mining and check drilling results if possible ; (v)Sampling- systematic pit and trench sampling, core and sludge sampling for laboratory scale and bulk sample for the pilot plant scale beneficiation studies.	4.Technological: (i)Pitting – As part of the exploration, during Jan. 2014, lessee has sunk 16 nos. of trial pits and further during Sept 2016, about 31 nos. of pits were made at a grid of 100m x 100m. (ii) Trenching – Not carried out. (iii)Drilling- Not carried out. (iv)Exploratory mining - Not carried out. (v)Sampling - Pit sampling was done and analyzed. However, no work of laboratory scale and bulk sample for the pilot plant scale beneficiation studies is being done.

5.Petrographic and mineragraphic study: Refining of data on the petrographic character of rocks of the deposit and its surroundings, alterations (if any), including study of grain size texture gangue and its liberation characteristics for further refining of data	5.Petrographic and mineragraphic study: No work of mineralogical studies was done as it is working mine.
6)Geostatistical analysis of borehole data thickness of ore : waste encountered in holes, assay values of samples if considered necessary.	6)Geostatistical analysis No geo-statistical work was done as the drilling data was very little



FEASIBILITY AXIS

F1 (Feasibility Study)	Status
1. Geology: Geology of area and project, detailed exploration, closed spaced drilling, ore body modelling, bulk samples for beneficiation, geotechnical and ground water & surface waters studies. However for coal, beneficiation studies to be carried out depending upon coal qualities. 2. Mining: Mining plan, mine recoveries and efficiencies, equipment selection, manpower requirement. 3.Environment: EIA studies and EMP including socio-economic impact, rehabilitation of project affected persons, waste disposal/reclamation, and detailed land use data.	1. GEOLOGY: Geology of area and project: The Mining Lease area is located in Ramgad range forming part of the Bellary–Hospet group of iron ore deposits hosted by Sandur Schist Belt. Based on the surface exposures and the field study, geologically it indicates that more or less the area is covered by float iron ore. Following are the general lithological sequence observed: - Iron ore floats. - Limonitic/Phyllitic clay Iron ore float is deposited in the limonitic/phyllitic clay. The float ore consists of iron ore pebbles and cobbles of size variation from 2mm to 150mm. Detailed exploration: As part of the exploration, during Jan. 2014, lessee has sunk 16 nos. of trial pits and further during Sept 2016, about 31 nos. of pits were made at a grid of 100m x 100m. Geotechnical, ground water & surface water studies: No study was carried out. 2. MINING: The deposit (mine) will be worked by opencast mechanized method (A). The material of +45% Fe will be ROM. Mining Plan is submitted to IBM and mining will carried out in accordance with this. 3. ENVIRONMENT: EIA studies and EMP including socio-economic impact, rehabilitation of project affected persons, waste disposal/reclamation detailed land use data are under taken by a reputed environmental consultancy firm and Environmental clearance from MoEF has been obtained.

4. Processing: Pilot scale/industrial scale investigation data, list of equipment, manpower and environmental considerations like waste disposal of tailing, etc.

5. Infrastructure and services, construction activities: Full details

6. Costing:
Detailed break-up of capital cost, operating cost, details of working capital.

7. Marketing:
Overview, specific market aspects.
8. Economic viability:
Cash flow forecast, inflation effects, sensitivity studies.

9. Other factors: Statutory provisions relating to labour, land, mining, taxation etc.

10. Economic Evaluation:

4. PROCESSING:

No wet mineral processing, only dry screening for size separation as per buyer's requirement.

5. INFRASTRUCTURE AND SERVICES, CONSTRUCTION ACTIVITIES:

The mine is having required infrastructural facilities and is well connected to main road by a good motorable road.

6. COSTING:

The mine is not operating for the last five years. However, estimated Cost of production based on previous experience is given below:

Item	Cost per tonne (Rs.)
Direct cost: Exploration, mining and beneficiation	189.60
Over-head cost	20
Depreciation	30
Interest and Taxes	-
Others	20
Environment & Afforestation	20
R&R costs	150
TOTAL	409.60

7 & 8. MARKETING and ECONOMIC VIABILITY:

There is good demand in market for all grade and sizes and the usual selling price will be about Rs.1000/- per ton and the production cost is about Rs.410/-, hence the mining of ore is economically viable.

9. OTHER FACTORS:

All the Statutory provisions relating to labour, land, mining, and taxation are being complied.

10. Economic Evaluation:

The cost of production including mining, overhead cost, depreciation etc is about Rs. 410/- per ton. But cost including royalty (Rs. 150/- @15%), NMET and DMF (Rs. 48/- 32% of Royalty) will be around Rs. 607.60/- per ton. The mine is economically viable as the average sale price of the ore (58%Fe) is Rs. 1,000/- per tonne.

ECONOMIC AXIS

E1(Economic)	Status
1. Detailed exploration.	<p>1. DETAILED EXPLORATION.</p> <p>As part of the exploration, during Jan. 2014, lessee has sunk 16 nos. of trial pits and further during Sept 2016, about 31 nos. of pits were made at a grid of 100m x 100m.</p>
2. Mining report /mining plan / working mines.	<p>2. MINING REPORT /MINING PLAN / WORKING MINES.</p> <p>Mining Plan is made as per the provisions and submitted for approval by IBM. Mining will be carried out as per approved MP.</p>
3. Specific end-use grades of reserves (above economic cut-off grade).	<p>3. SPECIFIC END-USE GRADES OF RESERVES (ABOVE ECONOMIC CUT-OFF GRADE).</p> <p>All the processed ore of +45% Fe is sold to local steel plants.</p>
4. Specific knowledge of forest/non-forest and other land use data.	<p>4. SPECIFIC KNOWLEDGE OF FOREST/NON-FOREST AND OTHER LAND USE DATA.</p> <p>All the land within the mining lease is in forest and Forest clearance has been obtained.</p>

A separate feasibility report including economic evaluation has been enclosed as Annexure-14.



2.0 MINING:

a) Existing / proposed method for excavation

Earlier the mine was operating by other than fully mechanized (A-OTFM) opencast mining method. In this Plan period also it is proposed continue mining by same method. No Drilling and blasting techniques will be used. Wheel loader/JCB will be used to dig pits and further screening will be done in mobile screening plant. Waste generated will be backfilled concurrently in the mined out pits wherever pit bottom exposes shale as some of trial pits already exposed shale at the bottom.

There are six float ore working pits (P-1 to P-6) are existing in the lease area covering a total area of 7 ha. The dimensions of the pits are given below:

Pit No.	Length (m)	Width (m)	Height (m)	Area (ha.)	Top RL	Bottom RL	No. of Benches
P-1	150	40	39.89	0.60	730.02	690.13	4
P-2	80	29	18.01	0.23	698.11	680.10	2
P-3	100	21	13.00	0.21	660.00	647.00	3
P-4	370	150	52.89	5.56	697.93	645.04	10
P-5	90	26	5.00	0.23	675.00	670.00	1
P-6	70	25	20.9	0.17	701.00	680.10	3

b) In situ Tentative Excavation

Yearly production program will be as per the CEC production limit i.e., 0.10 lakh TPA, although the lease has got EC for 1.30 lakh TPA. (Annexure-3). This production will be achieved by working float over an area of 0.1777 ha every year with an average depth of 2.5m.

Yearly working extent of float ore : 0.1777 Ha.

Average depth of float ore: 2.5 m

Total volume of excavation: 4,442.5 cu mtrs.

Recovery of float ore: 3,332 cu mtrs.(@ 75%)

Quantity of float ore production @3 tonnage factor: 9,996 tons

Quantity of waste generation @2 tonnage factor: 2,221 tons